



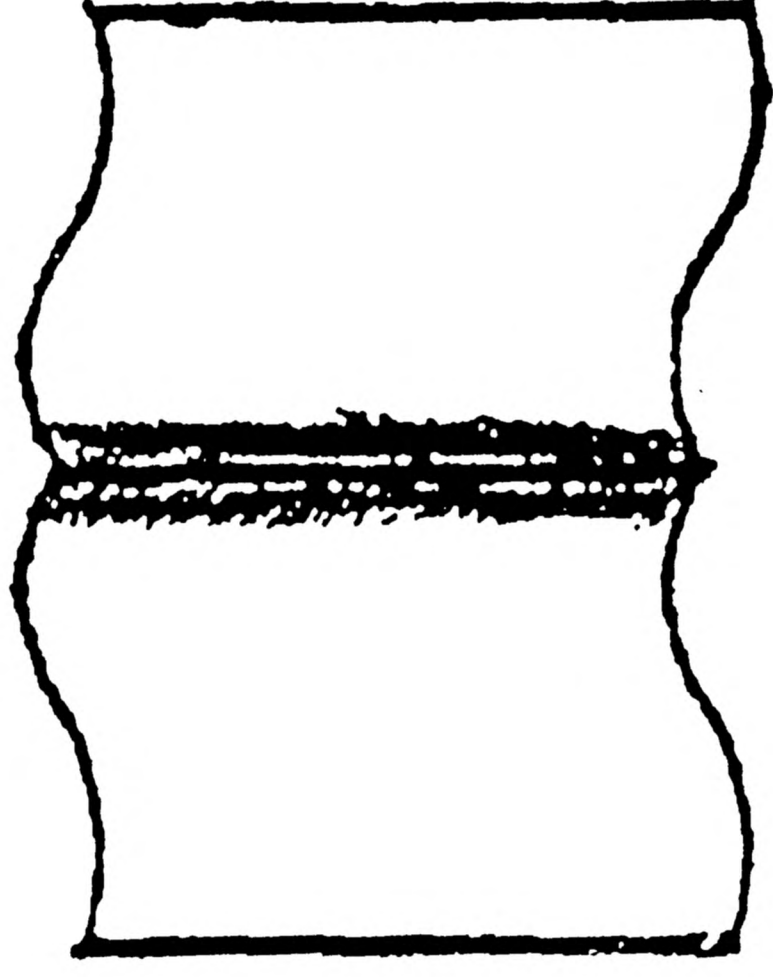
**THE IMPACT OF IMMIGRATION ON  
THE AUSTRALIAN ECONOMY**

Submitted by  
Gordon E.C. Fell

Hertford College  
University of Oxford

[1991]

THIS VOLUME HAS A  
VERY TIGHT BINDING



## ACKNOWLEDGEMENTS

---

I wish to thank Professors A.S. Goudie and D.W. Harvey for the opportunity of undertaking research in the School of Geography, an environment I find most stimulating.

My supervisor, Dr W.D. Macmillan, deserves special recognition. He has been outstanding in all respects.

Many people have provided valuable assistance in the course of this project. I would like to acknowledge in particular the generosity of the Hon. B. Humphreys, MP, and the staff of his office in greatly facilitating my research forays to Australia. The staff in the Business Migration Programme Section of the Department of Immigration, Local Government and Ethnic Affairs have also been very helpful. Finally, I wish to thank Dr B.R. Parmenter, who advised on the implementation of ORANI on the Oxford mainframe.

Financial support of the Rhodes Trust, Hertford College, and an Overseas Research Students Award are gratefully acknowledged.

Immigration means security. Even more than that, it means the full development of untapped resources. It means greater production of goods and services. It means a better, happier, more prosperous life for every Australian.

*J.B. Chifley*

*Prime Minister of Australia, 1945-49*

*Address to a conference of Federal Trade Unions on  
16th October, 1948.*

## CONTENTS

---

|          |                                                     |             |     |
|----------|-----------------------------------------------------|-------------|-----|
|          | <i>List of tables</i>                               | <i>page</i> | iii |
|          | <i>List of figures</i>                              |             | iv  |
| <b>1</b> | <b>Introduction</b>                                 |             | 1   |
|          | 1.1 Historical perspective                          |             | 2   |
|          | 1.2 Immigration and long run economic performance   |             | 8   |
|          | 1.3 Strategy                                        |             | 38  |
| <b>2</b> | <b>Immigration and capital formation</b>            |             | 40  |
|          | 2.1 Capital dilution                                |             | 41  |
|          | 2.2 Induced investment                              |             | 44  |
|          | 2.3 Immigrant fund transfers                        |             | 63  |
|          | 2.4 Conclusion                                      |             | 90  |
| <b>3</b> | <b>Immigration and economic growth</b>              |             | 93  |
|          | 3.1 Introduction                                    |             | 94  |
|          | 3.2 The basic neoclassical growth model             |             | 95  |
|          | 3.3 An extended model                               |             | 108 |
|          | 3.4 Application to Australia                        |             | 121 |
|          | 3.5 Conclusion                                      |             | 139 |
| <b>4</b> | <b>Capital ownership and economic welfare</b>       |             | 141 |
|          | 4.1 Introduction                                    |             | 142 |
|          | 4.2 Whose welfare?                                  |             | 143 |
|          | 4.3 The impact of immigration on original residents |             | 146 |
|          | 4.4 Application to Australia                        |             | 161 |
|          | 4.5 Limitations of the model                        |             | 187 |
|          | 4.6 Conclusion                                      |             | 190 |

|          |                                                              |            |
|----------|--------------------------------------------------------------|------------|
| <b>5</b> | <b>A general equilibrium analysis of immigration</b>         | <b>193</b> |
| 5.1      | Policy analysis using general equilibrium modelling          | 194        |
| 5.2      | ORANI: a multisectoral model of the Australian economy       | 199        |
| 5.3      | Structure of ORANI                                           | 204        |
| 5.4      | Modelling the impact of immigration using ORANI              | 227        |
| 5.5      | Conclusion                                                   | 303        |
| <b>6</b> | <b>The regional impact of immigration</b>                    | <b>305</b> |
| 6.1      | Industrial geography of Australia                            | 306        |
| 6.2      | Regional modelling                                           | 308        |
| 6.3      | Regional disaggregation of ORANI results                     | 316        |
| 6.4      | Conclusion                                                   | 331        |
| <b>7</b> | <b>The Business Migration Programme</b>                      | <b>333</b> |
| 7.1      | History of the programme                                     | 334        |
| 7.2      | Performance                                                  | 339        |
| 7.3      | Political environment: allegation and response               | 354        |
| 7.4      | Empirical evaluation                                         | 369        |
| 7.5      | Potential benefits of business migration                     | 376        |
| 7.6      | Conclusion                                                   | 387        |
| <b>8</b> | <b>Immigration, economic policy and regional integration</b> | <b>389</b> |
| 8.1      | Introduction                                                 | 390        |
| 8.2      | Immigration and economic policy                              | 390        |
| 8.3      | The geopolitical significance of immigration                 | 400        |
|          | <i>Bibliography</i>                                          | <i>407</i> |

## TABLES

---

|      |                                                                                        |     |
|------|----------------------------------------------------------------------------------------|-----|
| 1.1  | Household expenditure                                                                  | 36  |
| 3.1  | Data for Australia: 1988-89                                                            | 122 |
| 3.2  | Saving: 1984-89                                                                        | 122 |
| 3.3  | Data for Australia: 1974-75                                                            | 137 |
| 4.1  | Net capital stock                                                                      | 163 |
| 4.2  | Net international investment position                                                  | 165 |
| 4.3  | Composition of public sector debt                                                      | 167 |
| 4.4  | Level of public sector debt: 1987-90                                                   | 167 |
| 4.5  | Impact of unfinancial immigration on the<br>distribution of income in a closed economy | 170 |
| 4.6  | Impact of financial immigration on the<br>distribution of income in a closed economy   | 174 |
| 4.7  | Impact of financial immigration on the<br>distribution of income in an open economy    | 177 |
| 5.1  | Schematic representation of the ORANI equation<br>system                               | 218 |
| 5.2  | Economic environment                                                                   | 232 |
| 5.3  | Population projections: 1987-2030                                                      | 250 |
| 5.4  | Labour force projections: 1987-2030                                                    | 252 |
| 5.5  | Changes in the pattern of household expenditure                                        | 257 |
| 5.6  | Data for projection of capital formation                                               | 260 |
| 5.7  | Immigration shocks                                                                     | 262 |
| 5.8  | Results: Macroeconomic variables                                                       | 263 |
| 5.9  | Results: Welfare indicators                                                            | 273 |
| 5.10 | Results: Industry growth rates (Scenario I)                                            | 277 |
| 5.11 | Results: Industry growth rates (Scenario II)                                           | 286 |
| 5.12 | Results: Employment by occupation                                                      | 294 |
| 5.13 | Results: Income of original residents                                                  | 301 |
| 6.1  | Local industries in regional ORANI                                                     | 322 |
| 6.2  | Major Australian population centres                                                    | 325 |
| 6.3  | Regional results                                                                       | 328 |
| 7.1  | BMP source countries: 1982-90                                                          | 345 |
| 7.2  | Total and average funds transferred: 1988-89                                           | 351 |
| 7.3  | Place of intended residence: 1982-90                                                   | 352 |

## FIGURES

---

|      |                                                                                         |     |
|------|-----------------------------------------------------------------------------------------|-----|
| 1.1  | Immigration and long run economic performance                                           | 10  |
| 2.1  | Net migration and aggregate real investment growth: 1952-89                             | 55  |
| 2.2  | Net migration and net capital stock growth: 1975-89                                     | 62  |
| 2.3  | Funds transferred by immigrants: 1983-89                                                | 64  |
| 2.4  | The effect of an increase in domestic saving due to immigrant fund transfers            | 82  |
| 2.5  | Financing domestic investment: 1980-89                                                  | 86  |
| 3.1  | Graphical solution to the fundamental equation of neoclassical growth                   | 101 |
| 3.2  | Saving and economic growth                                                              | 107 |
| 3.3  | Fund transfers and capital formation                                                    | 111 |
| 3.4  | Financial immigration and economic growth                                               | 113 |
| 3.5  | Labour force projections                                                                | 124 |
| 3.6  | Effect of unfinancial immigration on capital intensity in a closed economy              | 127 |
| 3.7  | Effect of financial immigration on capital intensity in a closed economy                | 129 |
| 3.8  | Effect of immigration on foreign debt accumulation                                      | 132 |
| 3.9  | Effect of financial immigration on capital intensity in an open economy                 | 134 |
| 3.10 | Effect of immigration on capital intensity: 1974-89                                     | 138 |
| 4.1  | Marginal product of labour                                                              | 149 |
| 4.2  | Immigration and the labour market                                                       | 151 |
| 4.3  | Effect of financial immigration on the income of original residents in a closed economy | 175 |
| 4.4  | Effect of financial immigration on the income of original residents in an open economy  | 179 |
| 4.5  | Effect of admission fees on the income of original residents in a closed economy        | 185 |
| 5.1  | Comparative statics                                                                     | 196 |

|     |                                                                        |     |
|-----|------------------------------------------------------------------------|-----|
| 5.2 | Production technology in ORANI: current production                     | 206 |
| 5.3 | Production technology in ORANI: capital creation                       | 210 |
| 6.1 | Schematic representation of a balanced regional input-output model     | 318 |
| 7.1 | Number of business migrants: 1982-90                                   | 342 |
| 7.2 | BMP source countries: 1982-83                                          | 347 |
| 7.3 | BMP source countries: 1989-90                                          | 347 |
| 7.4 | Funds transferred by business migrants: 1983-89                        | 349 |
| 7.5 | Place of intended residence: shares of BMP                             | 353 |
| 7.6 | Place of intended residence: shares of BMP relative to population base | 353 |

## Chapter 1

### Introduction

*Australian immigration policy has traditionally been justified as a means to ensure national security and promote economic development. Neither of these rationales retains much contemporary force. A larger population is no longer regarded as critical to Australia's defensive capacity, and the quest for economic development, synonymous with aggregate growth, has been superseded by a concern about per capita growth performance. While humanitarian and cultural justifications for immigration have been advanced, they are either restricted in scope or contentious. Currently, the programme is operating on a large scale without a clear rationale. The purpose of this work is to investigate the economic consequences of immigration, and so consider whether the economic rationale may be recast in an alternative form. In this chapter, the existing literature is reviewed and a strategy for carrying the analysis further is outlined.*

## 1.1 Historical perspective

Immigration has exercised a profound influence over the economic and social development of Australia. The progressive reinforcement by immigration of the thousand Europeans who first settled in Sydney Cove in 1788 has been directly responsible for more than one third of total population growth.<sup>1</sup> Moreover, in the period since World War II, more than four million immigrants representing over one hundred nationalities have settled in Australia. The scale of the bold social experiment which has occurred is enormous, and the consequences irreversible.

The impact of immigration on the Australian economy has been similarly formative. Throughout most of the post-war period, it was regarded as vital to economic development. Increasingly, however, it has been criticised for exacerbating Australia's current economic difficulties. Reduction of the programme on economic grounds has been urged by some critics with the same passion that expansion of it was advocated during most of the post-war period, also on economic grounds. The purpose of this work is to investigate the economic consequences of immigration, and so contribute to the debate about the future course of immigration policy. Although the focus will be economic, it will be helpful to place the work in its broader context by briefly recounting the history of immigration and immigration policy in Australia.

---

<sup>1</sup> Australian Bureau of Statistics (1989), *Australian Yearbook*, Australian Government Publishing Service, Canberra, at 51.

Throughout Australian history, immigration has always exceeded emigration, except during wars and the Great Depression. For most of the post-war period, despite periodic cutbacks associated with recessions, the scale of the immigration programme has been very high. In response to adverse economic developments, the programme was scaled back after 1973, but was expanded cautiously in the early 1980s. Towards the end of the decade the immigration programme approached its highest post-war levels, although it was subsequently reduced in the wake of the recent downturn.

Nearly half of the growth in the labour force in the post-war period has been attributable to immigration.<sup>2</sup> As a result of sustained high levels of immigration, the proportion of the population born overseas has risen from 9.8 per cent in 1947 to a projected 22.8 per cent in 1991.<sup>3</sup> This may be compared with recent figures for the United States (6 per cent) and Canada (16 per cent).<sup>4</sup> The scale of the immigration programme has clearly demanded a national consensus. Until quite recently, such a consensus existed, resting on the traditional rationales of defence and economic development.<sup>5</sup>

---

<sup>2</sup> G. Withers (1987a), 'Labour', in R. Maddock and I.W. McLean (eds), *The Australian Economy in the Long Run*, Cambridge University Press, Cambridge, 248-288.

<sup>3</sup> Bureau of Immigration Research (1990), *Immigration Update*, Australian Government Publishing Service, Canberra.

<sup>4</sup> J.L. Simon (1989), *The Economic Consequences of Immigration*, Basil Blackwell, Oxford, at 29.

<sup>5</sup> D. Pope (1987), 'Population and Australian Economic Development', in Maddock and McLean, note 2, 33-59.

For the greater part of their history since settlement, Australians have feared the possibility of Asian encroachment. In 1905, a committee of inquiry expressed its support for immigration policy foremost 'as an insurance against aggression'.<sup>6</sup> Near invasion by Japan during World War II reinforced this fear, and together with evidence of a declining rate of natural increase,<sup>7</sup> led to a post-war campaign to 'populate or perish'. The first Minister for Immigration, Arthur Calwell, declared in 1945: 'We face the gloomy prospect of being a small nation surrounded by millions of other people looking enviously at our large continent.'<sup>8</sup> As the perceived threat of Asian invasion declined and military technology reduced the significance of mere numbers, however, defence became outmoded as justification for immigration.<sup>9</sup>

Economic development, the second pillar supporting immigration, was synonymous with an increase in the level and range of economic activities. Immigration was advocated by the 1905 committee of inquiry 'as a way of adding to the country more producers, more consumers and more taxpayers'.<sup>10</sup> Calwell expressed similar sentiments: 'We need increased population to

---

<sup>6</sup> T. Coghlan (1905), 'Memorandum by the Agents-General on the Question of Immigration', Commonwealth Parliament Papers, vol. 2, at 1179, quoted in Pope (1987), note 5, at 47.

<sup>7</sup> In 1945, a report of the National Health and Medical Research Council stated that as a result of a fertility rate below replacement level, Australia's population of 7.3 million would not exceed 9 million, even with an annual net migration of 40,000 persons. See J.M. Powell (1988), *An Historical Geography of Modern Australia: The Restive Fringe*, Cambridge University Press, Cambridge, at 206-207.

<sup>8</sup> A.A. Calwell (1945), *How Many Australians Tomorrow?*, Read and Harris, Melbourne, at 2.

<sup>9</sup> The last time national security was cited as a justification for immigration by the Minister for Immigration was in 1970: Hon. P. Lynch, MP, *Immigration in the Seventies*, Government Printer, Canberra, at 8.

<sup>10</sup> Coghlan (1905), note 6, at 1182.

develop fully our great country and to assist the expansion of its economy.'<sup>11</sup> The quest for economic expansion continued to justify immigration policy for the following two decades, during which Australia experienced rapid growth.<sup>12</sup>

As a result of the long period of stagflation which afflicted the economy after 1973, however, the immigration programme has become subjected to far more exacting economic scrutiny. The proposition that large-scale immigration generated economic benefits fell from its status as an article of faith, and required a reasoned defence. It is not entirely clear that this onus has been discharged.

Before turning to a discussion of the economic consequences of immigration, it is convenient to mention two further rationales which have been advanced. In order to meet an explicit post-war target of one per cent population growth from immigration,<sup>13</sup> the net for prospective immigrants was cast beyond the traditional British sources. Between 1947 and 1952, 170,000 refugees from Displaced Persons Camps arrived in Australia. Subsequently, Australia has received refugees from a variety of countries including Hungary, Czechoslovakia, Chile, Cyprus, Vietnam and Lebanon.

---

<sup>11</sup> A.A. Calwell (1949), *Immigration Policy and Progress*, Department of Immigration, Canberra, at 11.

<sup>12</sup> R. Maddock (1987), 'The Long Boom: 1940-1970', in Maddock and McLean, note 2, 79-105.

<sup>13</sup> This target was announced by the Minister for Immigration in 1945; the intention was for it to remain until the population had doubled. In the event, the target was only reached on several occasions. Nevertheless, it remained a tenet of immigration policy until 1972.

The total number admitted during the post-war period has exceeded 450,000. During most of the period, the re-settlement of refugees was marked by a happy coincidence of humanitarian and economic motives. Moreover, despite a bout of paranoia when 'boat people' (Indo-Chinese refugees) began landing in Australia in the late 1970s, prompting fears of an uncontrollable flood of arrivals which in retrospect proved unfounded, there is a broad base of support for this type of immigration on humanitarian grounds alone.<sup>14</sup> The humanitarian component of the immigration programme currently comprises about 10 per cent of the intake.<sup>15</sup>

The family reunion component of the programme has also been justified on humanitarian grounds. Because this category depends on the prior admission of a relative under another category, the humanitarian justification is secondary. Only in the case of refugees are humanitarian grounds a sufficient rationale for immigration. Since this only applies to a fraction of the intake, it is not on its own a sufficient rationale for the programme as a whole.

One argument which has been advanced is that immigration has introduced a beneficial diversity to Australian culture which it would not otherwise have. As well as adding to numbers, the post-war immigration programme has greatly diversified the composition of the population. This was due partly to the drive to

---

<sup>14</sup> Committee to Advise on Australia's Immigration Policies (1988), *Immigration: A Commitment to Australia* (2 vols) (hereafter the Fitzgerald Report), Australian Government Publishing Service, Canberra, vol.1, at 68-69.

<sup>15</sup> Bureau of Immigration Research (1990), note 3, at 11.

meet immigration targets, but also to the *realpolitik* of regional integration.<sup>16</sup> After the gradual dismantling of the notorious White Australia policy which restricted entry almost exclusively to Europeans, the racial composition of the immigration programme has increasingly come to reflect Australia's geographical proximity to Asia rather than its historical links with Europe. As a result, the proportion of the population born in Asia has risen from 0.3 per cent in 1947 to a projected 3.8 per cent in 1991. The Asian component of the immigration programme has expanded rapidly during the last decade, rising to the record level of 42 per cent in the most recent intake.<sup>17</sup>

Critics have recently argued that this development threatens the very fabric of Australian society, its values and institutions.<sup>18</sup> In 1988, the federal Opposition broke with bipartisan support for immigration on the grounds that the Asian component had become too high. This sparked a public debate which dominated the national media for several months.<sup>19</sup> The exchange pitted advocates of multiculturalism against those who wished to preserve the existing culture from a perceived threat of Asian domination. The debate was ultimately carried by the supporters

---

<sup>16</sup> The economic and geopolitical significance of immigration in promoting Australia's regional integration is discussed in the final chapter.

<sup>17</sup> Asia is defined to include Afghanistan, Bangladesh, Burma, Cambodia, China, Hong Kong, India, Indonesia, Japan, Korea, Laos, Malaysia, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, and Vietnam.

<sup>18</sup> One of the most trenchant critiques is G. Blainey (1984), *All for Australia*, North Ryde, Sydney.

<sup>19</sup> A useful selection of newspaper clippings and transcripts has been compiled by the Parliamentary Library (1988), 'Editorials and Selected Press Comment on the Immigration Debate', Current Information Service, Commonwealth Parliament, Canberra.

of immigration, at least in political terms,<sup>20</sup> but its ferocity indicated that the social rationale for immigration is far from unanimously supported.<sup>21</sup>

The essential point is that even if one does support the social implications of immigration, in the current climate it is necessary to demonstrate the economic benefits of the programme if it is to enjoy sufficient support to be politically viable. The economic effect of immigration in the long run is the domain of the present contribution. While the short term consequences of immigration may be important, they are beyond the scope of this work. The orientation adopted is prospective; it is nevertheless instructive to draw on previous experience as an indicator of future outcomes. In this way, the assumptions upon which projections are based may be justified.

## 1.2 Immigration and long run economic performance

Immigration has undoubtedly increased the aggregate growth of the Australian economy. Without the immigrant contribution to the labour force, it has been estimated that growth in gross domestic product (GDP) would have been reduced from 4.6 to 3.2 per cent over the period 1947 to 1979.<sup>22</sup> It is less clear, however,

---

<sup>20</sup> The leader of the federal Opposition who instigated the debate was soon after defeated in a leadership ballot. The immigration debate was widely recognised as a major factor in his removal.

<sup>21</sup> Fitzgerald Report (1988), note 14, vol. 1, at 59, expressed dissatisfaction with the state of the social rationale: 'Multiculturalism does not appear to have been a persuasive vehicle for analysis and community education about the beneficial social impact of immigration.'

<sup>22</sup> A. Kaspura and G. Weldon (1980), 'Productivity Trends in the Australian Economy, 1900-01 to 1978-79', Department of Productivity Working, Paper No. 9.

whether immigration has increased living standards measured in terms of GDP per capita. There is some evidence that high rates of population growth have had a negative effect on per capita growth rates in Australia relative to other OECD countries.<sup>23</sup>

With aggregate growth no longer a compelling rationale for immigration, a more sophisticated economic justification is now required. Understanding the long term economic consequences of immigration is central to this exercise. Considerable energy has been devoted to this goal.<sup>24</sup> The purpose of this section is to summarise the current state of knowledge.

A convenient analytical framework is shown in Figure 1.1. In the long run, the growth of the productive capacity of the economy is determined by growth of the factors of production and the rate of technological progress.<sup>25</sup> The existence of economies of scale may also prove beneficial. The effects of immigration on labour force growth and the rate of technological progress, as well as the existence or otherwise of potential economies of scale, are considered below.

---

<sup>23</sup> F.H. Gruen (1986), 'How Bad is Australia's Economic Performance and Why?', *Economic Record* 62(177), 180-193.

<sup>24</sup> The most comprehensive investigation to date is a report on the economics of immigration prepared by the Committee for Economic Development of Australia (CEDA) and the Department of Immigration and Ethnic Affairs: N.R. Norman and K. Meikle (1985), *The Economic Effects of Immigration on Australia* (2 vols), Committee for Economic Development of Australia. See also Centre for International Economics (1988), 'The Relationship Between Immigration and Economic Performance', in Fitzgerald Report (1988), note 14, vol. 2.

<sup>25</sup> For simplicity, land is not included as a factor of production until Chapter 5.

IMMIGRATION AND LONG RUN ECONOMIC PERFORMANCE

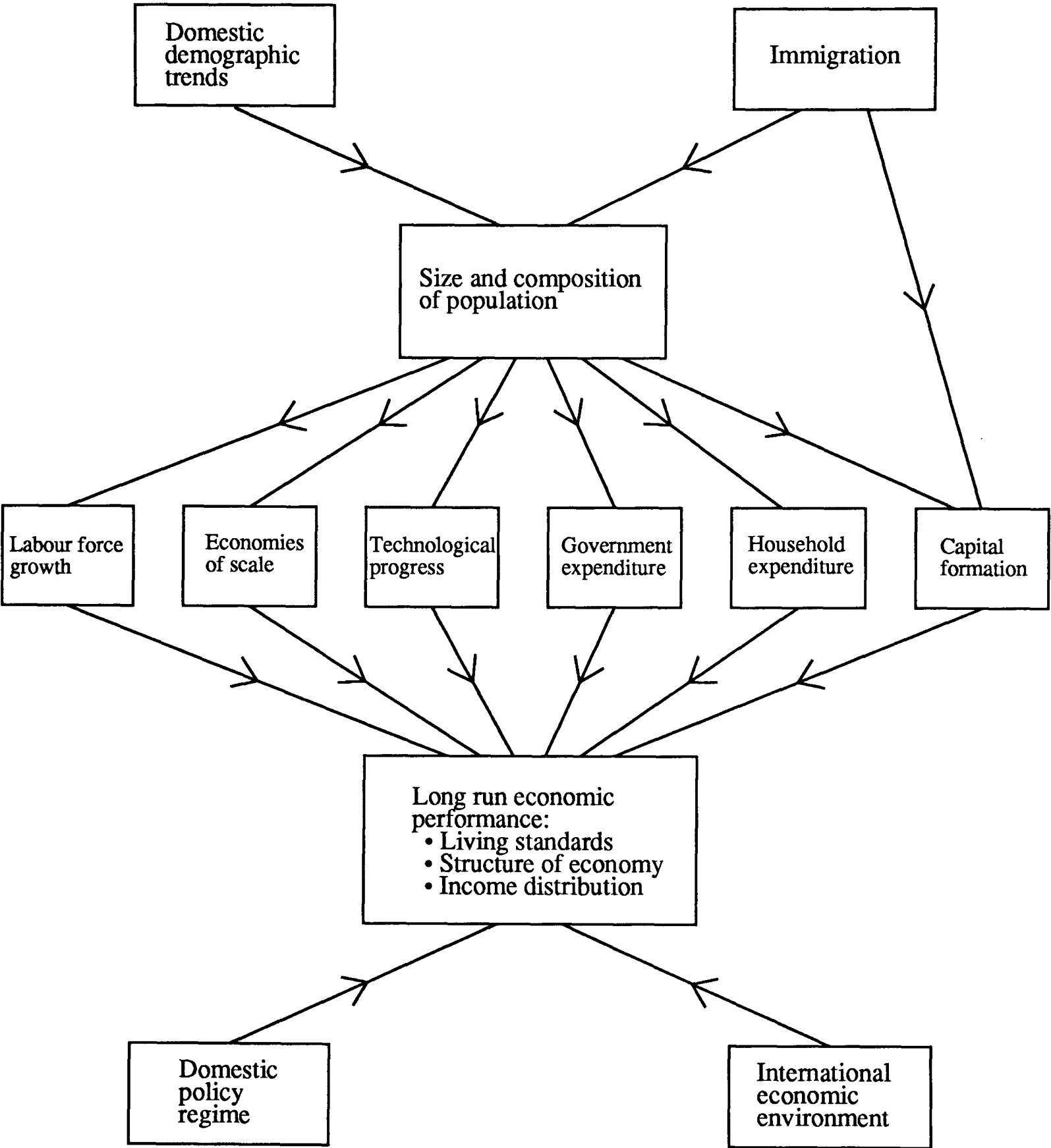


Figure 1.1

Immigration is shown in Figure 1.1 to affect capital formation both directly and indirectly. The indirect link represents the influence of population growth caused by immigration on the rate of capital formation. The direct link represents funds which are transferred by immigrants to Australia and subsequently invested.<sup>26</sup> The level of immigrant fund transfers has risen so dramatically in recent years as to warrant detailed consideration. This work represents the first attempt to evaluate the long term significance of this development. The relationship between immigration and capital formation, taking into account both direct and indirect links, is crucial to the long term consequences of immigration on the size and structure of the economy.

The discussion so far has concentrated on the contribution of immigration to the productive capacity (aggregate supply) of the economy. In the long run, potential growth in output is only realised if the growth in aggregate demand matches the growth in aggregate supply.<sup>27</sup> Immigration may affect aggregate demand in several ways. Consumption and investment by immigrants may add directly to aggregate demand.<sup>28</sup> Government spending may increase to maintain the quality of services provided to the

---

<sup>26</sup> Indicating this link presupposes an argument made in Chapter 2 that immigrant fund transfers affect the rate of domestic capital formation. Note also that there is a link between immigration and household expenditure; a portion of fund transfers may be used for consumption purposes. This is not shown to avoid complicating the diagram unduly.

<sup>27</sup> This abstracts from fluctuations associated with the business cycle. These are later considered in the context of the labour market.

<sup>28</sup> Investment by immigrants also adds to the capital stock and thus aggregate supply. Note that these simple statements should be qualified. Consumption, for example, may not increase if average household income declines sufficiently, perhaps due to a reduction in wages, to offset the increase in the number of households. To some extent, therefore, this discussion anticipates later results.

population. Both sources of additional demand may induce additional consumption by firms as they expand production and investment in order to expand capacity.

The possible impact of immigration on the pattern of household and government expenditure is discussed below. Such expenditures are influenced by factors which relate to changes in demography and household preferences, and may therefore be regarded as external to the economic system.<sup>29</sup> By this, it is meant that, although these developments have economic ramifications, they are not themselves caused by economic factors. It is therefore possible to trace the effect of changes due to immigration in a sequential way.<sup>30</sup> The contribution of immigration to the labour supply may be viewed in a similar light.

In contrast, most of the effects of immigration which determine the overall level of aggregate demand and supply involve complex interactions. In this respect, Figure 1.1 is somewhat misleading, as it shows a simplified chain of causation. As well as possible feedback from economic performance to domestic demographic trends (and indeed, levels of immigration<sup>31</sup>), it omits interactions between the economic variables. These are best captured using an economy-wide general equilibrium framework. This is discussed in the final section of this chapter.

---

<sup>29</sup> Clearly, this is a simplifying assumption. The possibility of feedbacks from the economic performance to demographic developments is not denied, but it is assumed to be unimportant in the Australian context.

<sup>30</sup> This is signified by the direction of causation shown in Figure 1.1.

<sup>31</sup> See Section 2.2.2.

Finally, it should be emphasised that the long term structure and performance of the economy are influenced by a variety of factors, including the international economic environment, especially terms of trade, and the domestic policy regime. The approach adopted here is to isolate the effect of immigration; the conclusions do not therefore purport to be forecasts.

### *1.2.1 Labour market*

The most obvious impact of immigration is to increase the size of the population. How this affects the labour force depends on the age structure of the immigration intake relative to that of the resident population, as well as rates of participation of immigrants in the labour force. During the post-war period, the median age of immigrants has been on average five years lower than the median age of the Australian population.<sup>32</sup> Net migration has contributed 45 per cent of the growth in the population of working age (15 to 64) in the post-war period.<sup>33</sup> If children of immigrants are taken into account, the contribution to the population of working age was nearly 60 per cent over the same period.<sup>34</sup>

---

<sup>32</sup> Fitzgerald Report (1988), note 14, vol. 1, at 8.

<sup>33</sup> G. Withers (1986), 'Migration and the Labour Market: Australian Analysis', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 144, at 2. Note that using net migration (permanent arrivals less permanent departures) somewhat underestimates the actual contribution of immigrants to the labour force, as only 20 per cent of permanent departures are former immigrants: G. Withers (1987b), 'Immigration and Australian Economic Growth', in L. Baker and P. Miller (eds), *The Economics of Immigration*, proceedings of a conference at the Australian National University, Australian Government Publishing Service, Canberra, 29-55.

<sup>34</sup> Withers (1986), note 33. This figure refers to births involving at least one parent born overseas.

The proportion of immigrants of working age who enter the labour force is determined by their participation rates, which vary according to sex, age and marital status. These are difficult to predict *a priori*, since there are competing considerations which may influence the behaviour of immigrants. For example, the need to acquire language skills and educational qualifications may delay entry into the labour force,<sup>35</sup> while the need for an immediate source of income may hasten entry. These are, however, short or medium term considerations. Although the age-specific participation rates of immigrants are initially lower than for the Australian born, convergence is achieved relatively quickly,<sup>36</sup> except for non English-speaking immigrants.<sup>37</sup> Overall, the age structure of immigration intakes has raised the aggregate participation rate in the labour force.<sup>38</sup>

In the early 1970s, the aggregate participation rate of immigrants was 7 to 8 per cent higher than for Australian born, but the difference declined to 1 to 2 per cent higher by the early 1980s.<sup>39</sup> A great deal of this change reflected a shift in the age structure of immigrant arrivals; the proportion concentrated in age groups with the highest participation rates declined. The contribution which immigration will make in the future to the labour supply is

---

<sup>35</sup> P.A. Inglis and T. Stromback (1983), 'A Descriptive Analysis of Migrants' Labour Market Experience', Bureau of Labour Market Research, Draft Working Paper.

<sup>36</sup> P.W. Miller (1982), 'The Economic Position of Immigrants: Facts and Fallacies', *Australian Bulletin of Labour* 8(4), 229-248.

<sup>37</sup> Inglis and Stromback (1983), note 35.

<sup>38</sup> Provided that the additions to the labour force are employed (see below), the increase in the aggregate participation rate may lead to higher income per head of population, even if income per worker remains constant.

<sup>39</sup> B.J. Chapman, D. Pope and G. Withers (1985), 'Immigration and the Labour Market', in Norman and Meikle, note 24, vol. 2, 162-369.

essentially a demographic question, influenced by the size and composition of the intake.<sup>40</sup> Together with information relating to domestic demographic trends, it is possible under certain assumptions to derive projections for the impact of immigration on the population and labour force in the long run. This is discussed in more detail in Section 5.4.3.

An additional factor by which immigrants add to labour supply is a tendency to work longer hours than Australian born employees.<sup>41</sup> As well as increasing the labour supply in terms of the number hours worked, immigration may also affect the quality, and thus the productivity, of the labour force. This depends critically on the skill profile of the intake.

It is generally agreed that the skill level of immigration intakes has risen over most of the post-war period, remaining consistently higher than the skill level of the resident population. There is some disagreement, however, about whether the skill level of recent arrivals has continued or reversed this trend.<sup>42</sup> The skill profile of the intake is influenced by the selection mechanisms contained in the immigration policy of the day. For example, an emphasis on family reunion category tends to lower the average skill level of the intake, whereas an emphasis on the skilled

---

<sup>40</sup> This is not meant to imply that demographic and economic variables are separable. Participation rates, for example, may depend on the level of real wages.

<sup>41</sup> Centre for International Economics (1988), note 14.

<sup>42</sup> Withers (1987b), note 33, argues that the skill level of recent intakes has risen; this is contested by R. Birrell (1987), "Immigration and Australian Economic Growth", by G. Withers: A Comment', Baker and Miller (1987), note 33, 56-65. The disagreement is essentially taxonomic, hinging on the classification of skilled occupations.

migration category tends to increase it. Recently, an increased focus on skills was advocated in a government report on immigration.<sup>43</sup> It is too early at this stage to assess whether this has occurred.

Although there have been several attempts to evaluate the contribution of immigrant skills to the Australian labour force, they are based on the skill categories drawn from immigration statistics.<sup>44</sup> Accordingly, the information relates to the performance of immigrants in the labour market of their countries of origin, which may not necessarily be a reliable guide to performance in the Australian labour market. For example, non-recognition of overseas qualifications may prevent immigrants from utilising their skills fully. There is also a crucial factor operating in the other direction:

There is some evidence of migrants being selectively drawn from among the most entrepreneurially oriented groups so that even though they do not have specific skills in demand in the labour market they have little trouble adapting to the market by setting up their own businesses. Thus the degree of self-employment, and even eventually employing of others, has been shown to be significant among recent Asian immigrants to the United States.<sup>45</sup>

In the absence of detailed information relating to the post-arrival labour market experience of immigrants, which compares skills possessed prior to arrival with employment held, it is difficult to

---

<sup>43</sup> Fitzgerald Report (1988), note 14, at 81-98.

<sup>44</sup> G. Hugo (1988), 'Outputs and Effects of Immigration in Australia', Fitzgerald Report (1988), note 14, vol. 2, at 12-13.

<sup>45</sup> Hugo (1988), note 44, at 13.

assess the contribution of immigration to the skill level of the Australian labour force.

Immigration therefore affects the labour supply in a number of ways. Aggregate employment, however, only increases as a result of immigration to the extent that the economy is able to absorb the additional supply of labour. The most important, and certainly the most emotive, labour market issue relating to immigration is its effect on unemployment: 'No issue fires the debate about immigration more than its alleged effects on unemployment.'<sup>46</sup> Moreover, on no other issue is the divergence between public perception and economic opinion so pronounced.

The fear that immigration exacerbates unemployment by increasing job competition, particularly during recession, has a long history.<sup>47</sup> It is based on the belief that immigration adds to unemployment either directly by swelling the ranks of the unemployed or indirectly by displacing existing workers, perhaps under worse conditions of employment.<sup>48</sup> Over the course of this century, the degree of resistance to immigration in Australia has vacillated according to the state of the labour market, tending to be greatest when the level of unemployment was highest. In the period since 1974, which has been characterised by considerable

---

<sup>46</sup> N.R. Norman and K. Meikle (1983), 'Immigration - the Crunch Issues for Australia', Committee for the Economic Development of Australia, Information Paper No. IP8, at 11.

<sup>47</sup> For a review of public perception of the impact of immigration on unemployment in a variety of countries, in particular the United States, see Simon (1990), note 4, at 208-224.

<sup>48</sup> G. Withers and D. Pope (1985), 'Immigration and Unemployment', *Economic Record* 61(173), 554-563. The impact of immigration on real wages is considered subsequently.

unemployment and few vacancies, the opposition to high levels of immigration on the basis of its alleged adverse effects on the labour market has become more widespread.

A typical example occurred during the recession of the early 1980s, when the president of the apex body of the trade union movement, the Australian Council of Trade Unions (ACTU), warned:

The feedback we are getting from shop stewards and trade union officials is that there is a strong and growing feeling among workers that immigration has to be cut drastically and that jobs for people already here has to be the paramount concern.<sup>49</sup>

What effect does immigration have on unemployment? It is convenient to distinguish between cyclical and structural unemployment.

The causes of cyclical unemployment include real wages in excess of labour productivity (classical unemployment) and insufficient growth in the economy to absorb growing labour supplies (Keynesian unemployment), or both. The fears expressed above are based on the view that, if real wages are rigid, immigration adds to unemployment by increasing the labour supply. It is important to recognise, however, that immigration affects not only the supply, but also the demand, for labour. The impact of

---

<sup>49</sup> C. Dolan, quoted in M. Gawenda and S. Mills (1982), 'Should We Close the Door on Migrants?', *The Age*, 20 December 1982, referred to in Norman and Meikle (1983), note 46, at 6. In a similar vein, the ACTU advocated a reduction in the immigration programme during the current downturn. This is referred to the following chapter (see Chapter 2, note 48).

immigration on cyclical unemployment depends on which of these two effects dominates.<sup>50</sup>

The possibility that population growth, especially due to net migration, influences the demand side of the economy has been canvassed in the past.<sup>51</sup> Indeed, it seems undeniable that some expansion is likely to be induced by immigration, as a result of immigrants' own expenditures and the industrial and social expenditures induced by their presence.<sup>52</sup> The issue is whether the demand for labour generated by the expansion in activity is sufficient to absorb the additional labour supply and thus prevent an increase in the rate of unemployment.<sup>53</sup> As this cannot be resolved on theoretical grounds, the matter is essentially an empirical one.

Structural unemployment arises where there is a mismatch between labour force skills and job requirements, caused by technological change or secular shifts in demand. This may occur due to inadequate labour force mobility, both geographically and between jobs. It has been suggested that, by increasing labour

---

<sup>50</sup> The discussion here implicitly assumes that real wages do not adjust to balance demand and supply in the labour market. This assumption is adopted in order to develop the argument as simply as possible, and may be interpreted as reflecting institutional rigidities associated with centralised arbitration and wage-fixing (see Chapter 5). As a result, an excess of supply over demand causes unemployment. If real wages do adjust fully, then the economy may be able to absorb the additions to the labour force so that the rate of unemployment remains constant.

<sup>51</sup> See, for example, S. Kuznets (1958), 'Long Swings in the Growth of Population and in Related Economic Variables', *Proceedings of the American Philosophical Society* 102, 25-52. The impact of immigration on investment is considered in Chapter 2.

<sup>52</sup> W.M. Corden (1979), 'Tell Us Where the Extra Jobs Will Be', *Bank of New South Wales Review* 30, 6-11.

<sup>53</sup> Recall that the possibility of real wage adjustment is omitted from this discussion.

force mobility, immigration reduces the rate of structural unemployment. The flavour of the argument is well captured in this description of post-war immigrant labour:

Some [immigrants] indeed have acted as a highly mobile labour force at one moment cutting sugar in North Queensland, then picking fruit on the Murray-Murrumbidgee rivers, then doing construction work in outer Melbourne suburbs, then perhaps moving to a new mining area in Western Australia, then south to work at a factory or brickworks in Perth. Others have been equally mobile in the industrial areas of capital cities, moving from factory to factory as wages and employment opportunities dictate.<sup>54</sup>

By enhancing labour force mobility, immigrants may have reduced structural unemployment.

Even if the labour force is highly mobile, as appears to have been the case in Australia during the post-war period,<sup>55</sup> structural unemployment may occur where there is a mismatch between the skills required and those possessed by the labour force as a whole. As a result, there may be an over-supply of certain skills which are not in demand, and an under-supply of other skills which are in demand. Although the number of vacancies may equal the number of unemployed, unemployment may persist if the skills necessary to fill the vacancies are not available. It has been argued that immigration, by altering the skill composition of the

---

<sup>54</sup> C.A. Price (1968), 'Migrants in Australian Society', Duke of Edinburgh's Third Commonwealth Study Conference, Sun Books, Melbourne, at 102, quoted in P.J. Brain, R.L. Smith and G.P. Schuyers (1979), *Population, Immigration, and the Australian Economy*, Croon Helm, London, at 121-122.

<sup>55</sup> Withers (1987a), note 2.

labour force, may alleviate this situation, provided that the procedure for selection correctly identifies required skills.<sup>56</sup>

Two main objections have been raised to the argument that immigration has eased structural unemployment by introducing required skills into the labour market. The first is that professional and trade associations have often been reluctant to recognise overseas qualifications so that many immigrants have been forced to accept jobs for which they are over-qualified.<sup>57</sup> The second objection relates to the impact of immigration on the quality of training offered to the existing labour force. The standard remedy prescribed for structural unemployment is to retrain the affected part of the labour force. The industrial training system, however, is in a parlous state and is frequently cited as a reason for Australia's weak long term per capita income growth relative to other OECD countries.<sup>58</sup> It has been argued that immigration has caused an easy reliance on overseas sources for the provision of necessary skills, to the detriment of education and training programmes in Australia.<sup>59</sup> In the long run, the benefit in terms of saving on training and education expenses may

---

<sup>56</sup> W.M. Corden (1955), 'The Economic Limits to Population Increase', *Economic Record* 31(61), 242-260.

<sup>57</sup> Hugo (1988), note 44, at 12-13. This problem was recognised in the Fitzgerald Report (1988), note 14, vol. 1, at 109, which recommended that accreditation procedures be reviewed.

<sup>58</sup> Committee of Inquiry into Labour Market Progress (1985), Report, Australian Government Publishing Service, Canberra. The problem of weak industrial training is now widely recognised and the appropriate response would seem be to address it directly, rather than altering the immigration intake; see Withers (1987b), note 33.

<sup>59</sup> Norman and Meikle (1985), note 24, at 209-214; Withers (1987b), note 33; Fitzgerald Report, note 14, vol. 1 at 39-40; Birrell (1987), note 42; Hugo (1988), note 44, at 57-58; F. Stilwell (1987), 'Immigration Policy: Sound Economic Foundations?', *Australian Journal of Political Economy* 21, 49-65.

be outweighed by the torpor induced in the domestic labour force.<sup>60</sup>

As with cyclical unemployment, the net effect of immigration on structural unemployment is ambiguous in theory. Fortunately, there is now an impressive body of empirical evidence to point. A number of studies employing different approaches have concluded that aggregate unemployment has not been increased by the level of immigration during the post-war period.<sup>61</sup> Furthermore, there is some evidence that immigration might have reduced unemployment slightly.<sup>62</sup> With respect to cyclical unemployment, immigrants have created at least as many jobs as they have taken, and with respect to structural unemployment, no significant change has resulted from immigration.<sup>63</sup>

This conclusion is based on historical data relating to immigration and unemployment. It is therefore uncertain whether it would hold if the size or composition of the immigration programme were to change dramatically from past patterns. The periods

---

<sup>60</sup> Stilwell (1987), note 59, at 59-60.

<sup>61</sup> See, for example, R.S. Warren (1982), 'Immigration and the Natural Rate of Unemployment in Australia', *Journal of Macroeconomics* 4, 449-459; D.S. Harrison (1984), 'The Impact of Immigration on a Depressed Labour Market: the South Australian Experience', *Economic Record* 60, 57-67; Withers and Pope (1985), note 48. For a comprehensive review of these studies, see Chapman et al (1985), note 39. The same conclusion was reached in a study of immigration and unemployment in New Zealand: J. Poot (1986), *Immigration and the Economy: A Review of Recent Australian Findings on the Economic Consequences of Immigration and the Relevance of These Findings for New Zealand*, Victoria University Press, Wellington, at 29-31.

<sup>62</sup> Withers and Pope (1985), note 48. The actual result suggested that doubling net migration would reduce unemployment by 2 per cent.

<sup>63</sup> Warren (1982), note 61; Withers and Pope (1985), note 48. The failure to find a clear link between immigration and structural unemployment is not surprising in view of the already high mobility of the Australian labour force: D.J. Rowland (1979), *Internal Migration in Australia*, Australian Bureau of Statistics, Canberra.

covered by the studies do, however, embrace a fairly wide range of programme characteristics and fluctuations in economic performance. As a result, the conclusion that immigration does not cause aggregate unemployment can be projected into the future with some confidence for a wide range of possible intakes.

It should also be noted that while immigration has no evident effect on aggregate unemployment, it may have significant compositional effects.<sup>64</sup> Of particular concern is the impact of immigration on unemployed residents, both across the board and in particular labour markets. One interesting implication of the conclusion that aggregate employment is unaffected by immigration is that unemployed residents benefit on the whole. This follows from the above average unemployment rate experienced by immigrants, which implies that the unemployment rate for residents is slightly below average.<sup>65</sup> Since the aggregate unemployment rate for the entire population is unaffected by immigration, it can be inferred that immigration increases the job prospects of unemployed residents. Nevertheless, it should be noted that the job prospects of unemployed residents in particular labour markets may vary.<sup>66</sup>

Identifying the compositional effects of immigration is a task which is more profitably undertaken using an economy-wide framework, within which the contribution of immigration to

---

<sup>64</sup> Harrison (1984), note 61; Chapman, Pope and Withers (1985), note 39.

<sup>65</sup> In June 1990, the unemployment rate for all overseas born was 7.1 per cent, compared with 6.2 per cent for Australian born. Source: Bureau of Immigration Research (1990), note 3, at 33.

<sup>66</sup> This issue has received considerable attention in the United States. See, Simon (1989), note 4, at 225-252, for a review of the relevant literature.

employment growth in particular sectors can be analysed. Job creation is inextricably connected with capital formation, since additional members of the labour force need to be equipped adequately if productivity is not to fall.<sup>67</sup> It is therefore not possible to assess job creation in isolation from capital formation. This point is raised, but not pursued, in the literature relating to immigration and unemployment. It is central to this work.

The discussion so far has proceeded on the basis that real wages are inflexible. If real wages adjust, then immigration adds to the labour force without increasing the proportion which is unemployed. Immigration is frequently alleged to exert a downward pressure on real wages.<sup>68</sup> Historically, the evidence indicates no significant link between real wage growth and net migration in Australia.<sup>69</sup> It will be apparent from the preceding discussion that the impact of immigration on real wages depends on the capital formation which accompanies it, as the ratio of capital to labour is a basic determinant of productivity. In addition, productivity growth, and hence real wage growth, may occur due to the realisation of scale economies, acceleration of technological progress or enhancement of labour force quality resulting from immigration. The determination of the effect of

---

<sup>67</sup> Factors other than capital intensity may influence productivity and thus be reflected in employment growth, including the realisation of scale economies and the acceleration of technological progress. These possibilities are canvassed subsequently.

<sup>68</sup> See, for example, Stilwell (1987), note 59.

<sup>69</sup> Withers (1986), note 33. This is supported by a series of studies of labour markets in the United States, where immigration was found to have little or no effect on real wages earned by residents. See G.J. Borjas and M. Tienda (1987), 'The Economic Consequences of Immigration', *Science* 235(4789), 645-651, and Simon (1989), note 4, at 225-252, for a review of these studies.

immigration on real wages is thus best undertaken using an economy-wide framework.

### *1.2.2 Economies of scale*

If immigration increases the aggregate demand for goods and services produced by Australian industries, and also increases the capacity of those industries,<sup>70</sup> then the possibility arises that the increased production may allow economies of scale to be reaped. These occur where an increase in the scale of production leads to a decrease in the unit cost of production.<sup>71</sup>

Two principal types of economies of scale are generally identified: internal and external. Internal economies of scale relate to benefits associated with increased production by an individual plant or firm. They may be achieved in a variety of ways, including: spreading indivisible costs over a larger volume of sales, such as overheads, advertising and research and development; specialisation of the labour force and capital equipment;<sup>72</sup> utilising larger and more efficient equipment;<sup>73</sup> exercise of market power associated with larger size.

---

<sup>70</sup> This assumes that the increase in the inputs of capital and labour to production are approximately proportionate to the increase in population caused by immigration. The purpose of this assumption is to isolate the contribution of economies of scale from the availability of factors of production.

<sup>71</sup> Economies of scale should be distinguished from effects of increased capacity utilisation. While utilisation may be higher, and unit costs lower, as a result of increased demand induced immigration, this is essentially a short term effect.

<sup>72</sup> The *locus classicus* on the division of labour is Adam Smith (1776), *The Wealth of Nations*, Book I, Chapters 1-3, reprinted by Penguin (1985), Harmondsworth, England, at 109-126.

External economies of scale are associated with an increase in the size of an industry or the entire economy. At the industry level, economies may arise due to declining unit costs of advertising, research or lobbying activities undertaken by the industry as a whole.<sup>74</sup> Also, industry growth may facilitate intra-industry specialisation.<sup>75</sup> Similarly, at the national level, a larger economy may spawn service industries which enhance economic efficiency. Moreover, the unit cost of public provision of services may decline with increasing population.

The importance of scale economies in the Australian economy is unclear. In common with other OECD economies, the contribution of heavy manufacturing to national output has declined, while the contribution of service industries has grown. Since economies of scale are thought to be more prevalent in heavy manufacturing, their contribution to overall economic growth has probably fallen as a consequence of this structural change.<sup>76</sup> As far as manufacturing is concerned, there is some evidence that scale economies have been important in the past, and may remain so,<sup>77</sup>

---

<sup>73</sup> This is due in part to the increase in the ratio of volume to area as capacity expands. The cost of material inputs increases less than proportionately with an increase in capacity.

<sup>74</sup> Coordination of these activities on an industry-wide basis has characterised a number of Australian industries, especially in the primary sector.

<sup>75</sup> The role of vertical disintegration is discussed in A.C. Kelley (1972-3), 'Scale Economies, Inventive Activity, and the Economics of American Population Growth', *Explorations in Economic History* 10, 35-52.

<sup>76</sup> J. Poot, G. Nana and B. Philpott (1988), *International Migration and the New Zealand Economy*, Victoria University Press, Wellington, at 89.

<sup>77</sup> R.E. Caves (1984), 'Scale, Openness and Productivity in Manufacturing Industries', in R.E. Caves and L.B. Krause (eds), *The Australian Economy: A View from the North*, Allen and Unwin, Sydney. It should be noted, however, that a recent trend in some industries, for example the chemical industry, has been towards process intensification, whereby a greater

although inevitably it is hard to isolate scale effects from technological progress.<sup>78</sup>

Moreover, it is not apparent that population growth caused by immigration is the best way to realise potential economies of scale. It is uncertain, for example, whether an increase in population leads to increased production by existing firms or the entry of a new firm into the industry. If some or all firms expand their production, then it is likely that internal economies of scale will be reaped. In contrast, if a new firm enters the industry and produces on a similar scale to existing industries, then internal economies of scale will not be realised.<sup>79</sup> The outcome will be determined by the competitive structure of the industry, in particular the nature of entry barriers.

It should also be recognised that the realisation of internal economies of scale by firms does not necessarily require increased overall production in an industry; it may also be achieved by the rationalisation of the industry so that fewer firms produce the same output more efficiently.<sup>80</sup> Both internal and external economies of scale rely on increased production, which in turn depends on increased market size. For goods or services which are traded internationally, the relevant market is the

---

number of plants with lower minimum efficient scales are located to minimise transport costs. This casts doubt on the importance of population growth in reaping scale economies in such industries.

<sup>78</sup> Centre for International Economics (1988), note 24, at 15.

<sup>79</sup> Norman and Meikle (1985), note 24, at 450.

<sup>80</sup> Too few firms, however, may reduce competitiveness in industries not exposed to international competition.

international market rather than the domestic one.<sup>81</sup> In these circumstances, the most appropriate way to exploit potential economies of scale is to pursue other avenues to reduce costs:

[T]o the extent that scale economies can be achieved in traded industries it is inappropriate to consider immigration as being a valid policy instrument. The adoption of more internationally oriented trading policies, by encouraging domestic industries to produce for and compete on the much larger international market, has the potential to achieve much more in the way of efficient (lowest cost) industry production techniques than policies such as immigration which increase the size of the domestic market.<sup>82</sup>

Traditionally, domestic import-competing manufacturers have supported both immigration and protection as a means of reaping economies of scale from a larger domestic market.<sup>83</sup> It is now widely accepted that the costs imposed on the economy as a result of the protection of inefficient industries outweighed the benefits.<sup>84</sup> In addition, it arguably encouraged the fragmentation of industries so that potential economies of scale were not in the event reaped.<sup>85</sup> With the progressive reduction in levels of protection, the existence of a larger domestic market for import-

---

<sup>81</sup> P.J. Lloyd (1982), 'The Effects of Immigration on Economic Growth via Technological Change and Economies of Scale', in *The Economics of Australian Immigration*, Proceedings of a Conference at the University of Sydney, 57-65; Withers (1987b), note 33.

<sup>82</sup> Centre International Economics (1988), note 24, at 47.

<sup>83</sup> Lloyd (1982), note 81.

<sup>84</sup> See, for example, K. Anderson (1987), 'Tariffs and the Manufacturing Sector', in Maddock and McLean, note 2, 165-194.

<sup>85</sup> Lloyd (1982), note 81.

competing industries is an increasingly irrelevant justification for immigration, if indeed it ever was one.<sup>86</sup>

The position with respect to non-trading industries may be different, as production is directly related to population size. The existence of economies of scale appears to be important in the public sector provision of infrastructure and services.<sup>87</sup> Significant reductions in per capita spending on transportation,<sup>88</sup> communications and defence may result from a larger population.

Economies of scale in the provision of services by state governments (including health, education and law and order) are relevant to the distribution of revenue by the federal government. The estimates compiled by the Commonwealth Grants Commission imply that economies of scale are available only for states with a population less than 2.5 million. In the larger states, no further economies of scale are available because most state government services are provided on a local basis. Since immigrants are mostly accommodated in the expanding suburban fringes of the capital cities, especially Sydney and Melbourne, additional services are usually required in new locations.

Finally, the possibility of diseconomies of scale associated with immigration should be mentioned. Considerable importance has been attached by opponents of immigration to urban congestion

---

<sup>86</sup> It should be noted that this is not an argument against immigration, but rather a denial of a possible justification for it.

<sup>87</sup> For a more detailed discussion, see Centre for International Economics (1988), note 24, at 48-50.

<sup>88</sup> This applies especially to inter-urban and inter-state networks, which are not so prone to congestion.

and environmental damage, which represent externalities not reflected in market decisions.<sup>89</sup> A detailed consideration of these effects is beyond the scope of this work, although these issues clearly merit attention. Suffice it to remark that a resolution of these issues independently of the broader economic effects of immigration is problematic. Environmental degradation, for example air pollution and land salination, is likely to increase due to immigration. The cost per head of population to repair the damage may nevertheless be lower and thus improve the prospects for effective action.<sup>90</sup>

### 1.2.3 *Technological progress*

The relationship between population growth and technological progress is complex. The view that population growth may encourage technological progress in the long run has attracted support from some writers.<sup>91</sup> One basis for this view is that a larger population leads to economies of scale in the production and application of knowledge.<sup>92</sup> This involves two hypotheses. First, a larger population contains more inventors and innovators, *ceteris paribus*, and thus the rate of inventive activity is higher.

---

<sup>89</sup> The appropriate response is to address the sources of market failure directly; see E.S. Phelps (1968), 'Population Increase', *Canadian Journal of Economics* 1, 497-518.

<sup>90</sup> Fitzgerald Report (1988), note 14, at 42-43.

<sup>91</sup> The classic exposition of this view is found in E. Boserup (1965), *The Conditions of Agricultural Progress*, Allen and Unwin, London. See also S. Kuznets (1960), 'Population Change and Aggregate Output', in Universities-National Bureau of Economic Research, *Demographic and Economic Change in Developed Countries*, Princeton, NJ, Princeton University Press; C. Clark (1968), *Population Growth and Land Use*, Macmillan, London; Phelps (1968), note 89; J.L. Simon (1986a), *Theory of Population and Economic Growth*, Basil Blackwell, Oxford.

<sup>92</sup> This view was articulated by Kuznets (1960), note 91. See also Kelley (1972-3), note 75, and Simon (1986a), note 91.

Secondly, the increase in the rate of inventive activity exceeds the increase in the number of inventors (and therefore population growth); several reasons why this might occur have been advanced, including positive externalities associated with a larger stock of knowledge, and the stimulative effect of a dense environment,<sup>93</sup> such as lower communication costs and specialised division of labour.

While this may offer a valuable insight into the relationship between population growth and technological progress at a global level, its application to Australia is very limited. The magnitude of the effect is uncertain. In addition, it is based on a somewhat autarkic view of the sources of technological progress. In reality, technology may be purchased from other countries, as well as developed domestically. In this connection, it has been argued that purchasing overseas technology is a more cost-effective strategy for Australia than relying on population growth induced by immigration to boost the rate of technological progress.<sup>94</sup>

There is another argument that population growth, by depressing the real wage rate, renders the employment of additional workers more attractive than the installation of new capital equipment, thus inhibiting the adoption of capital-embodied technology.<sup>95</sup>

---

<sup>93</sup> D. Love and L. Pashute (1978), 'The Effects of Population Size, Growth, and Concentration upon Scientific Productivity', in J.L. Simon (ed.), *Research in Population Economics*, vol. 1, JAI Press, 127-142.

<sup>94</sup> Withers (1987b), note 33; Centre for International Economics (1988), note 24.

<sup>95</sup> This is the implication of the argument that labour scarcity induces faster innovation, advanced by Habakkuk and others to explain economic growth in the United States: H.J. Habakkuk (1962), *American and British Technology in the Nineteenth Century*, Cambridge University Press, Cambridge. See also P.A. Baran (1957), *The Political Economy Of Growth*,

This hinges on an assumed negative impact of population growth on the labour market. In Section 1.2.1, this assumption, at least with respect to immigration-induced population growth, was shown to be questionable in theory and unsupported by the evidence.

Ultimately, the effect of immigration on the rate of technological progress is heavily influenced by its effect on capital formation, which is considered in Chapter 2. Capital accumulation and technological progress influence each other in such a way as to make separation of the two strictly impossible.<sup>96</sup> The principal focus of this work is capital formation, although it should be recognised that the rate of capital formation influences the rate of technological progress.

One mechanism by which this may happen is the embodiment of the latest technology in new capital equipment. Thus an increased rate of capital formation may reduce the average age of the capital stock, and so increase its efficiency.<sup>97</sup> This is a plausible productivity gain flowing from immigration, if it can be shown that immigration increases the rate of capital formation. It is also

---

reprinted by Pelican (1973), Harmondsworth, England; J.L. Simon (1986b), 'Some Theory of Population Growth's Effect on Technical Change in an Industrial Context', *Australian Economic History Review*, 148-158.

<sup>96</sup> F.H. Hahn and R.C.O. Matthews (1964), 'Growth and Technical Progress: A Survey', *Economic Journal* 74, 825-850. Despite this, most growth models treat technological progress as exogenous. See M.F. Scott (1989), *A New View of Economic Growth*, Clarendon Press, Oxford, where technological progress is subsumed entirely under investment.

<sup>97</sup> This is the essence of vintage models of economic growth. See H. Jones (1975), *An Introduction to Modern Theories of Economic Growth*, Nelson, London.

arguable that faster aggregate growth may lead to increased expenditure on research and development.<sup>98</sup>

Human capital formation and technological progress are also closely connected. Technological advances may be embodied in individuals who possess certain skills and knowledge. Immigration directly contributes to the stock of human capital in this way; depending on the skill profile, the effect may be beneficial or detrimental to productivity. One of the objectives of the Australian immigration programme is the importation of technological and entrepreneurial expertise. To the extent that this objective is achieved, immigration may increase the rate of technological progress. Moreover, if learning-by-doing effects are significant, then immigration, if it increases production runs, may accelerate the acquisition of skills by the labour force.<sup>99</sup>

In the absence of convincing evidence, however, the view that immigration accelerates technological progress and thereby increases productivity is essentially an article of faith. Consequently, the impact of immigration on technological progress will not be considered further.

---

<sup>98</sup> Although, as Lloyd (1982), note 81, observes, this would require a change in attitude of many Australian companies.

<sup>99</sup> Note that the relevant increase in output is associated with particular products (or closely related set of products). The likely importance of learning effects therefore depends on the same considerations as economies of scale.

### 1.2.4 *Government expenditure*

The level of government expenditure is ultimately determined by the national income and a political decision about the appropriate size of government.<sup>100</sup> Assuming that the role of government in the economy remains broadly the same, then the level of spending depends primarily on national income. Within the overall budget, the composition of government expenditure may change as a result of immigration. Since a large proportion of government expenditure is age-related, the long term impact of immigration on the pattern of public spending depends in part on its effect on the age structure of the population.<sup>101</sup> Increased per capita outlays on education, and reduced outlays on social security and health, may be expected as a consequence of this demographic shift.<sup>102</sup> Estimates of these effects are contained in Section 5.4.3.

In addition, concern is often expressed about the reliance of immigrants on social security, which depends critically on their labour market performance. To the extent that the unemployment rate for immigrants is higher than for residents, this represents a drain on public funds. When the tax contribution of immigrants is factored into the equation, however,

---

<sup>100</sup> This applies equally to household expenditure.

<sup>101</sup> In the short term, costs associated with the selection and settlement of immigrants add to government expenditure. The amount involved is fairly negligible and moreover represents a one-off, rather than a continuing, cost. In addition, the degree of cost recovery has been increased.

<sup>102</sup> This should be qualified by noting that previous patterns of government expenditure have shown little correlation with demographic trends, but rather were influenced by other policy considerations. See A. Tulpulé (1984), 'Effects of Alternative Migration Strategies on Government Expenditure', Committee for Economic Development of Australia, Information Paper No. IP12.

it appears that immigrants are net contributors to the public purse.<sup>103</sup> This implies that the level of services provided to residents can be maintained while lowering their tax burden or, alternatively, the quality of service provided can be improved.

### *1.2.5 Household expenditure*

There are two main facets of household expenditure: the overall level and the pattern of consumption. The impact of immigration on the level of household consumption cannot be determined in isolation. One direct effect of immigration is to increase the number of households in the economy. Whether this increases the overall level of household consumption depends on the effect of immigration on household income. This is analysed using an economy-wide framework in Chapter 5.

Immigration also affects the composition of household consumption by altering the characteristics and requirements of households in the economy. Table 1.1 summarises the findings of a recent survey of household expenditure. The survey revealed that immigrant households, while receiving the same average income as Australian-born households, spend more on every expenditure group except alcohol.<sup>104</sup> Table 1.1 shows that spending by immigrant households is about 8 per cent higher than

---

<sup>103</sup> Tulpulé (1984), note 102.

<sup>104</sup> *Household Expenditure Survey, 1988-89*, ABS Catalogue No. 6528.0. Households are identified according to the place of birth of the person who was nominated by the household as its head.

## HOUSEHOLD EXPENDITURE

---

| Broad expenditure group | Average weekly household expenditure (\$) |                      |
|-------------------------|-------------------------------------------|----------------------|
|                         | <i>Australian born</i>                    | <i>Overseas born</i> |
| Current housing costs   | 69                                        | 78                   |
| Fuel and power          | 13                                        | 13                   |
| Food and beverages      | 92                                        | 104                  |
| Alcohol                 | 18                                        | 15                   |
| Tobacco                 | 7                                         | 7                    |
| Clothing and footwear   | 30                                        | 33                   |
| Furniture and equipment | 37                                        | 39                   |
| Household services      | 24                                        | 25                   |
| Medical and health      | 22                                        | 22                   |
| Transport               | 75                                        | 79                   |
| Recreation              | 58                                        | 62                   |
| Personal care           | 10                                        | 10                   |
| Miscellaneous           | 38                                        | 42                   |
| TOTAL                   | 492                                       | 531                  |

---

Source: *Household Expenditure Survey, 1988-89*, ABS Bulletin 6503.0.

Table 1.1

by Australian-born households. This higher level of consumption may be attributable to the funds transferred by immigrants.<sup>105</sup>

The principal components of higher immigrant household consumption are housing costs and food.<sup>106</sup> Both the level and the pattern of expenditure in immigrant households varies with the period of residence in Australia, with more established households tending to converge towards the economy-wide average.

Within immigrant households of a similar vintage the pattern of expenditure depends on ethnicity. Households with a Mediterranean head, for example, tend to spend more heavily on clothing and footwear.<sup>107</sup> The pattern of household expenditure is thus influenced by the ethnic composition of the immigration programme. The long term consequences of this are uncertain, since the ethnic composition of the intake may change over time. Nevertheless, the overall pattern of expenditure for immigrant households may induce shifts in the structure of the economy in the long run. Estimates of this effect are contained in Section 5.4.3.

This completes a review of some of the most important long term effects of immigration on the economy. Much of the material covered will be relied on subsequently to justify certain

---

<sup>105</sup> Bureau of Immigration Research (1990), note 3, at 35.

<sup>106</sup> The inclusion of mortgage repayments in housing costs is somewhat misleading as it represents an investment rather than current consumption.

<sup>107</sup> Bureau of Immigration Research (1990), note 3, at 36.

assumptions. A strategy for carrying the analysis further is outlined in the following section.

### 1.3 Strategy

The next chapter is devoted to the relationship between immigration and capital formation. This is a key element in understanding the long term ramifications of immigration.

Particular attention is devoted to the significance of funds which are transferred by immigrants to Australia. It will be argued that these funds have a positive effect on the rate of capital formation. The implications of this are explored in subsequent chapters.

Various different but complementary approaches are adopted. In Chapters 3 and 4, the impact of immigration on the productive capacity of the economy is analysed. A basic growth model is constructed in Chapter 3 to investigate capital formation and economic growth in the long run. The broad distributive impact of immigration, particularly on the welfare of original residents, is considered in Chapter 4.

While providing a useful insight, the supply-side models developed in Chapters 3 and 4 are fundamentally limited. Immigration affects both aggregate supply and demand in the economy, and these are linked by complex interactions. The economic effects of immigration are thus better analysed within a framework which captures economy-wide linkages. An appropriate vehicle for this type of inquiry is general equilibrium modelling. In Chapter 5, the advantages of this approach to policy

analysis are reviewed, and an existing model of the Australian economy (ORANI) described. The long term macroeconomic ramifications of immigration with and without fund transfers are investigated. In addition, the multisectoral character of ORANI allows a detailed analysis of the structural consequences of immigration. The results obtained in Chapter 5 are disaggregated to the state level in Chapter 6. An interesting picture of the differential impact of immigration emerges, particularly when the impact of fund transfers is taken into account.

Chapter 7 concentrates on business migration, a classic case where human and capital migration coincide. The history of the programme, various criticisms relating to its performance, and governmental response to the criticisms are discussed. In addition, the potential benefits flowing from the programme are explored in a section which extends the arguments advanced in Chapter 2.

In Chapter 8, the compatibility of the immigration programme with past and contemporary economic policy is explored. In addition, immigration is placed within its broader geopolitical context, and the impetus immigration provides to the integration of Australia into the Asian-Pacific region analysed. This chapter also contains a review of the principal findings of this work.

## Chapter 2

### Immigration and capital formation

*The relationship between immigration and capital formation is central to the long term consequences of immigration. Criticism of immigration on the grounds of capital dilution often treats the capital stock as fixed, so that productivity inevitably declines. In reality, immigration may induce additional investment through a variety of channels. Immigrants also transfer substantial savings to Australia. The significance of this recent phenomenon is analysed in this chapter. It is argued that immigrant fund transfers increase the rate of capital formation in the economy.*

## 2.1 Capital dilution

One of the principal criticisms levelled at immigration programmes is that the additional population dilutes the capital stock and so damages the standard of living in the long run. Advocates of immigration have sought to emphasise other benefits which might outweigh this cost, but have rarely questioned the central proposition itself. It is important, however, to make explicit the two assumptions on which it rests: first, that there are diminishing returns to labour; secondly, that the economy is closed to international capital flows; and, thirdly, that immigration is best classified as a species of population growth. The significance of the final assumption is that the general conclusions of growth theory with respect to population growth can be automatically applied to immigration.

The dominant theory of economic growth is neoclassical. While it is possible to contest this theory at the most fundamental level, certain of the basic conclusions it generates have matured into economic orthodoxy. These conclusions are reviewed in the following chapter. With respect to population growth, the following statement provides a good illustration:

One of the central results of growth theory, for example, is the proposition that between two countries with same technology and saving rates the one that has the higher rate of population growth will eventually have lower per capita income.<sup>1</sup>

---

<sup>1</sup> R. Dornbusch and S. Fischer (1987), *Macroeconomics* (4th ed.), McGraw-Hill, New York, at 716.

This proposition flows directly from the assumption of diminishing returns to labour.<sup>2</sup> As the stock of capital available to each worker is diluted, labour productivity is impaired so that the increase in production is less than proportionate to the increase in population. Although new members of the population add to the capital stock themselves by saving and investing a proportion of their income, if we assume that they save the same proportion as original members, then this will not be sufficient to restore the capital stock per head to its original level, since the average income out of which they save is lower. The inevitable result is that per capita income must fall.

Alternatively, the population may decide to maintain the average capital stock per head by increasing their rate of saving and investment, which entails a lower level of consumption. In an open economy, it may be possible to maintain both capital per worker and consumption by borrowing overseas, but eventually the consequences of an accumulating foreign debt will have to be faced.<sup>3</sup> Variations on this theme abound.

Whatever the particular scenario, the usual conclusion is that an increase in the rate of population growth has a deleterious effect on living standards in the long run. An obvious corollary is that

---

<sup>2</sup> Diminishing returns to labour arise because of the fixed supply of a factor of production with which a greater supply of labour works. The focus in this chapter is the extent to which it is accurate to regard capital as a fixed factor. Land is not explicitly included in the analysis until Chapter 5, where the fixed supply of agricultural land is found to influence the impact of immigration.

<sup>3</sup> The consequences of accumulating foreign debt are discussed in Section 2.3.1(e).

living standards are maintained by zero population growth, a slogan which has attracted a number of prominent supporters. According to neoclassical growth theory, then, population growth is inimical to intensive economic growth (that is, rising living standards).<sup>4</sup>

This conclusion can be resisted in a number of ways, which were discussed in Chapter 1. For example, economies of scale may exist so that there are increasing returns to a larger labour force. Population growth may increase the rate of technological progress in the long run, a hypothesis which has attracted some support among population theorists and economists.<sup>5</sup> For present purposes, it will be assumed that neither of these effects is significant.

Is capital dilution therefore an inevitable consequence of immigration? It will be argued in the following two sections that, although immigration may dilute the capital stock immediately upon arrival, there are a number of channels by which immigration may stimulate capital formation. The population growth caused by immigration may induce additional investment. In addition, if funds are transferred by immigrants to the receiving country, then this may boost capital formation.

---

<sup>4</sup> Population growth has either a neutral impact (if it occurs at a constant rate) or a negative impact (if it is increasing). Even in the former case, it is inimical in the sense that living standards could be raised by a lower rate of population growth. Viewed in this light, the only beneficial rate of population growth is a declining one. This is a standard conclusion; see, for example, R.M. Solow (1970), *Growth Theory: An Exposition*, Clarendon Press, Oxford, at 26-30; H. Brems (1973), *Labour, Capital, and Growth*, Lexington Books, Lexington, Massachusetts, at 53-72.

<sup>5</sup> See Section 1.2.3.

Attention has in the past been devoted to the effect on the domestic economy of remittances by immigrants to their countries of origin, but less interest has been shown in the savings which immigrants bring with them to their new country. This is perfectly justifiable from an historical perspective, since most of the large-scale immigration which has occurred this century has been undertaken by people with minimal financial resources. It appears, however, that a new era of international migration may have begun in which the average wealth of immigrants to certain countries is far higher than it was previously.<sup>6</sup> Evidence of this phenomenon will be presented for Australia in Section 2.3.

In the following two sections, the links between immigration and capital formation are explored. In Section 2.2, the extent to which unfinancial immigration induces additional investment will be considered. In Section 2.3, the significance of immigrant fund transfers will be discussed.

## 2.2 Induced investment

Links between immigration and capital formation are difficult to quantify, because of the complexity of the interactions involved.<sup>7</sup> This is probably the major gap in understanding the long run economic effect of immigration on the productive capacity of an

---

<sup>6</sup> Including, for example, Australia, New Zealand and Canada.

<sup>7</sup> For a discussion of the links between population growth, in particular through immigration, see R.A. Easterlin (1968), *Population, Labour Force, and Long Swings in Economic Growth*, National Bureau of Economic Research, New York.

economy. While the availability of labour can be derived from population and labour force projections,<sup>8</sup> and equated with aggregate employment growth for the reasons discussed in Chapter 1, no such method exists for estimating the process of capital accumulation.

The rate of investment determines the rate of growth of the capital stock. To the extent that immigration induces investment, capital dilution caused in the short run by the additional population may be reduced, offset completely, or even reversed in the long run. The standard conclusions referred to in the introduction to this chapter may then need to be modified, or perhaps abandoned. It is therefore necessary to derive some means of predicting the impact of immigration on investment. This section focuses on immigration as a species of population growth, and investigates the ways in which immigration might induce additional investment.

### 2.2.1 *Literature review*

The connection between population growth and capital accumulation has received considerable attention, most recently with respect to developing countries.<sup>9</sup> No attempt will be made here to offer a comprehensive review of this literature. Suffice it to observe that the conclusions relating to the current situation of developing countries are not necessarily applicable to developed

---

<sup>8</sup> Similarly, the supply of land can be assumed to be constant.

<sup>9</sup> See, for example, World Bank (1984), *World Development Report*, Oxford University Press, Oxford.

countries. The consensus, at least among the international institutions responsible for assisting with the economic development of developing countries, is that rapid population growth hinders the process of capital formation required for development.<sup>10</sup> The essence of the problem is held to be that rapid population growth prevents the accumulation of more capital per head of population, which is a major determinant of productivity and thus living standards. Any productivity gains are simply absorbed by the growing population.

In contrast, a more modest rate of population growth is thought to increase capital formation per capita.<sup>11</sup> Historically, the population growth which coincided with the industrial revolution is thought to have facilitated capital accumulation through a variety of direct and indirect channels.<sup>12</sup> Several indirect channels were discussed in the previous chapter, including the exploitation of scale economies and an accelerated rate of technological progress. Other more direct channels have been postulated. The most obvious of these is the impact of population growth on aggregate demand, in particular for investment items

---

<sup>10</sup> This proposition is by no means uncontested, as will be apparent from the discussion in Chapter 1 concerning the relationship between population growth and technological progress.

<sup>11</sup> The existence of suitable institutions, such as a mature capital market, is clearly central to taking advantage of the stimulus to capital formation provided by immigration. Ironically, those countries with such institutions, which could therefore cope best with the demand for capital associated with population growth, are on the whole those with the lowest rates of population growth.

<sup>12</sup> See, for example, H.J. Habakkuk (1971), *Population Growth and Economic Development since 1750*, Cambridge University Press, Cambridge. Note that although representing a dramatic acceleration from historical levels, population growth during the industrialisation of now developed countries at no stage approached the rate currently prevailing in many developing countries. In addition, the spillover outlet of the New World available to European countries is not available to developing countries.

such as housing and the public provision of social infrastructure.<sup>13</sup> Secondly, by exerting a downward pressure on real wages, population growth renders existing capital more profitable, and induces further investment.<sup>14</sup>

The economic and demographic stagnation of the 1930's led to concern about the diminishing number of investment outlets in industrial countries.<sup>15</sup> The virtuous effect of population growth on the investment climate was extolled by Keynes in an address to the Eugenics Society on population economics.<sup>16</sup> Expectations were accorded a central place in his argument, with entrepreneurs more likely to make investments when aggregate growth enhanced the expectation of future profitability through higher

---

<sup>13</sup> Some caution should be exercised in making this claim. A positive link between aggregate demand and population growth depends on an increase in total disposable income (and hence government revenue). Assuming that the level of unemployment (and the tax rate) remains constant, this in turn depends on whether the lower real wage rate or larger labour force dominates the total income. Of course, the real wage rate and the level of unemployment are themselves related to the level of capital intensity in the economy. Such linkages suggest, even at this early stage, the usefulness of the general equilibrium approach adopted later. Finally, note that even if total income is unchanged, the requirements of a growing population are likely to skew the allocation of income towards housing. On this point, see P.A. Baran (1955), *The Political Economy of Growth*, reprinted in 1976 by Penguin, Harmondsworth, England, 181-199.

<sup>14</sup> Again, this is a far from definitive statement. There may be a reduction in sales if real wages fall enough to lower total income, thereby reducing profitability and the incentive for further investment. Also, it may be argued that the availability of cheap labour militates against the introduction of labour-saving machinery, an important component of investment. See Baran (1955), note 13, at 184-185.

<sup>15</sup> A.H. Hansen (1939), 'Economic Progress and Declining Population Growth', *American Economic Review* 29, 1-15. Hansen set out three sources of investment opportunities over the broad sweep of modern economic history: territorial expansion, population growth and technological progress. With territorial frontiers closed, and populations static or declining, Hansen concluded: 'The problem of our generation is, above all, the problem of inadequate investment outlets.' Note that these sources, especially population growth and technological progress, interact.

<sup>16</sup> J.M. Keynes (1937), 'Some Economic Consequences of a Declining Population', *Eugenics Review* 29, 13-18, quoted in B. Thomas (ed., 1958), *Economics of International Migration*, Macmillan, London, at 382.

sales. In addition, an expanding economy provides a more forgiving environment for investment than a static one, since the harm caused by erroneous investment decisions, whether by public authorities or the private sector, is more readily reversed in a growing economy.<sup>17</sup> For example, additional capacity which is unable to yield an adequate return at the time the investment is made may become profitable as the domestic market expands due to population growth.

The conclusion that population growth leads to an increase in total investment was applied readily to immigration. Keynes attached great importance to contribution of immigration to capital formation in the United States:

[I]t was largely because of migration that the United States economy was always growing rapidly and out-stripping capacity. There was consequently less risk in undertaking investment, and capital formation was larger, more rapid and more confident.<sup>18</sup>

The proposition that immigration induces some additional investment is fairly uncontroversial. The central issue is whether the level of investment induced is sufficient to maintain the level of capital stock per head ('capital intensity') in the economy.

---

<sup>17</sup> C. Clark (1978), 'Population Growth and Productivity', in J.L. Simon (ed.), *Research in Population Economics*, vol. 1, JAI Press, 143-154; B.M. Walsh (1989), 'Tests for Macroeconomic Feedback from Large-Scale Migration Based on the Irish Experience, 1948-87: A Note', *Economic and Social Review* 20(3), 257-266.

<sup>18</sup> Keynes (1937), note 16, at 382.

This has been a recurring theme in the debate on the economics of immigration which has taken place in Australia. The first contributions were prompted by the implementation of the large-scale immigration programme after World War II. In one of the early analyses of the economic effects of immigration, it was emphasised that the investment necessary to maintain the level of capital intensity in the face of an immigration programme is far more than proportionate to the increase in population.<sup>19</sup> In these circumstances, the possibility of a gulf between capital requirements and effective demand was emphasised. In the event that the capital requirements of immigrants were not met, the ratio of capital to labour would fall, so that labour productivity and consequently the standard of living would be adversely affected.

In order to satisfy immigrant requirements for capital and so preserve the ratio of capital to labour in the economy, it was argued that resources would need to be diverted from consumption to investment, entailing a welfare loss.<sup>20</sup> Alternatively, foreign investment was canvassed as a means of maintaining capital intensity and thus productivity:

---

<sup>19</sup> P. H. Karmel (1953), 'The Economic Effects of Immigration', reprinted in H. W. Arndt and W. M. Corden (1963), *The Australian Economy: First Volume of Readings*, Cheshire, Melbourne, 124-139. It should be noted that this analysis applies to the short term; in the long run, investment and the capital stock grow at the same rate. Precisely the same reasoning was employed in a government report released over 30 years after this article was published, indicating that the state of knowledge about the link between immigration and investment has not improved a great deal. See K. Meikle (1985), 'Immigration and Economic Development', in N.R. Norman and K.F. Meikle (1985), *The Economic Effects of Immigration on Australia* (vol. 2), Committee for Economic Development of Australia, 16-46.

<sup>20</sup> W.M. Corden (1955), 'The Economic Limits to Population Increase', *Economic Record* 31(61), 242-260.

There can be no doubt that the general atmosphere of rapid economic development, to which the immigration programme has contributed, has been an important stimulus for overseas investment. In this sense, the immigration policy might be said to have contributed to the supply of capital, as well as to the demand for it.<sup>21</sup>

Nevertheless, the consensus was that this channel of investment would prove inadequate and that immigration would therefore cause capital dilution.<sup>22</sup>

A related criticism may also be traced to these early contributions. The satisfaction of immigrant capital requirements was held to divert scarce resources from additional investment in productive capital to the mere replication of existing productive capital to equip the immigrant labour force and the provision of social infrastructure for immigrants.<sup>23</sup>

These arguments acquired the status of orthodoxy, as was evident in the findings of the Vernon Committee of Economic Enquiry in a report submitted to the government in 1965: 'The major cost of immigration concerns the use of capital'.<sup>24</sup> This conclusion rested

---

<sup>21</sup> D. M. Bensusan-Butt (1950), 'Investment and Immigration in Australia in the 1950s', *Economic Record* 26, 201-216.

<sup>22</sup> Corden (1955), note 20. This view was shared by New Zealand commentators. See, for example, Monetary and Economic Council (1966), *Increased Immigration and the New Zealand Economy*, Report No. 12, Government Printer, Wellington.

<sup>23</sup> Bensusan-Butt (1950), note 21; D. Pope (1987), 'Population and Australian Economic Development 1900-1930', in R. Maddock and I.W. McLean (eds), *The Australian Economy in the Long Run*, Cambridge University Press, Cambridge, 33-60.

<sup>24</sup> Committee of Economic Enquiry (1965), Report, Commonwealth of Australia, vol. 1, at 66.

squarely on diminishing returns to labour. The report went on to argue that the investment induced by immigration:

...involves a 'widening' of the capital structure of the economy, rather than the 'deepening' which occurs when investment gives rise to more capital intensive forms of production, and hence directly to improvements in productivity.<sup>25</sup>

The distinction between capital widening and capital deepening, while possessing an intuitive appeal, is not always clear. First, it is important to clarify the meanings ascribed to the terms. The basic definition of capital widening which is adopted here is the maintenance of capital intensity in the face of population growth. Capital deepening may be defined as growth in the level of capital stock per head (growth in capital intensity).<sup>26</sup> These basic definitions contain no reference to the type of capital involved.

Frequently, however, the terms are used in an allocative sense which focuses on the type of capital involved. Capital widening is associated with investment in housing and infrastructure (demographic investment), and capital deepening with investment in industry (productive investment).<sup>27</sup> When such connotations are attached to the terms, their ambit becomes unclear. For example, it is difficult to characterise an increase in housing capital per head which occurs when all other capital per head

---

<sup>25</sup> Committee of Economic Enquiry (1965), note 24, at 67.

<sup>26</sup> Throughout this work, capital dilution is used to mean a reduction in capital intensity; it is therefore the opposite of capital deepening.

<sup>27</sup> The terminology 'demographic' and 'productive' investment is adopted here for convenience. The dangers associated with its usage are discussed below.

remains constant. By the basic definition, this is regarded as a case of capital deepening, since the level of aggregate capital per head increases, but this is precluded if the term is reserved for investment in industry. These difficulties may be avoided by adhering to the basic definitions proposed above.

Apart from semantic problems, there are serious conceptual difficulties which flow from the distinction between capital widening and deepening. Implicit in the notion that immigration causes capital widening in the sense of a skewed allocation of resources towards demographic investment is the view that productive investment is crowded out.<sup>28</sup> According to this view, the competition for scarce capital drives the interest rate up, rendering unprofitable productive investment projects which would have been profitable in the absence of immigration. It is simply assumed in this work that foreign capital inflows alleviate this effect.<sup>29</sup>

In addition, the classification of investment as productive or demographic is arbitrary and overlooks linkages between sectors of the economy. Housing investment, for example, stimulates demand for the output of a range of construction and construction-related industries, and thereby also stimulates productive investment. Similarly, public investment in infrastructure has been shown to encourage private sector

---

<sup>28</sup> See, for example, H. W. Arndt (1968), 'Migration and the National Economy', in *A Small Rich Industrial Country*, Cheshire, Melbourne, at 18-19: 'The immigration programme has, in the past decade, pre-empted a high proportion of the resources available to Australia for capital formation'.

<sup>29</sup> The implications of this assumption are considered in Section 2.3.1(e).

investment.<sup>30</sup> Such linkages call into question the usefulness of the capital widening concept, at least in its allocative sense.

Finally, any negative effects which may be associated with capital widening in the basic sense are offset to the extent that new investment embodies current technology and so reduces the average age of the capital stock.<sup>31</sup> By stimulating investment, immigration may therefore produce productivity gains, even if the level of capital intensity remains unchanged.<sup>32</sup>

In summary, there are a number of theoretical grounds for anticipating that immigration increases aggregate investment in an economy. The first concerns the impact of immigration on aggregate demand. Immigrants have specific capital requirements in the form of housing and infrastructure; in addition, these indirectly stimulate investment in other sectors. Expectations of aggregate growth fuelled by immigration encourage increased investment, by both local and foreign investors.<sup>33</sup> Furthermore, a growing economy lessens the risks associated with investment. Finally, the rising return to capital implied by diminishing returns to labour may induce more investment.<sup>34</sup>

---

<sup>30</sup> K.T. Duffy-Deno (1991), 'Public Capital and the Factor Intensity of the Manufacturing Sector', *Urban Studies* 28(1), 3-14.

<sup>31</sup> P.J. Brain, R.L. Smith and G.P. Schuyers (1979), *Population, Immigration and the Australian Economy*, Croon Helm, Melbourne. See also Section 1.2.3.

<sup>32</sup> If capital dilution occurs, then productivity depends on which of the two effects dominates.

<sup>33</sup> Arndt (1968), note 28, 18-19.

<sup>34</sup> G. Withers (1987), 'Immigration and Australian Economic Growth', L. Baker and P. Miller (eds), *The Economics of Immigration*, Australian Government Publishing Service, 29-65.

### 2.2.2 *Historical evidence*

The relationship between immigration and capital formation is clearly complex. Figure 2.1 compares the growth in aggregate real investment with population growth due to net migration for Australia over the period 1952-89.<sup>35</sup> This includes three episodes where population growth due to net migration exceeded one per cent (in the mid-1950s, late 1960s and the late 1980s) as well as two episodes where net migration fell to well below its average level (the mid-1970s and mid-1980s). The period therefore encompasses fairly wide fluctuations in net migration intakes.

A casual inspection of the two series reveals a strong positive correlation between immigration and investment. Moreover, it appears that investment has grown sufficiently in periods of high migration to increase the growth in investment per capita. Extreme caution, however, must be exercised in attributing the observed correlation to a causal relationship between the investment and net migration.<sup>36</sup> Two time series of economic data are often positively correlated because each variable is influenced by the secular growth of the economy and fluctuations in the business cycle.<sup>37</sup>

In this case, the secular growth of the economy is eliminated by using growth rates of the two variables. Nevertheless, the

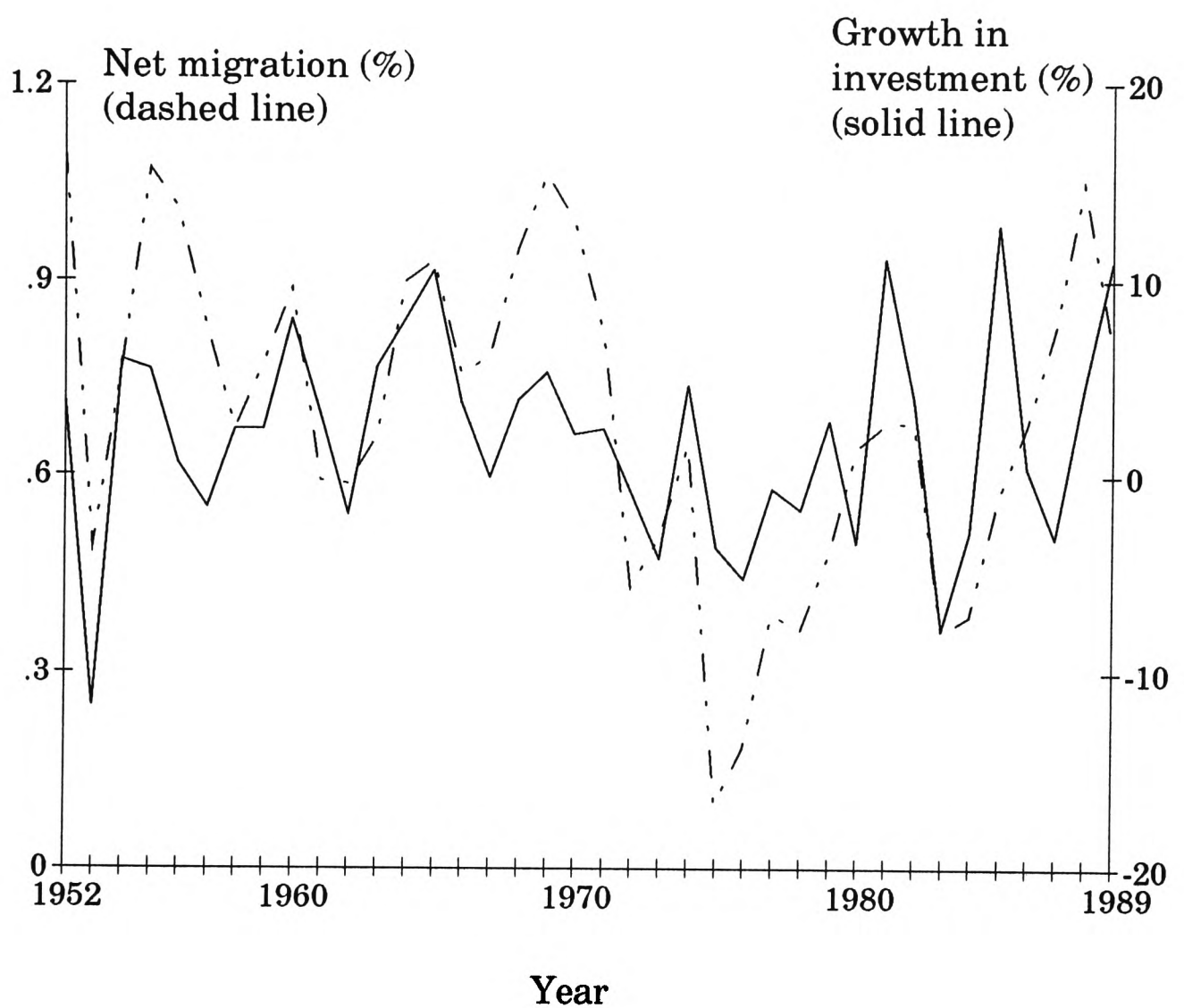
---

<sup>35</sup> Net migration is defined as permanent arrivals less permanent departures.

<sup>36</sup> Especially in identifying the direction of causation.

<sup>37</sup> T.J. Sargent (1981), 'Interpreting Economic Time Series', *Journal of Political Economy* 89, 213-248.

**NET MIGRATION AND AGGREGATE REAL  
INVESTMENT GROWTH: 1952-89**



Sources: Maddock and McLean (1987), note 23, Statistical Appendix; Australian Demographic Statistics, 1990, ABS Catalogue No. 3103.0; Australian National Accounts: National Income and Expenditure, ABS Catalogue No. 5204.0.

Figure 2.1

influence of the business cycle remains. Of the two variables, it is well established that investment is influenced by changes in gross domestic product (GDP) and thus by the medium term swings in GDP associated with the business cycle.<sup>38</sup> The association between immigration and the business cycle is more subtle.

There is a large body of literature concerned with the determinants of international migration, which analyses decisions to migrate within a cost-benefit framework.<sup>39</sup> Relevant economic considerations include the standard of living and the state of the labour market in the country of destination relative to the country of origin.<sup>40</sup> This approach leads to the conclusion that immigration to a country is likely to be higher (and emigration from it lower) when the economy is in a high growth phase of the business cycle.

This was central to Easterlin's account of long swings in economic growth in the United States.<sup>41</sup> In the free-entry period before World War I, immigration responded to the state of the US labour market. On the face of it, this sort of response could explain the

---

<sup>38</sup> Fluctuations in investment, the most volatile component of aggregate demand, in turn influence the business cycle.

<sup>39</sup> The consequences, rather than the determinants, of immigration are the focus of this work. For a flavour of the literature on the determinants of international migration, see, for example, E.G. Ravenstein (1889), 'The Laws of Migration', *Journal of the Royal Statistical Society*, 240-301; L.A. Sjaastad (1962), 'The Costs and Returns of Human Migration', *Journal of Political Economy* 70, 80-93.

<sup>40</sup> There are doubtless other considerations which motivate international migration, including political freedom, the desire for family reunification, and factors relating to 'quality of life'. The general argument advanced here is unaffected by the failure to include these considerations explicitly.

<sup>41</sup> Easterlin (1968), note 7, at 30-31.

correlation between immigration and investment, via the dependence of both on the business cycle.

The difficulty with applying this reasoning to recent international migration is the existence of stringent controls, which means that a decision to migrate may not come to fruition. Immigration controls are readily enforceable by a country such as Australia which, as an island, has no common borders with other countries.<sup>42</sup> The cost-benefit approach is more appropriate to analyse migration which is not subject to controls, so that the level of migration reflects the level of demand by individuals to migrate. For example, trans-Tasman migration between Australia and New Zealand, which is unrestricted, is sensitive to economic and labour market conditions in both countries.<sup>43</sup> Settler arrivals from New Zealand, while accounting for nearly half the permanent departures from that country,<sup>44</sup> only represent a fairly small fraction of the Australian immigration intake (11 per cent in 1989-90).<sup>45</sup>

In contrast, the intake from all other countries, which represents the bulk of the programme, is subject to immigration controls. Currently, the level of demand for migration to Australia far

---

<sup>42</sup> The obvious example of international migration between two countries with a common border, but with vastly different living standards, is the flow of illegal immigrants from Mexico to the United States.

<sup>43</sup> P. Brosnan and J. Poot (1986), 'An Econometric Model of Trans-Tasman Migration after World War II', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 138, Canberra.

<sup>44</sup> J. Poot, G. Nana and B. Philpott (1988), *International Migration and the New Zealand Economy: A Long-Run Perspective*, Victoria University Press, Wellington.

<sup>45</sup> Bureau of Immigration Research (1990), *Immigration Update, 1990*, Australian Government Publishing Service, Canberra, at 15.

exceeds the number of places allocated under the immigration programme. This situation has prevailed for the past two decades and is projected to continue for the foreseeable future.<sup>46</sup> In these circumstances, the determinants of the size and composition of the immigration intake are the eligibility criteria specified by policy, which may be viewed as a rationing mechanism to cope with excess demand.<sup>47</sup>

The desire to migrate may not come to fruition if the eligibility criteria are not satisfied, however great the incentive for the individuals concerned. As a result, the cost-benefit approach is of very limited use in describing immigration flows to Australia. The ready association between levels of net migration and the state of the economy which this approach implies is also therefore unlikely to explain the observed fluctuations in net migration.

Nevertheless, there is strong evidence that the federal government has tended to set immigration targets based on the state of the economy, thereby indirectly linking the level of net migration with the business cycle.<sup>48</sup> One of the chief fears about immigration is that it exacerbates unemployment. While this is

---

<sup>46</sup> Committee to Advise on Australia's Immigration Policies (1988), *Immigration: A Commitment to Australia* (2 vols), Australian Government Publishing Service, Canberra, vol. 1, at 1.

<sup>47</sup> This may be contrasted with the practice of providing assisted passages in order to encourage immigration which commenced in the 1830s. Since that time, approximately 4.5 million immigrants have received assisted passage, including 2 million after World War II. Sources: Australian Bureau of Statistics (1989), *Australian Yearbook*, Australian Government Publishing Service, Canberra, at 51 (pre-war); G. Withers (1987), 'Labour', in R. Maddock and I.W. McLean (eds), *The Australian Economy in the Long Run*, Cambridge University Press, Cambridge, 248-288, at 263 (post-war). The policy of assisted migration is no longer pursued.

<sup>48</sup> A.C. Kelley and R.M. Schmidt (1979), 'Modelling the Role of Government in Post-War Australian Immigration', *Economic Record* 55(149), 127-139.

not borne out by recent evidence,<sup>49</sup> it is firmly steeped in the psyche of the Australian trade union movement. During periods of above average unemployment, it has been, and continues to be, practical politics to reduce the immigration intake.<sup>50</sup>

Immigration as an instrument of short and medium term macroeconomic policy has been criticised as blunt and imprecise.<sup>51</sup> Setting immigration targets which are independent of the business cycle has been advocated. Ironically, it also seems that it may be preferable to set immigration targets counter-cyclically, rather than pro-cyclically, since immigration appears in the short run to increase aggregate demand more than aggregate supply. Be that as it may, a policy of varying the intake pro-cyclically was certainly pursued in the period covered in Figure 2.1, which might account for the observed correlation between investment and net migration.

It is therefore difficult to isolate *a priori* the principal reasons for the observed correlation. While there are grounds for expecting that net migration should induce additional investment, the

---

<sup>49</sup> See Section 1.2.1.

<sup>50</sup> The apex body of the trade union movement, the Australian Council of Trade Unions, argued very recently that the immigration programme was contributing to unemployment during the current downturn and advocated a substantial cut (*Sydney Morning Herald*, 30 April 1991, at 3). In the event, the government decided to reduce the size of the immigration intake for 1991-92 (*Australian Financial Review*, 1 May 1991, at 3). The Minister for Immigration subsequently confirmed that unemployment had been a factor in the decision (*Weekend Australian*, 18-19 May 1991, at 1). This was roundly condemned by the immigration spokesman for a major ethnic lobby group as contrary to the best economic opinion. To some extent, the criticism missed the point. The decision was politically, rather than economically, motivated.

<sup>51</sup> Centre for International Economics (1990), 'Immigration and Economic Management: Short Term Economic Consequences of Minor Variations in Immigration', Report submitted to Bureau of Immigration Research.

magnitude of this effect is uncertain, so that the major reason for the observed correlation may simply be immigration policy formulated with regard to the business cycle. One recent study attempted to resolve this issue empirically.<sup>52</sup>

The methodology used in this study was based on the concept of Granger causality, which postulates that fluctuations in one variable 'cause' fluctuations in a second variable if the value of the second variable is better forecasted using values of the first variable as input than by not doing so.<sup>53</sup> The two time series for net migration and investment per capita were modelled separately to eliminate cyclical fluctuations. The residual time series thus obtained were independent of the business cycle. Nevertheless, cross-correlation of the two series revealed a significant positive correlation between net migration and investment per capita. The lag structure of the cross-correlation indicated that a change in investment per capita was correlated with change in the level of net migration in the previous year, providing support for the view that an increase in immigration induces an increase in investment per capita.

While this is an important result, it remains unclear whether the increase in investment per capita is sufficient to maintain the level of capital stock per capita. As noted earlier, the size of

---

<sup>52</sup> L. Baker (1987), 'Immigration and Per Capita Investment', in L. Baker and P. Miller (eds), *The Economics of Immigration*, proceedings of a conference at the Australian National University, Australian Government Publishing Service, Canberra, 73-89.

<sup>53</sup> C.W.J. Granger (1969), 'Investigating Causal Relationships by Econometric Models and Cross-Spectral Methods', *Econometrica* 37(3), 424-438.

aggregate investment relative to the capital stock means that investment has to increase far more than proportionately in response to an increase in net migration if capital intensity is to be preserved.<sup>54</sup>

Figure 2.2 compares the growth of the net capital stock with population growth due to net migration. There is no striking evidence of a negative association between the two time series. Instead, it appears that the capital growth and net migration may be positively correlated. The same caveats apply here as to conclusions based on a casual inspection of Figure 2.1.

In the study discussed above, a crude attempt to estimate the direct response of investment to net migration was made using an existing econometric model of the Australian economy.<sup>55</sup> One of the equations in the model explained non-dwelling investment in terms of lagged GDP and net migration, and predicted that a one per cent increase in population due to net migration would lead to an eight per cent increase in investment. This was equivalent to 0.8 per cent of GDP. Relying on an estimate that private non-residential capital stock is valued at approximately two-thirds of GNP,<sup>56</sup> it was concluded that the investment induced by a one per cent increase in population due to net migration would increase

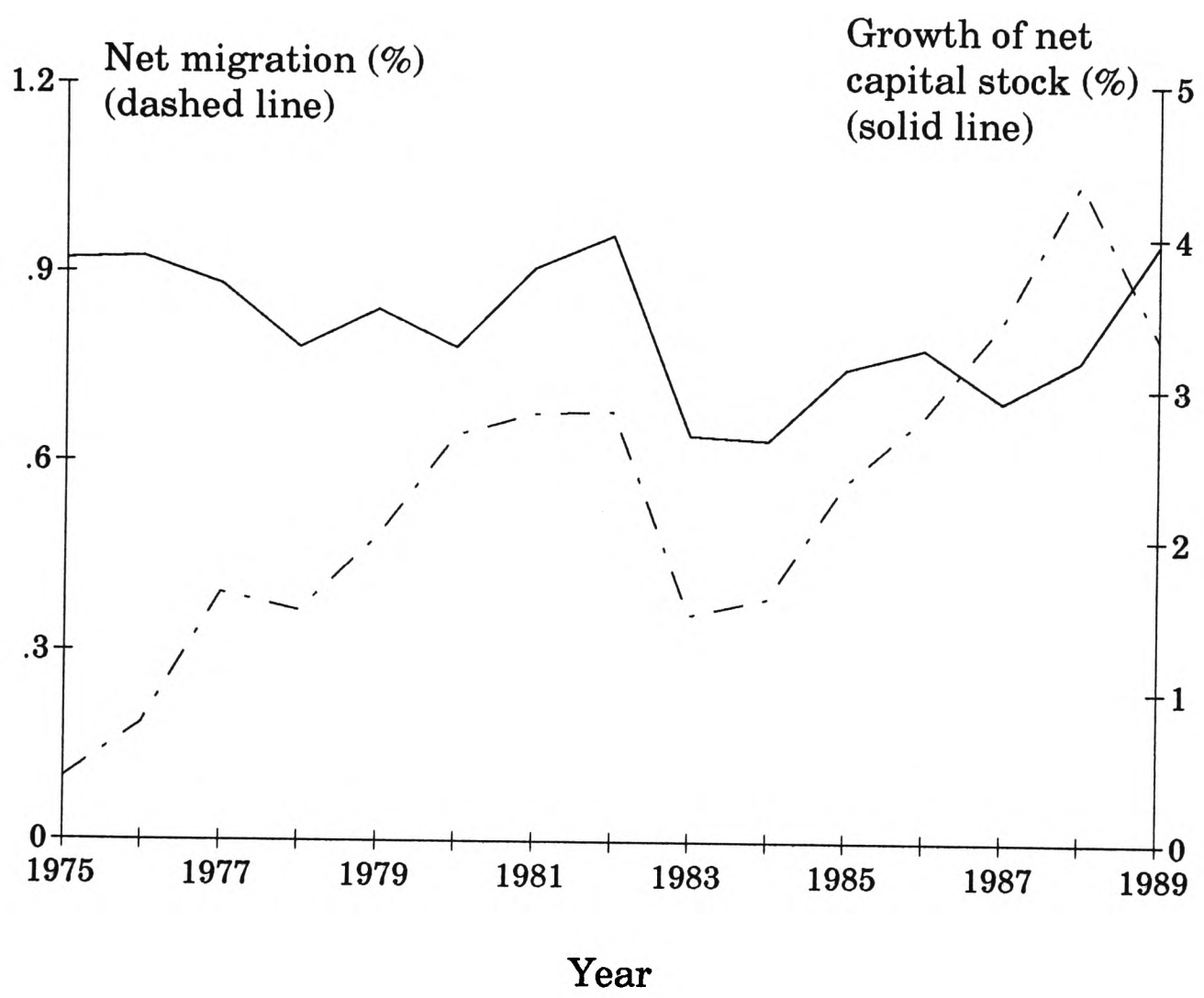
---

<sup>54</sup> Karmel (1953), note 19; Meikle (1985), note 19.

<sup>55</sup> J. Kmenta (1966), 'An Econometric Model of Australia', *Australian Economic Papers* 5(2), 131-164.

<sup>56</sup> Until recently, the only available estimates for the capital stock were contained in C. Clark (1970), 'Net Capital Stock', *Economic Record* 46(116), 449-466. Now the Australian Bureau of Statistics publishes statistics relating to the capital stock (*Capital Stock, 1988-89*, ABS Catalogue No. 5221.0). These will be used throughout this work. For present purposes, the better estimates would not alter the general argument materially.

**NET MIGRATION AND NET CAPITAL STOCK  
GROWTH: 1975-89**



Source: See Figure 2.1

Figure 2.2

the private non-residential capital stock by slightly more than one per cent.

The significance of this conclusion is that even private productive capital, the component of the capital stock which is arguably the most vulnerable to dilution, appears to be intensified as a result of immigration. The central point to emerge is that immigration appears to induce an expansion in investment which is probably sufficient to maintain or perhaps even intensify the level of capital per worker.

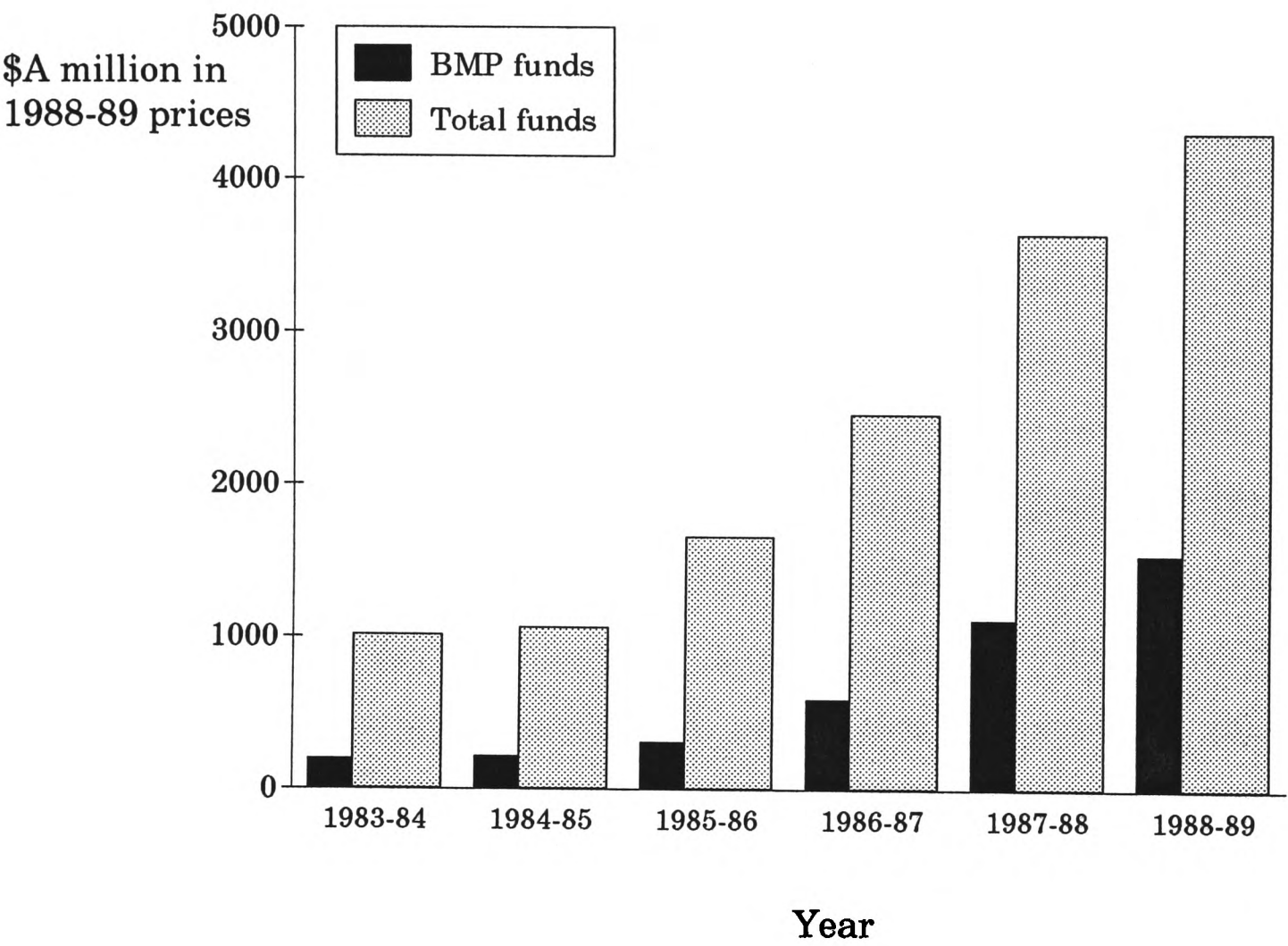
Consequently, it will be assumed throughout this work that immigration induces sufficient investment to maintain the capital intensity in the economy. This is based on the evidence which has been presented in this section. In addition, it will be argued in the following section that immigrant fund transfers further increase the level of domestic capital formation. This argument represents the principal contribution of this chapter.

### **2.3 Immigrant fund transfers**

As noted earlier, one issue which has received very little attention is the significance of the funds transferred by immigrants to Australia. Yet these fund transfers, if they increase the productive capacity of the Australian economy in the long run, represent a potentially large benefit.

In recent years, the level of funds transferred by immigrants to Australia has grown dramatically. Figure 2.3 shows the total

**FUNDS TRANSFERRED BY IMMIGRANTS:  
1983-89**



Source: Department of Immigration, Local Government and Ethnic Affairs.

Figure 2.3

amount of funds transferred by all categories of immigrants between 1983 and 1989. Over that time, the level of funds transferred per annum has grown from just over \$1 billion to \$4.3 billion. To place these figures in perspective, export receipts in 1988-89 were approximately \$52 billion. Immigrant fund transfers thus represent a significant source of foreign currency.

Part of the reason for the rapid increase in the level of funds transferred is the expansion of the immigration programme, which doubled in size over the period.<sup>57</sup> A major factor in addition has been the advent of the Business Migration Programme (BMP), a scheme designed to attract established business persons to Australia.<sup>58</sup> One of the eligibility criteria for the BMP is the transferral of funds to Australia in order to establish a business or participate in a joint venture. Figure 2.3 shows the level of funds transferred under this category of the programme. From a modest \$194 million in 1983-84, total funds transferred rose to \$1.5 billion in 1988-89. The expansion of the BMP is not, however, a complete explanation for the increase in average funds transferred by immigrants. When the contribution of the BMP is subtracted from the total, it transpires that the average level of funds transferred by immigrants in all other categories has actually doubled in real terms over the period. The remarkable increase in the level of immigrant fund transfers has not therefore been confined to one eligibility category, but has characterised the entire programme.

---

<sup>57</sup> The actual number of settler arrivals were 68,820 in 1983-84 and 145,330 in 1988-89. Source: *Overseas Arrivals and Departures*, ABS Catalogue No. 3401.0.

<sup>58</sup> See Chapter 7.

What effect do immigrant fund transfers have on the economy? In addressing this question, the central issue to resolve is whether fund transfers increase the level of domestic investment above the level that would be induced by unfinancial immigration. To foreshadow the answer offered here, it seems that the assumption that most of the additional saving remains in the receiving country and flows to domestic capital formation is a fair approximation to reality.

Two quite different arguments will be adduced to support this contention. The first relies on the high correlations between domestic saving and investment rates observed in many national economies, which imply that domestic saving is a very much more important source of finance for domestic investment than foreign saving. Several reasons have been advanced to explain the saving-investment correlations. While the explanation for the observed correlations is not entirely clear, their existence is well established as an empirical proposition.

The second argument is based on the entrepreneurial attributes of the immigrants themselves. Essentially, it is based on the notion that the set of investment opportunities in the receiving country is expanded by the intake of entrepreneurial immigrants who are equipped with capital. Even in a world characterised by high capital mobility, the share of world saving to be allocated to the receiving country increases as the investment opportunities expand.

### 2.3.1 *The macroeconomic significance of immigrant fund transfers*

Funds transferred by immigrants can be viewed as an exogenous increase in the level of domestic saving. In a closed economy, where capital (except that which accompanies immigrants) is confined to national boundaries, this may be expected to translate into domestic investment.<sup>59</sup> As a result, the productive capacity of the economy is expanded.

The assumption of low international capital mobility appears crucial to this analysis. It means that domestic saving and investment are highly correlated and that as a consequence any additional saving tends to manifest itself as additional domestic capital formation. It is necessary to ask whether this conclusion would survive the transition to a framework in which capital is internationally mobile.

#### (a) Perfect international capital mobility

Consider a world economy characterised by perfect international capital mobility in which capital flows freely among countries to equalise net rates of return.<sup>60</sup> Savings, irrespective of country of origin, would be pooled and redistributed via an international

---

<sup>59</sup> This assumes that saving equals investment. No attempt will be made here to specify whether this comes about as a result of market adjustments or government intervention.

<sup>60</sup> This is a standard definition of perfect international capital mobility. It may be, however, that rates of return are not equalised among countries even though capital is internationally mobile, for a variety of reasons, including a lack of international goods market or domestic financial market integration. These possibilities are explored later; for the purpose of the present exposition, the standard definition will suffice.

capital market governed by a common world interest rate. In their seminal paper, Feldstein and Horioka examined the implications of perfect capital mobility for the role of domestic saving in national economies.<sup>61</sup> They argued that there would be no reason to expect any correlation between domestic saving and domestic investment, since domestic saving would simply be allocated to the country offering the highest rate of return on capital. In this way, differential yields would be eliminated by net saving flows between countries. For countries facing the same world interest rate, different propensities to save reflect various structural factors,<sup>62</sup> while investment decisions depend on relative investment opportunities, with the difference between saving and investment systematically accommodated by current account imbalances.

According to this line of argument, perfect capital mobility breaks the nexus between domestic saving and domestic capital formation.<sup>63</sup> Feldstein and Horioka outlined two scenarios depending on whether the country concerned is a net borrower or lender. If a country is already a capital exporter, then most of the additional saving will finance investment abroad. If it is already a capital importer, then the additional saving will replace foreign saving inflow that would otherwise have been invested there. In both cases, the level of domestic capital formation is basically

---

<sup>61</sup> M. Feldstein and C. Horioka (1980), 'Domestic Saving and International Capital Flows', *Economic Journal* 90, 314-329.

<sup>62</sup> For example, demographic and cultural factors, as well as the distribution of income.

<sup>63</sup> The same caveat as in note 59 applies.

unaffected by an increase in domestic saving.<sup>64</sup> Benefits associated with increased domestic saving are not readily apparent if capital is highly mobile. In particular, the importance of immigrant fund transfers becomes questionable.

As noted before, funds transferred by immigrants boost the domestic saving rate of the receiving country. The long term contribution of this windfall to the productive potential of the receiving country depends upon the resolution of the following question: what proportion of an increase in domestic saving remains within the economy to finance domestic investment rather than flowing abroad to finance additional investment in foreign countries? The logic of the above reasoning suggests that in the absence of additional investment outlets no part of the additional saving would remain within the economy. There are, however, a variety of reasons why this conclusion is difficult to support.

#### (b) Saving-investment correlations

Feldstein and Horioka tested the hypothesis that the share of income saved by individual countries is unrelated to the share of output allocated to domestic investment, a situation which arguably should prevail if capital were perfectly mobile. It was found, however, that across different countries domestic investment rates are highly correlated with domestic saving rates.

---

<sup>64</sup> For a capital importing country, the foreign debt position may be improved, but the significance of the absolute level of foreign debt per se depends on a variety of factors. This is discussed subsequently.

The correlation existed not only between the levels, but also changes in the levels, of saving and investment rates: '[T]he statistical estimates indicate that nearly all of the incremental saving remains in the country of origin.'<sup>65</sup>

Feldstein and Horioka attributed the high saving-investment correlations to a low level of international capital mobility. This conclusion was contrary to the conventional view that international capital mobility, at least among most major industrial countries, had reached very high levels in the post-Bretton Woods era. One possible explanation was that the sample period for the Feldstein-Horioka study failed to capture the effect of important developments promoting international financial market integration, including the removal of capital controls by the largest industrial countries, the injection of capital surpluses by OPEC members into the world economy, and the rapid growth of the Eurocurrency market.<sup>66</sup> Subsequent more recent studies, however, including cross-section studies that reported pre- and post-1973 results,<sup>67</sup> as well as time-series studies,<sup>68</sup> confirmed

---

<sup>65</sup> Feldstein and Horioka (1980), note 61, at 150.

<sup>66</sup> The original Feldstein-Horioka study considered 15 industrial countries over the period 1960-74.

<sup>67</sup> See for example M. Feldstein (1983), 'Domestic Saving and International Capital Movements in the Long Run and the Short Run', *European Economic Review* 21, 129-151; A. Penati and M. Dooley (1984), 'Current Account Imbalances and Capital Formation in Industrial Countries, 1949-81', *IMF Staff Papers* 31(1), 1-24; R. Murphy (1984), 'Capital Mobility and the Relationship Between Saving and Investment Rates in OECD Countries', *Journal of International Money and Finance* 3, 327-342; M. Dooley, J. Frankel and D.J. Mathieson (1987), 'International Capital Mobility: What Do Saving Investment Correlations Tell Us?', *IMF Staff Papers* 34(3), 503-530; J.A. Frankel and A.T. MacArthur (1988), 'Political vs. Currency Premia in International Real Interest Differentials', *European Economic Review* 32, 1083-1121; T. Bayoumi (1990), 'Saving-Investment Correlations: Immobile Capital, Government Policy, or Endogeneous Behaviour?', *IMF Staff Papers* 37(2), 360-387.

the existence of high correlations between domestic saving and investment; moreover, the correlations showed no decline over time.<sup>69</sup>

While the existence of high saving-investment correlations is widely recognised, the Feldstein-Horioka interpretation that they are due to low international capital mobility has been challenged on a variety of fronts. One alternative hypothesis which is consistent with perfect international capital mobility is that saving and investment are correlated because they share common determinants; if an exogeneous boom causes both to rise, it would be incorrect to attribute the correlation to low capital mobility.<sup>70</sup> Another is that governments react systematically to reduce current account imbalances with policies designed to change public or private saving.<sup>71</sup> These arguments focus on the endogeneity of domestic saving, a problem which appears to have been adequately addressed in the saving-investment studies.<sup>72</sup>

---

<sup>68</sup> See for example M. Obstfeld (1986), 'Capital Mobility in the World Economy: Theory and Measurement', *Carnegie-Rochester Conference Series on Public Policy*, 24, 55-103; Frankel (1985), note 67.

<sup>69</sup> Both Dooley et al (1987), note 67, at 515, and Frankel and MacArthur (1988), note 67, at 1086-87, find that the correlation actually increases for industrial countries after 1973.

<sup>70</sup> Dooley et al (1987), note 67, discuss this possibility in some detail but nevertheless conclude that the econometric methods employed in the saving-investment correlation studies deal with this econometric problem adequately.

<sup>71</sup> See for example N. Fieleke (1982), 'National Saving and International Investment', *Saving and Government Policy*, Federal Reserve Bank of Boston Conference Series No. 25; J. Tobin (1983), 'Comments: Domestic Saving and International Capital Movements in the Long Run and the Short Run', by M. Feldstein', *European Economic Review* 21, 153-156; Bayoumi (1990), note 67.

<sup>72</sup> The regressions used instrumental variables to deal with any sources of endogeneity of domestic saving: typical examples include the ratio of dependents to working age population, considered a good proxy for the private saving rate, and the ratio of military expenditure to GNP, considered a good proxy for the public sector saving rate. See Frankel and MacArthur (1988), note 67, at 1086. In addition, the general conclusion of

A third challenge relates to country size and concerns the possibility that certain countries may be sufficiently large to influence the world interest rate by a change in their saving rate.<sup>73</sup> A fall in national saving of such a country might drive up interest rates and crowd out investment throughout the world. In these circumstances, although a domestic fall in saving and investment occurs, it would not be due to low capital mobility but rather due to the large country effect.<sup>74</sup> If capital were perfectly mobile, and the crowding out of investment due only to the large size of the country concerned, the rise in interest rates and fall in investment should be as large abroad as domestically. Empirically, however, the large country effect has proved unable to explain high saving-investment correlations.<sup>75</sup> In addition, the group of countries to which it might conceivably apply is limited in number, and certainly would not include Australia.<sup>76</sup>

(c) Rates of return

The most plausible explanation of the high correlation between domestic saving and investment rates observed in many countries

---

the studies is confirmed by direct studies of rates of return, which avoid the endogeneity problem. See below.

<sup>73</sup> See for example Tobin (1983), note 71; Murphy (1984), note 67. As Dooley et al (1987), note 67, at 519-520, point out, the possible endogeneity of the world interest rate is only a problem for time-series studies.

<sup>74</sup> Obstfeld (1986), note 68, explained the high correlation obtained for a U.S. time-series study in terms of the size of the U.S. in world markets.

<sup>75</sup> The hypothesis that a large country's saving has no more effect on its own saving than other countries' saving was tested and rejected for the United States by J.A. Frankel (1985), 'International Capital Mobility and Crowding Out in the US Economy: Imperfect Integration of Financial or of Goods Markets?', NBER Working Paper No. 1773.

<sup>76</sup> At most, the large country effect could offer a partial explanation for saving-investment correlations.

is that rates of return on capital are not equalised internationally. This possibility has been explored in the context of financial capital markets for which rates of return can be investigated directly. Real interest parity (RIP) - the equalisation of real interest rates across countries - has consistently been rejected.<sup>77</sup> Furthermore, no convergence to real interest parity among major industrial countries is evident in the post-Bretton Woods era.<sup>78</sup>

Why should real interest differentials among countries persist? Previously, the existence of legal barriers such as capital controls was a prime candidate to explain persistent differentials.<sup>79</sup> The extent of financial market liberalisation suggests that this is now unlikely to be a major factor for most industrial countries. An alternative explanation is that risk considerations impede the flow of capital to countries with the highest yields. Maximisation of yield is only one extreme version of the portfolio theory of investment, and for the majority of investors the risks associated with foreign investment may be perceived as so great that investment is confined to the domestic economy.<sup>80</sup>

---

<sup>77</sup> F. Mishkin (1984), 'The Real Interest Rate: A Multi-Country Empirical Study', *Canadian Journal of Economics* 17(2), 283-311, and 'Are Real Interest Rates Equal Across Countries? An Empirical Investigation of International Parity Conditions', *Journal of Finance* 39, 1345-1358; N. Mark (1985), 'Some Evidence on the International Inequality of Real Interest Rates', *Journal Of International Money and Finance* 4, 189-208; W. Gaab, M. J. Granziol and M. Horner (1986), 'On Some International Parity Conditions: An Empirical Investigation', *European Economic Review* 30(3), 683-713; Frankel and MacArthur (1988), note 67.

<sup>78</sup> Mishkin (1984), note 77, at 1352; Frankel and MacArthur (1988), note 67, at 1086-1087. In fact, real interest differentials seem to have become more variable after 1973, in line with the saving-investment correlation studies (see note 69). Frankel and MacArthur suggested this is due to the variability of real exchange rates under the floating rate regime, at 1105.

<sup>79</sup> Feldstein and Horioka (1980), note 61, at 316.

<sup>80</sup> Note, however, that the existence of some risk averse investors does not prevent the equalisation of yields; all that is required is a sufficient number of risk neutral investors.

The notion of 'country risk' is relevant here.<sup>81</sup> There are several variations on this theme, but the most common is that countries with a high level of foreign indebtedness tend to offset the debt through some combination of capital controls, taxation, or outright default.<sup>82</sup> Investors are aware of this tendency and add a risk premium to additional funds lent to an already indebted country.

The effect of a risk premium is to violate the small open economy assumption under which there is an unlimited and perfectly elastic supply of foreign capital at the given world interest rate. Instead, prospective borrowers face an upward-sloping supply curve for foreign capital.<sup>83</sup> In these circumstances, domestic saving provides a cheaper source of finance than its foreign counterpart, so it is more likely to be diverted to domestic investment than if capital were perfectly mobile.

Capital controls and country risk premia, together with factors such as transaction costs and information limitations,<sup>84</sup> comprise barriers to international capital mobility. Using forward discount rates, Frankel and MacArthur investigated the size of these barriers using covered interest differentials, which they

---

<sup>81</sup> Also referred to in the literature as 'sovereign risk' and 'political risk'.

<sup>82</sup> A. Harberger (1983), 'Vignettes on the World Capital Market', *American Economic Review* 70, 331-337; M. Dooley and P. Isard (1980), 'Capital Controls, Political Risk and Deviations from Interest-Rate Parity', *Journal of Political Economy* 88(2), 370-384. While this argument is commonly advanced with respect to less developed countries, Dooley and Isard apply it to industrial countries as well.

<sup>83</sup> J.S. Bhandari, N.U. Haque and S.J. Turnovsky (1990), 'Growth, External Debt and Sovereign Risk', *IMF Staff Papers* 37(2), 388-417.

<sup>84</sup> R.H. Gordon and H.R. Varian (1989), 'Taxation of Asset Income in the Presence of a World Securities Market', *Journal of International Economics* 26, 205-226; Tobin (1983), note 71.

interpreted as a measure of the degree of integration of financial markets across national political boundaries.<sup>85</sup> Essentially, the financial markets with which they were concerned were bond markets. They found that deviations from covered interest parity (CIP) were generally much smaller than deviations from RIP, especially for countries where barriers to capital mobility were known to be small.<sup>86</sup> This result suggests that persistent real interest differentials for these countries are not likely to be due to capital controls or country risk premia,<sup>87</sup> a conclusion which accords with intuition.

Real interest differentials may also be caused by exchange rate variability. Frankel and MacArthur found this to be the more significant cause of RIP failure for industrial countries.<sup>88</sup> If currencies are not perfect substitutes or currency markets are inefficient, an exchange risk premium will exist.<sup>89</sup> In addition, if the expected real depreciation of the domestic currency is non-zero, then this will also give rise to a real interest differential, even where there is no country or exchange risk premium. Given the well-documented failure of purchasing power parity, there is

---

<sup>85</sup> The covered interest differential is defined as the difference between the nominal interest rate differential and the forward discount rate of the domestic currency. In the absence of capital controls, sovereign risk, information limitations and transaction costs, covered interest parity should hold.

<sup>86</sup> This included the major industrial countries, as well as Switzerland, the Netherlands, Hong Kong, Singapore and Malaysia. As far as Australia is concerned, there is evidence of financial market liberalisation during the sample period; after 1983, CIP largely held.

<sup>87</sup> M.T. Shapiro (1988), 'Comments: 'Political vs Currency Premia in International Real Interest Differentials', by J.A. Frankel and A.T. MacArthur', *European Economic Review* 32, 1114-1118.

<sup>88</sup> Frankel and MacArthur (1988), note 67, 1109-1111.

<sup>89</sup> W. H. Branson (1988), 'Comments: 'Political vs Currency Premia in International Real Interest Differentials', by J. A. Frankel and A. T. MacArthur', *European Economic Review* 32, 1119-1121.

no reason why the expected real depreciation should be zero. However, this is better interpreted as a lack of goods market integration rather than a lack of financial market integration. To the extent that goods are imperfect substitutes, prices will fail to be equalised across countries and this will produce a disparity in real interest rates.<sup>90</sup> Thus while capital may be sufficiently mobile to equalise rates of return in terms of a common currency, RIP will not hold unless investors anticipate no change in real exchange rates.<sup>91</sup> This would prevent the international equalisation of rates of return even if capital were perfectly mobile.

One version of this explanation focuses on terms of trade effects when tradeables produced by one country are less than perfect substitutes for the tradeables produced by other countries.<sup>92</sup> As a result, the country may face a downward sloping demand curve for its exports. This feature of international trade is often incorporated into computable general equilibrium models in the form of Armington elasticities.<sup>93</sup> As well as being due to imperfect substitutability, the export demand curve may reflect the size of the country in the world market for particular

---

<sup>90</sup> P. Krugman (1989), 'Comment: 'On the International Capital Ownership Pattern at the Turn of the Twenty-First Century'', by K. Hamada and K. Iwata', *European Economic Review* 33, 1083-1085.

<sup>91</sup> Dooley et al (1987), note 67, at 522.

<sup>92</sup> See, for example, D.F. Burgess (1988), 'On the Relevance of Export Demand Conditions for Capital Income Taxation in Open Economies', *Canadian Journal of Economics* 21(2), 285-300.

<sup>93</sup> P.S. Armington (1969), 'The Geographic Pattern of Trade and the Effects of Price Changes', *IMF Staff Papers* 16, 176-199. Examples of CGE models using Armington elasticities include R. Boadway and D. Treddenick (1978), 'A General Equilibrium Computation of the Effects of the Canadian Tariff Structure', *Canadian Journal of Economics* 11, 424-446; P.B. Dixon, B.R. Parmenter, J. Sutton and D.P. Vincent (1982), *ORANI: A Multisectoral Model of the Australian Economy*, North-Holland, Amsterdam.

commodities, so that an increase in the export level will reduce the world price for these commodities.<sup>94</sup> The combined effect of these two phenomena - imperfect substitutability and considerable size in world markets - is that the country may experience a deterioration in its terms of trade in order to expand its export volume.<sup>95</sup>

Consequently, even though the country may be able to obtain an unlimited amount of foreign capital at a given world real interest rate, the cost of this capital measured in terms of domestic output increases with the level of foreign debt. The result is an upward sloping supply curve of foreign capital, as with, for example, country risk. In this case, however, the upward slope occurs not because foreign savers demand a higher rate of return the more funding they supply (a risk premium), but because foreign consumers are not prepared to pay as much for the domestic country's exports as the absolute level of exports increases.<sup>96</sup> The end result is similar: real interest rate differentials.

It is quite possible therefore for real interest rate differentials to persist even if capital were perfectly mobile internationally, because of the imperfect integration of goods markets. In fact, Frankel and MacArthur suggest that this might be the most

---

<sup>94</sup> This may be viewed as a variation of the country size argument advanced earlier.

<sup>95</sup> Burgess (1988), note 92, at 289, analysed the terms of trade effect with only one good. The inclusion of non-tradeables would not affect his analysis. With two tradeables, an influx of foreign capital would improve rather than worsen the terms of trade of the country concerned if imports were more capital intensive than exports. This is not the case for Canada, the focus for Burgess, or Australia, where the main export industries are highly capital intensive. (at 289)

<sup>96</sup> Burgess (1988), note 92, at 298.

important determinant of real interest differentials for major industrial countries and countries known to have open financial markets. They argue that this is no reason to doubt the correctness of the saving-investment or real interest parity studies, but merely to doubt the Feldstein-Horioka interpretation that the observed results are due to low international capital mobility alone.<sup>97</sup>

(d) The distinction between physical and financial capital

There may be, however, additional grounds for attributing saving-investment correlations, as opposed to RIP failure, to a lack of international capital market integration. Crucial here is the distinction between financial and physical capital. Whereas RIP tests utilise rates of return on short-term liquid capital, the focus in saving-investment correlation studies is on fixed capital expenditure. Even if net yields are equalised for certain short-term securities,<sup>98</sup> this does not necessarily imply that national markets for physical capital are likewise highly integrated to form a single international market.<sup>99</sup> Although it would seem plausible that long-term capital movements would also equalise net yields since the failure to do so would leave unexploited opportunities

---

<sup>97</sup> Frankel and MacArthur (1988), note 67, at 1089 and 1111.

<sup>98</sup> For example, the yields of short-term securities in the Eurocurrency market and their forward prices indicate that liquid financial capital moves quickly to equalise international yields. Full arbitrage is limited to a subset of short-term securities, as noted above and also in J. Frenkel and R. Levich (1977), 'Covered interest arbitrage in the 1970s', *Economics Letters* 8(3), 267-274.

<sup>99</sup> Dooley et al (1987), note 67, at 522-528, where it is noted that assessing international capital mobility by measuring expected rates of return on short-term securities is analogous to measuring the degree of integration of international goods markets by noting that prices are equalised for a subset of agricultural and mineral commodities.

for profit, there are a number of factors which may militate against such long-term arbitrage.

Risk considerations become increasingly significant for longer term and less liquid investment, especially in the case of foreign direct investment. The most obvious version of country risk in this connection is the threat of nationalisation, but there are other, less extreme, possibilities. Foreign direct investment carries with it ownership and control,<sup>100</sup> which is perceived in some quarters as an undesirable encroachment on national sovereignty. As a result, governments may see it as politically expedient to impose controls on the inflow of foreign investment in certain key areas.<sup>101</sup> Inevitably, the pressure to act in this way will increase as the level of foreign investment increases. Where physical capital is concerned, country risk is thus likely to be a more important barrier to the equalisation of yields than may be the case for financial capital.

Several further barriers to the international integration of national markets for physical capital exist. Information limitations are likely to be much more pronounced than is the case with financial capital. In addition, as Tobin points out, the role of 'localising factors' is influential:

It is no contradiction of Keynes's famous dictum that savers and investors are not identical to observe that much saving goes directly into investment, especially if we refer to gross

---

<sup>100</sup> Similarly, equity claims contained in foreign investment portfolios impart a measure of control over domestic firms.

<sup>101</sup> Dooley et al (1987), note 67, at 523. The activities of the Foreign Investment Review Board in Australia demonstrate this point.

saving and investment. Some directly invested saving is tied to residence, as for housebuilders, or to labour input, as for self-employed farmers, entrepreneurs, and professionals. A large share of company investment is financed by retention of gross earnings.<sup>102</sup>

Information limitations and localising factors are likely to impede the international flow of savings to investments offering the highest yield. Moreover, there is the related point, made by Feldstein and Horioka, that foreign direct investment is undertaken for a variety of reasons beyond pure yield maximisation, including, for example, the implementation of marketing strategies and the avoidance of trade restrictions.<sup>103</sup> Thus substantial international flows of savings may occur without tending to equalise the returns available on physical capital in different countries.

#### (e) Summary

The point of departure was that immigrant fund transfers increase the level of domestic saving in the receiving country. The central issue was identified as whether this increase in saving translates into an increase in domestic investment. In textbook models of small open economies, domestic investment is completely independent of domestic saving.<sup>104</sup> In such models, funds which are transferred and invested by immigrants can have

---

<sup>102</sup> Tobin (1983), note 73, at 154.

<sup>103</sup> Feldstein and Horioka (1980), note 61, at 316-317.

<sup>104</sup> The 'small open economy' assumption is an amalgam of two separate assumptions: perfect international capital mobility (open) and limited size in world markets (small).

no real effect on the economy. The sole consequence of the immigrant capital inflow is to reduce the level of reliance of foreign savings to finance domestic investment. This will be referred to as the 'orthodox' view.

A number of arguments have been advanced to refute the orthodox view and to support the proposition that the level of domestic investment is influenced quite strongly by the level of domestic saving. Foremost among these is the close association between domestic saving and investment observed in many countries. Several explanations were canvassed for this phenomenon, including a lack of international capital mobility, imperfect international goods markets, imperfect domestic capital markets, and the distinction between financial and physical capital. While the reasons for these correlations remain somewhat unclear, the empirical evidence for them is solid.<sup>105</sup> Admitting the existence of a correlation between domestic saving and investment leads to the conclusion that policies which affect the level of saving can also influence the level of investment. This will be referred to as the 'habitat' view of capital formation.

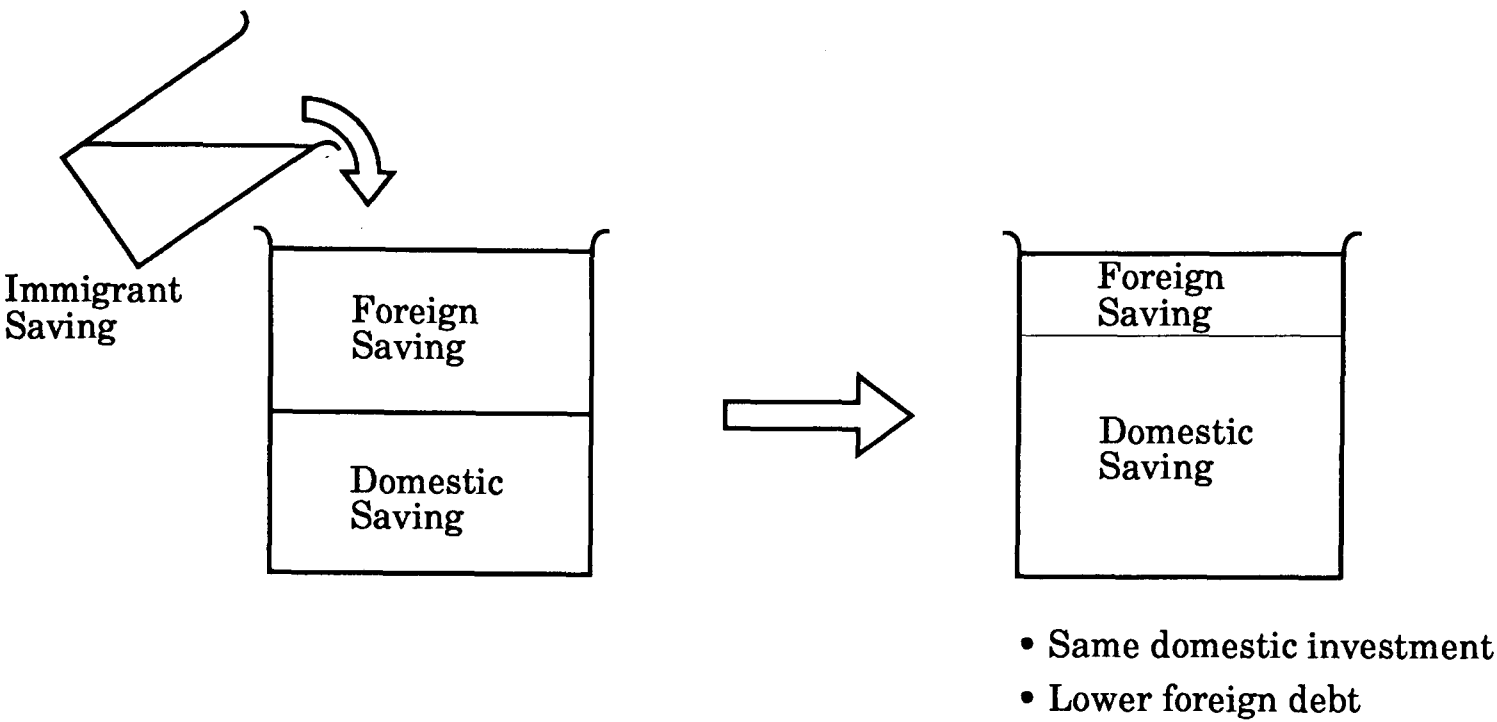
The immigration programme, in the light of the significant amount of fund transfers, is an instrument by which the Australian government can influence the level of domestic saving. The macroeconomic consequences of a higher domestic saving rate depend on its impact on domestic capital formation. Figure 2.4

---

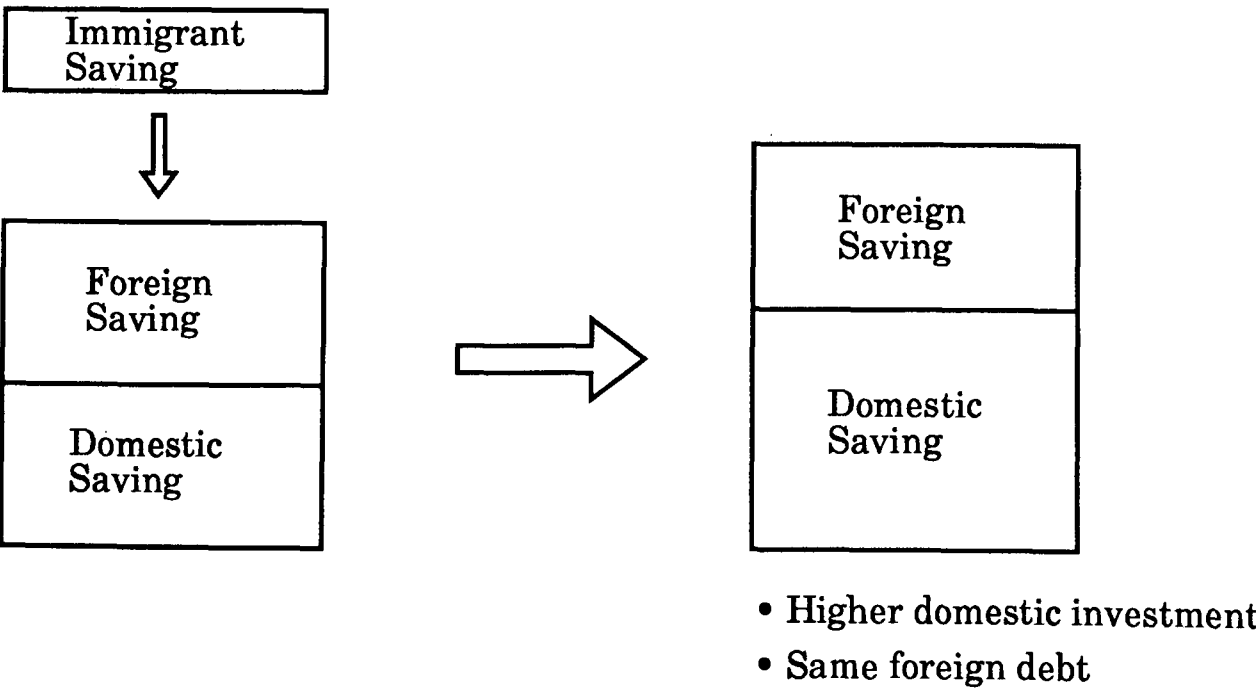
<sup>105</sup> In addition to the studies cited earlier, see also M. Monadjemi (1990), 'Testing the Degree of International Capital Mobility', *Australian Economic Papers* 29(54), 30-39 (where the applicability of the above discussion to Australia is confirmed).

THE EFFECT OF AN INCREASE IN DOMESTIC SAVING  
DUE TO IMMIGRANT FUND TRANSFERS

Orthodox View



Habitat View



shows a stylised representation of the different consequences flowing from the two views of capital formation outlined above.<sup>106</sup>

According to the orthodox view, the transfer of immigrants' savings does not increase the rate of domestic investment; it merely reduces the level of foreign debt. In contrast, the habitat view of capital formation implies that domestic investment increases by an amount equal to the additional saving, while the foreign debt remains unchanged. No doubt reality lies somewhere in between these two extremes. On the basis of the evidence reviewed earlier, the habitat view may be closer approximation to the real world.

Considerable concern has been expressed in Australia, as in other countries, about the rapid accumulation of foreign debt. A detailed consideration of this issue is beyond the scope of the present work. Nevertheless, the implications of the link between immigration and capital formation which has been suggested in this chapter should be mentioned. If, as was assumed on the basis of historical evidence in Section 2.2, immigration induces sufficient investment to maintain capital intensity, then this will be financed primarily by foreign capital. Immigration is therefore likely to cause an increase in the level of foreign debt. According to the orthodox view, this will be reduced by an amount corresponding to the level of funds transferred by immigrants, but, according to the habitat view, the funds transferred by

---

<sup>106</sup> Foreign investment and borrowing are subsumed under foreign debt.

immigrants will further boost capital formation, rather than reducing the level of foreign debt.

The significance of a higher level of foreign debt is the subject of some academic dispute. The view adopted here is that foreign debt is not intrinsically undesirable, but must be judged on the basis of the activities which it is used to finance.<sup>107</sup> It seems fairly clear, for example, that foreign borrowing to finance an excess of government and private consumption over national disposable income is unsustainable in the long run.<sup>108</sup> Where foreign borrowing is used to finance investment projects, however, more information is required to resolve the issue. The key question is whether the return offered by the investment is sufficient to cover the interest accruing on the foreign debt. If it is, then the foreign debt accumulated to finance the project is sustainable.

There are, of course, additional considerations outside this simple framework. Foreign lenders, as discussed earlier, may demand a risk premium for loans to already indebted countries. Moreover, governments may target the current account (the counterpart to foreign borrowing). By implementing macroeconomic policies designed to reduce the current account deficit, the stimulus to economic growth which would otherwise flow from additional

---

<sup>107</sup> For a full exposition of this approach, see J.D. Pitchford (1990), *Australia's Foreign Debt: Myths and Realities*, Allen and Unwin, Sydney.

<sup>108</sup> J. Salop and E. Spittler (1980), 'Why Does the Current Account Matter?', *IMF Staff Papers* 27(1), 101-134; A.J. Makin (1989), 'Is the Current Account Deficit Sustainable', *Australian Economic Review* (Q2), 29-33. National disposable income is defined here as GDP less net transfers overseas and depreciation of fixed capital.

investment might be curbed.<sup>109</sup> Similarly, if the private sector forms the view that the current account deficit and the associated level of foreign borrowing is unsustainable, for whatever reason, then the expectation of deflationary policy may act as a constraint on growth.<sup>110</sup> Finally, there are issues associated with sovereignty where direct foreign investment is concerned.

Nevertheless, the most important criterion for the sustainability of foreign debt used to finance investment projects would seem to be the capacity of the projects to generate returns which cover the cost of foreign borrowing. Figure 2.5 compares the cost of foreign borrowing with the net rate of return on private capital over the last decade.<sup>111</sup> It reveals that a substantial gap has existed between the net returns available on capital and the interest charged on the loans to finance the necessary investment. From this fundamental perspective, the accumulation of foreign debt used to finance investment projects appears to offer substantial economic benefits.

In this connection, it is interesting to note that in these circumstances immigrant fund transfers are more favourable to an economy under the habitat view of capital formation. A simple numerical example illustrates this point. Consider an economy

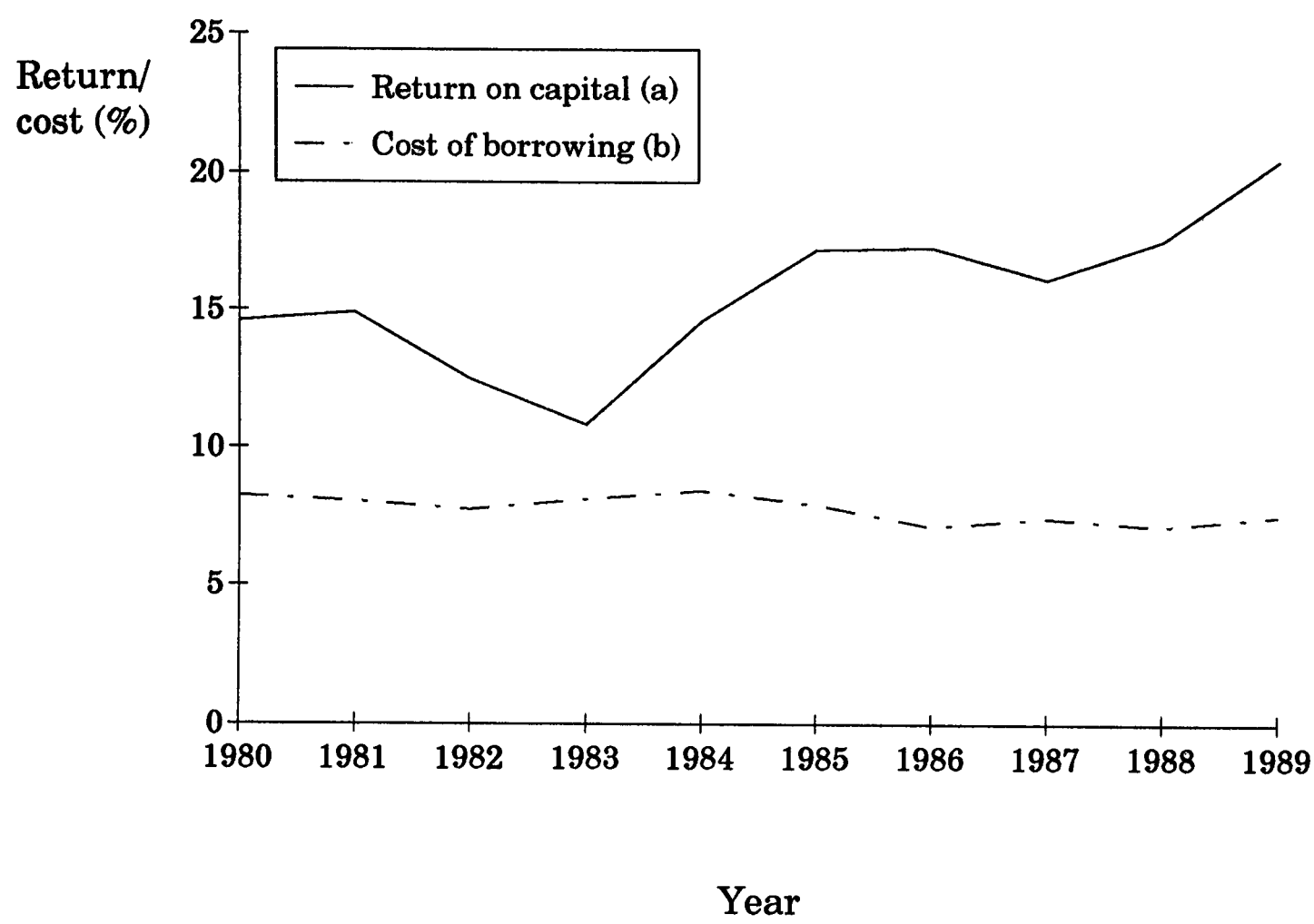
---

<sup>109</sup> J.D. Pitchford (1989), 'A Sceptical View of Australia's Current Account and Debt Problem', *Australian Economic Review* (Q2), 5-13.

<sup>110</sup> The importance of expectations in this context is stressed in W. Beckerman (1965), *The British Economy in 1975*, Cambridge University Press, Cambridge.

<sup>111</sup> The cost of foreign borrowing is defined here as that ratio of interest payable on foreign borrowing to gross external debt. The net return on capital is defined as the ratio of net operating surplus to net capital stock in private sector trading enterprises.

**FINANCING DOMESTIC INVESTMENT:  
1980-89**



(a) Ratio of net operating surplus to net capital stock for private sector trading enterprises  
(b) Ratio of interest payable on foreign borrowing to gross external debt

Sources: Australian National Accounts: Capital Stock, 1988-89, ABS Catalogue No. 5221.0; Foreign Investment, Australia, 1988-89, ABS Catalogue No. 5305.0.

Figure 2.5

which before immigration has a capital stock of \$100 billion and a foreign debt of \$10 billion. Immigration results in fund transfers of \$10 billion. After immigration, on the orthodox view, the capital stock would remain unchanged but the foreign debt would be eliminated. The habitat view, in contrast, predicts that the fund transfers would increase the capital stock to \$110 billion, with the foreign debt remaining constant. If the net rate of return on the additional capital equals the cost of foreign borrowing, then national income is the same irrespective of which view of capital formation prevails. If, however, the rate of return on capital exceeds the cost of foreign borrowing, as has been the case for Australia, then expanding the capital stock will confer greater benefits on the economy than reducing the level of foreign debt.

To conclude, the economic expansion induced by immigration is likely to lead to an increase in the rate of foreign debt accumulation. The consequences of this do not receive detailed consideration in this work. The working assumption adopted here is that the foreign debt accumulated as a result of immigration is fundamentally sustainable, provided that it is diverted to investment, rather than consumption, purposes. The recent balanced budget of the federal government indicates that the demands of the public sector for foreign borrowing are currently low. The issue is then whether firms borrowing offshore, and indeed the lenders themselves, correctly assess whether the return on the activity funded by the loan exceeds the servicing costs associated with the debt, including provision for repayment. No sound *a priori* reasons exist to doubt that this should generally be the case.

A growing foreign debt may be undesirable if there are fundamental economic problems associated with it or, alternatively, the government or private sector perceives this to be the case. For the case where foreign debt is borrowed to finance private sector investment projects, the economic disadvantages of foreign debt remain to be demonstrated. If indeed the benefits outweigh the costs in principle, but in practice this is not believed to be the case, then the fault may lie with those who influence public opinion. In these circumstances, it would be unfortunate to regard the accumulation of foreign debt as an argument against immigration. Rather, there may be an argument against an incorrect view of the consequences of immigration.

### 2.3.2 *The 'entrepreneurial bundle'*

The first argument concerned the macroeconomic consequences of an increase in domestic saving. Although concentrating on immigrant fund transfers, the arguments apply with equal force to any increase in domestic saving. The gist of the argument is that an increase in domestic saving is accompanied by an increase in domestic investment (the habitat view of capital formation). The second argument advanced here supports a similar conclusion, but is entirely different in nature. It focuses on the unique combinations of capital and skill introduced into the receiving country by immigrants, which will be referred to as the 'entrepreneurial bundle'.

The strategies pursued by immigrants to accumulate capital have been analysed elsewhere.<sup>112</sup> According to a recent study of immigrant businesses:

Most of our informants told us that they had acquired the bulk of their capital through their own savings, a universal finding in studies of small business foundings. Some had arranged loans within the ethnic community, and a few had acquired bank loans, usually to expand the business. Very few had brought capital with them when they immigrated.<sup>113</sup>

In contrast, the notable feature of recent Australian experience is the high level of funds transferred by immigrants. These funds are available to establish businesses on, or soon after, arrival in Australia. The prime example is the Business Migration Programme (BMP), which commenced in 1981, under which funds must be transferred for the purpose of establishing a business in Australia. The BMP warrants attention as a striking example of financial immigration. A separate chapter is therefore devoted to the operation and economic effect of this component of the immigration programme.<sup>114</sup>

A detailed discussion of the 'entrepreneurial bundle' will be postponed until Chapter 7. The essence of the argument advanced there is that immigrant combinations of capital and labour may be complementary to existing combinations. Thus additions to the

---

<sup>112</sup> For a recent review, see R. Waldinger, H. Aldrich and R. Ward (1990), *Ethnic Entrepreneurs: Immigrant Business in Industrial Societies*, Sage, Newbury Park, California.

<sup>113</sup> Waldinger et al (1990), note 112, at 137.

<sup>114</sup> See Chapter 7.

net capital stock may not exert a downward pressure on the economy-wide rate of return on capital. As a result, domestic investment financed by immigrant fund transfers represent net additions to the capital stock.

It should be noted that this is completely independent of the first argument. Even if rates of return are equalised by the perfectly mobile flows of international capital, fund transfers may increase the rate of domestic capital formation because they are used to finance activities which are complementary, rather than competitive with, existing activities.<sup>115</sup>

## 2.4 Conclusion

This chapter has explored the link between immigration and capital formation. The current understanding of this relationship is far from complete, although it is central to an assessment of the long term economic consequences of immigration. Several avenues have been pursued in an attempt to elucidate the impact of immigration on capital formation.

As a species of population growth, immigration induces investment through a variety of channels, including its impact on aggregate demand, expectations and risk-taking. On the basis of historical evidence, it appears that investment induced by

---

<sup>115</sup> Alternatively, the activities of new firms may be more efficient in some respect than existing ones, so that even if the activities of existing firms are displaced by those of more competitive new firms, the overall rate of return on capital will be maintained or improved as a result of higher productivity. See Chapter 7 for an elaboration of these arguments.

immigration may have been sufficient to maintain the ratio of capital to labour in the economy. While the evidence does not support a definitive conclusion, this has been adopted as a working assumption.

In recent years, immigration has acquired a new dimension due to the level of funds transferred by immigrants. The significance of immigrant fund transfers has received no serious attention to date. A glib application of the small open economy assumption leads to the conclusion that immigrant fund transfers have no real effect on the economy. There are, however, good reasons for expecting that the increase in domestic saving which results from immigrant fund transfers leads to an increase in domestic investment. This has been called the habitat view of capital formation.

Two quite separate arguments have been developed to support the habitat view. The first is that domestic saving and investment are closely correlated in modern economies, a proposition for which considerable empirical evidence exists. The explanation for this phenomenon was considered at some length. The second argument rests on immigrants who transfer their savings to Australia with the implementation of investment plans in mind.

If it is accepted that immigrant fund transfers have a real effect on the economy, then the question arises as to the impact of these transfers in the long run. Financial immigration is likely to affect the economy differently from a simple expansion of the population and the labour force. In the following chapter, the long

term consequences of financial and unfinancial immigration are assessed using a simple growth model. In Chapter 5, a multisectoral model is used to address the same issues, in order to investigate the structural consequences of financial and unfinancial immigration.

## Chapter 3

### Immigration and economic growth

*Although diluting the capital stock immediately upon arrival, immigrants compensate by investing their savings, both earned in Australia and transferred from their countries of origin. Induced investment by the government and local and foreign investors adds further to the capital stock. The combined effect of these additional sources of investment on the productive capacity of the economy in the long run is investigated using a simple neoclassical growth model. The standard version of the model is described, and then extended to incorporate immigrant fund transfers. Projections of the impact of immigration on capital formation are obtained for the Australian economy.*

### 3.1 Introduction

The purpose of this chapter is to describe a basic growth model to assess the potential contribution of immigrant fund transfers to the economy. In Chapter 2, the argument was advanced that the rate of capital formation in the receiving country is boosted by the investment of immigrant funds. This view was labelled the 'habitat' view. According to this view, financial immigration has an impact on both factors of production. The labour force expands, but this need not necessarily dilute the capital available per worker, since the immigrants may invest a sufficient amount of savings to restore, or even improve, the capital intensity. In these circumstances, it is as inaccurate to regard immigration simply as population growth as it is to regard it as simply a form of unconditional foreign aid.

A complete analysis of the effect of immigration on capital accumulation and economic growth must take both dimensions into account. The following two sections attempt such an analysis in the broadest possible terms. The basic neoclassical growth model is a suitable vehicle for a preliminary enquiry. By explicitly incorporating the contribution of immigrants to the capital stock, the importance of this new feature of international migration can be explored. First, however, it is convenient to review the standard version of the model.

### 3.2 The basic neoclassical growth model

In this section, a simple neoclassical growth model is presented, based on the original one-sector model constructed by Solow,<sup>1</sup> Swan<sup>2</sup> and Meade.<sup>3</sup> Initially, the treatment is confined to a closed economy, although this restriction is removed in the following section.

The centrepiece of neoclassical growth theory is the production function which relates output to the inputs of capital and labour. Eschewing the theoretical controversy surrounding aggregation<sup>4</sup> and the econometric debate about the form of the function, we shall assume that the aggregate production function for the whole economy is given by:

$$Q = K^{\alpha}L^{1-\alpha} \quad (3.1)$$

This is the familiar Cobb-Douglas form and exhibits the following properties:

- (i) Positive marginal products: an increase in either capital or labour will always increase output;

---

<sup>1</sup> R.M. Solow (1956), 'A Contribution to the Theory of Economic Growth', *Quarterly Journal of Economics* 70, 65-94.

<sup>2</sup> T.W. Swan (1956), 'Economic Growth and Capital Accumulation', *Economic Record* 32, 334-361.

<sup>3</sup> J.E. Meade (1961), *A Neoclassical Theory of Economic Growth*, Allen and Unwin, London.

<sup>4</sup> For a survey of this controversy (referred to as the Cambridge controversy), see G.C. Harcourt (1972), *Some Cambridge Controversies in the Theory of Capital*, Cambridge University Press, Cambridge.

- (ii) Diminishing marginal productivities: increments in capital or labour are subject to diminishing returns;
- (iii) Constant returns to scale: if the inputs are changed proportionately, then the output will change by the same proportion;
- (iv) The constants  $\alpha$  and  $(1-\alpha)$  are the elasticities of capital and labour, respectively;<sup>5</sup>
- (v) Elasticity of substitution equal to one.

These properties are listed in ascending order of specificity to the Cobb-Douglas form. The first two are necessary for any production function to generate a unique solution; such a function is termed well-behaved in the literature.<sup>6</sup> The third property (constant returns to scale) is convenient because it allows the production function to be written in a per capita form:

$$q = k^\alpha \quad (3.2)$$

where  $q$  is output per capita and  $k$  is capital stock per capita.<sup>7</sup>

---

<sup>5</sup> The proportionate rate of growth of output is given by:

$$\frac{dY}{dt} \frac{1}{Y} = \alpha \frac{dK}{dt} \frac{1}{K} + (1-\alpha) \frac{dL}{dt} \frac{1}{L} \quad (F3.1)$$

from which the elasticity of output with respect to capital and labour are  $\alpha$  and  $(1-\alpha)$ , respectively. For example, if  $\alpha = 1/3$ , then a 3 per cent rise in the growth rate of capital would produce a 1 per cent rise in the growth rate of output.

<sup>6</sup> For a formal statement of the conditions a well-behaved production function must satisfy, see K. Inada (1964), 'On a Two-Sector Model of Economic Growth: Comments and a Generalisation', *Review of Economic Studies*, 119-27.

<sup>7</sup> Using equation (3.2), the per capita growth rate is:

$$\frac{dy}{dt} \frac{1}{y} = \alpha \frac{dk}{dt} \frac{1}{k} \quad (F3.2)$$

from which the elasticity of output per capita with respect to capital stock per capita is again  $\alpha$ .

The final two properties are special features of the Cobb-Douglas form. As well as the assumptions embodied in the choice of production function, the basic growth model is subject to the standard neoclassical assumptions that (a) factor prices (and factor proportions) are fully variable and that full employment of capital and labour prevails; and (b) perfect competition exists in the product and factor markets so that the factors are paid their marginal products. Under these assumptions, two further statements can be made about the Cobb-Douglas production function. First, the output elasticities,  $\alpha$  and  $(1-\alpha)$ , are equal to the relative shares of capital and labour in the national income.<sup>8</sup> Secondly, because the elasticity of substitution is equal to one, the relative income shares of wages and profits remain constant in the face of changes in the ratio of capital to labour.

Now that a production function has been specified, a basic growth model can be constructed.<sup>9</sup> The first step is to model the factors of production, capital and labour, for which two further assumptions are required. The first is that the labour force<sup>10</sup> grows exponentially at an exogeneous rate,  $n$ , so that:<sup>11</sup>

---

<sup>8</sup> Typically, the profit share is in the vicinity of one third of the national income; the corresponding wage share is about two thirds.

<sup>9</sup> The presentation here follows D. Hamberg (1971), *Models of Economic Growth*, Harper and Row, New York. Each variable is a function of time.

<sup>10</sup> There is an implicit assumption here that the labour force is a constant proportion of the population.

<sup>11</sup> If, in the spirit of Malthus, population growth is treated as endogenous to the economic system and assumed to be positively related to the level of material welfare (using the wage rate or per capita income as a proxy), the conclusions in this section are altered for the worse. The economy is driven into a subsistence stationary state; see J.D. Pitchford (1974), *Population in Economic Growth*, North-Holland, Amsterdam, at 54-70. It is assumed that the feedback from economic welfare to population growth is negligible in the context of an industrial country such as Australia.

$$L = L_0 e^{nt} \quad (3.3)$$

The second is that investment demand corresponds exactly to available saving and that the latter is a constant fraction of the output,  $s$ .<sup>12</sup> Since investment is by definition the rate of change in the capital stock, we have:

$$I = \frac{dK}{dt} = sQ \quad (3.4)$$

Combining equations (3.1), (3.3) and (3.4), we obtain:

$$\frac{dK}{dt} = s K^\alpha (L_0 e^{nt})^{1-\alpha} \quad (3.5)$$

This equation governs the accumulation of capital. It is a straightforward differential equation which may be solved to yield an expression for the capital stock at any time  $t$ :

$$K = \left[ \lambda (e^{n(1-\alpha)t} - 1) + K_0^{1-\alpha} \right]^{1/(1-\alpha)} \quad (3.6)$$

where  $\lambda = sL_0^{1-\alpha}/n$ .

An expression for total output can then be obtained using equation (3.6) in the production function (3.1) to give:

---

<sup>12</sup> Keynesians would no doubt be uneasy at the ready equation of saving and investment; it is assumed here that the appropriate policy instruments have been used to ensure that saving equals investment. Note that the foreign borrowing is introduced in the following Section to accommodate a difference between domestic saving and investment. For reasons outlined in Chapter 2, however, it is not assumed that the nexus between saving and investment in the domestic economy is completely broken by international capital flows.

$$Q = L_0^{1-\alpha} e^{n(1-\alpha)t} \left[ \lambda(e^{n(1-\alpha)t} - 1) + K_0^{1-\alpha} \right]^{\alpha/1-\alpha} \quad (3.7)$$

The proportionate rate of growth of output is then given by:

$$\frac{dQ}{dt} \frac{1}{Q} = n(1-\alpha) + \frac{n\lambda\alpha}{\lambda - [(\lambda - K)/e^{n(1-\alpha)t}]} \quad (3.8)$$

In the long run, the right hand side of this equation reduces to the population growth rate,  $n$ . This is the equilibrium growth rate. The evolution of output in the long run is given by:

$$Q = Q_0 e^{nt} \quad (3.9)$$

In the absence of technical progress, the growth rate of total output is equal to the growth rate of the labour force. Importantly, it is independent of the proportion of income devoted to saving and investment. The reason for this will be discussed subsequently.

Thus far the story has focused on growth of total output (extensive growth). In order to investigate growth in living standards (intensive growth), the analysis can be recast in a per capita form. Recall the per capita production function in equation (3.2). Since:

$$\frac{1}{k} \frac{dk}{dt} = \frac{1}{K} \frac{dK}{dt} - \frac{1}{L} \frac{dL}{dt} \quad (3.10)$$

and:

$$\frac{dK}{dt} = sY = sk^{\alpha} L \quad (3.11)$$

it can be shown that:

$$\frac{dk}{dt} = sk^{\alpha} - nk \quad (3.12)$$

This is the fundamental equation of neoclassical growth.<sup>13</sup>

It can be demonstrated formally that for any well-behaved production function there exists a unique capital-labour ratio,  $k^*$ , such that the capital stock per capita remains constant ( $dk^*/dt = 0$ ).<sup>14</sup> This is illustrated for a Cobb-Douglas production function in Figure 3.1. It may be interpreted as follows. The curve labelled  $k^{\alpha}$  is the per capita production function which defines the output per capita,  $q$ , associated with any given level of capital per capita,  $k$ . Since a fraction  $s$  of output per capita is saved, the curve  $sk^{\alpha}$  is the level of saving per capita associated with any value of  $k$ . By assumption, this is equal to the level of investment per capita. The line  $nk$  represents the level of investment per capita required to offset the capital dilution caused by the growth of the labour force. Equilibrium occurs where the supply of investment equals the amount required to equip the labour force with the same capital per capita. Graphically, this occurs at the intersection

---

<sup>13</sup> In its Cobb-Douglas form; in its general form, equation (3.12) becomes:

$$\frac{dk}{dt} = sf(k) - nk \quad (F3.3)$$

where  $f(k)$  is the per capita production function.

<sup>14</sup> E. Burmeister and A.R. Dobell (1970), *Mathematical Theories of Economic Growth*, Macmillan, London, at 25.

**GRAPHICAL SOLUTION TO THE FUNDAMENTAL  
EQUATION OF NEOCLASSICAL GROWTH**

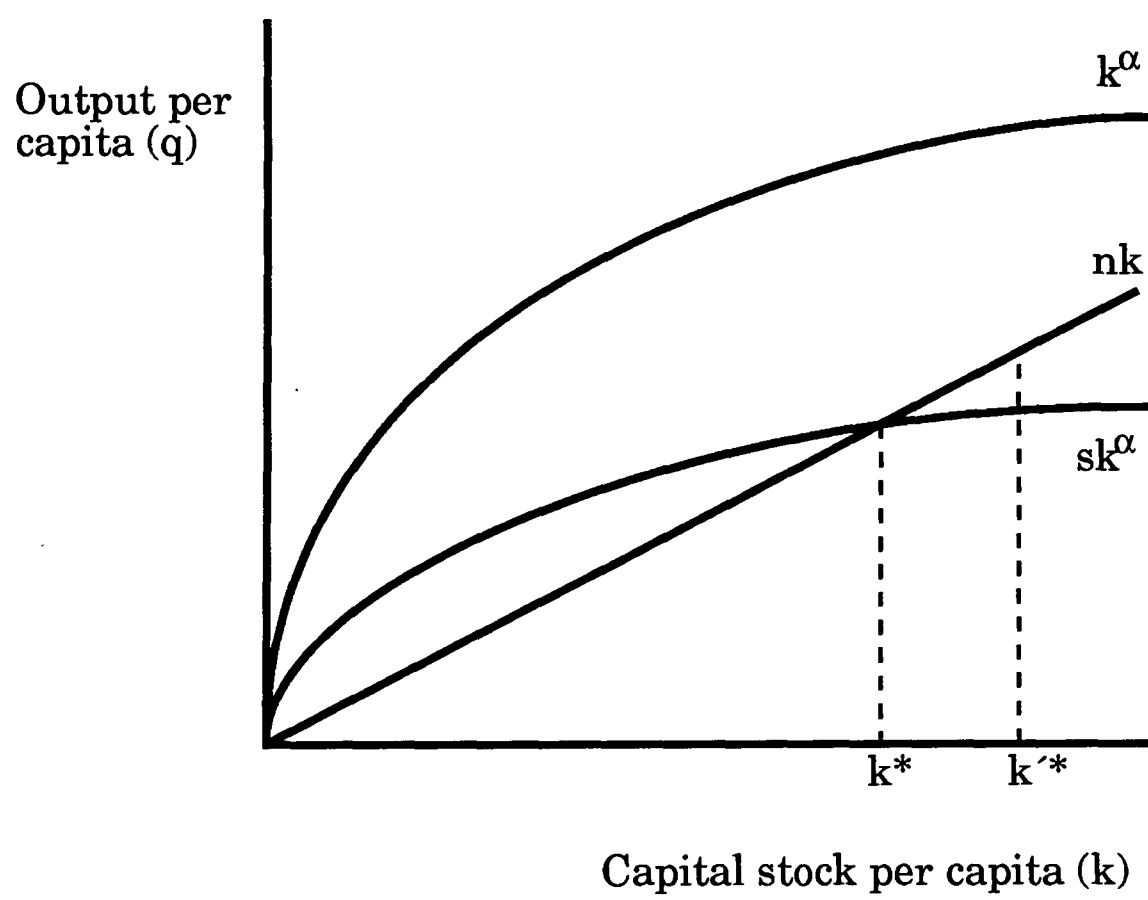


Figure 3.1

between the curve  $sk^\alpha$  and the line  $nk$ , shown as  $k^*$ . At this point,  $dk/dt = 0$  (from equation (3.12)). Since  $k = K/L = k^*$ , and the labour force is growing at a constant rate  $n$ , the capital stock is growing at the same rate. The same is true of total output (as was shown in equation (3.9)). In these circumstances, where output, capital and labour all grow at the same constant rate, the economy is following a balanced growth path.<sup>15</sup>

As it stands, this simple model conflicts with some of the stylised facts which growth theory attempts to explain. These were originally summarised by Kaldor as follows:

- (i) growth of output and labour productivity at a constant rate;
- (ii) growth in capital per worker;
- (iii) constant rate of profit on capital;
- (iv) constant capital-output ratio;
- (v) constant shares of factor incomes.<sup>16</sup>

These 'facts' are abstracted from fluctuations associated with the business cycle. Together they characterise an economy in a state of steady growth.<sup>17</sup> They were regarded as a reasonable starting point by Solow,<sup>18</sup> although this has been disputed by others.<sup>19</sup> In

---

<sup>15</sup> H. Jones (1975), *An Introduction to Modern Theories of Economic Growth*, Nelson, London, at 40-42.

<sup>16</sup> N. Kaldor (1961), 'Capital Accumulation and Economic Growth', in F.A. Lutz and D.C. Hague (eds), *The Theory of Capital*, Macmillan, London.

<sup>17</sup> Balanced growth, where output, capital and labour all grow at the same rate, may be contrasted with steady state growth, where these variables grow at constant, but not necessarily the same, rates. Output and capital grow at the same rate which exceeds the rate of labour force growth.

<sup>18</sup> R.M. Solow (1970), *Growth Theory: An Exposition*, Clarendon Press, Oxford, at 2-8.

a recent exposition of growth theory, Scott has argued that they are a valuable way of summarising certain key facts about long-term aggregate economic behaviour, provided that the focus is restricted to the non-residential business sector.<sup>20</sup>

In any event, whether one accepts the entire set of facts as a reasonable approximation to long term reality or not, it is clear that one fairly incontrovertible feature of the economic history of industrialised countries is a secular rise in output per worker. The basic model which has been presented generates a constant output per capita and therefore does not explain the observed rise. This may be rectified by incorporating technological progress in the model. The standard assumption is that technological progress is exogenous to the economic system and serves to increase the output produced by any combination of the factors of production. Graphically, this may be represented as a shift in the production function. It turns out, however, that certain assumptions about the nature of technological progress are necessary if the model is to be reconciled with the facts outlined above. In particular, it is clear that facts (ii) and (iii) are uneasy bedfellows. Why should the rate of profit on capital (ie. the marginal product of capital<sup>21</sup>) remain constant when the capital-labour ratio is increasing?<sup>22</sup>

---

<sup>19</sup> See, for example, G. Hacche (1979), *The Theory of Economic Growth*, Macmillan, London, at 260-300. In particular, he argues that if there has been a common experience of trends in growth rates among industrialised countries, it has been an experience of acceleration. He also presents evidence that distributive shares have shifted in favour of capital, at 299.

<sup>20</sup> M.F. Scott (1989), *A New View of Economic Growth*, Clarendon Press, Oxford, at 48-54.

<sup>21</sup> Under competitive conditions and assuming the absence of risk.

<sup>22</sup> The following explanation draws on Scott (1989), note 25, at 75.

One possible explanation is that technological progress happens to be systematically labour-augmenting, so that the effective quantity of labour grows faster than the actual quantity of labour. If the labour force is measured in efficiency units, then the capital-labour ratio does not rise, since the effective quantity of labour is growing at the same rate as output and capital. Accordingly, the marginal product of capital remains constant. Technological progress of this sort is defined as Harrod-neutral. Unfortunately, it transpires that steady state growth is only possible where technological progress takes this form.<sup>23</sup> This is disconcerting because there is no obvious reason why technological progress should be Harrod-neutral.<sup>24</sup>

A second possible explanation is that the production function has an elasticity of substitution between the factors of production equal to one, as with a Cobb-Douglas function. The marginal product of capital then remains constant whatever the capital-labour ratio. The analysis incorporating technological progress begins with the following production function:

$$Q = e^{mt} K^{\alpha} L^{1-\alpha} \quad (3.13)$$

---

<sup>23</sup> H. Uzawa (1960-1), 'Neutral Inventions and the Stability of Growth Equilibrium', *Review of Economic Studies*, 117-124.

<sup>24</sup> R.M. Solow (1970), note 24, at 45; F.H. Hahn and R.C.O. Matthews (1964), 'The Theory of Economic Growth: A Survey', *Economic Journal*, 779-902. Attempts have been made to specify mechanisms whereby technical progress would be expected to be systematically Harrod-neutral. See, for example, C. Kennedy (1964), 'Induced Bias in Innovation and the Theory of Distribution', *Economic Journal* 74, 541-547. The essence of Kennedy's argument is that a fall in the price of capital, relative to labour, will induce inventions of a labour-augmenting type.

where  $m$  is the exogeneous rate at which technical progress occurs. It should be noted that this equation can be recast in a form showing Harrod-neutral technological progress:

$$Q = K^\alpha [L e^{mt/(1-\alpha)}]^{1-\alpha} \quad (3.14)$$

Following the same procedure as before, the equilibrium growth rate of output is given by  $n+m/(1-\alpha)$  and evolution of output is:

$$Q = Q_0 e^{[n+m/(1-\alpha)]t} \quad (3.15)$$

The equilibrium growth rate is therefore equal to the sum of the labour force growth rate and the rate of labour-augmenting technological progress. Consequently, growth of output per capita is equal to the rate of labour-augmenting technological progress. This model, despite its shortcomings, generates steady state growth consonant with the stylised facts outlined above.

As well as this, the model predicts that an economy will converge to the steady state in the long run. To focus on the role of capital accumulation in the growth process, we shall assume that there is no technological progress. Consider the case where  $k'^* > k^*$  shown in Figure 3.1. At  $k'^*$ , total investment per worker exceeds the amount required to maintain that level of capital intensity, so that the capital intensity rises. As this happens, the amount of investment needed to maintain the increasing level of capital per worker increases proportionately. However, since there are diminishing output returns to increasing capital intensity, and investment is proportional to output (by assumption), total

investment per worker increases less than proportionately. Thus as the level of capital per worker rises, the investment available to further increase capital per worker diminishes. Eventually, the economy reaches a level of capital intensity,  $k^*$ , where all the investment available from savings is required to maintain the current level. At this point it embarks on an era of steady state growth.

It is possible to analyse in a similar way the performance of an economy which is disturbed from a steady growth path by a shock to one or both of the factors of production. It was noted earlier that in the long run growth is independent of the fraction of national income devoted to saving and investment. At first sight, this is a startling conclusion. Nevertheless, it can be explained in the same fashion. Consider the case where the propensity to save rises from  $s$  to  $s'$ , illustrated in Figure 3.2. With the higher saving rate, total investment per worker is more than is required to maintain the old level of capital intensity,  $k^*$ , so that the economy moves towards a new, higher level of capital intensity. As before, however, diminishing returns set in, and equilibrium is reached at a point,  $k'^*$ , where the investment is exactly sufficient to offset dilution of this higher level of capital per worker. The comparison here is between two different steady states. In the second state, the rate of growth is identical to the first, but the capital intensity and hence output per worker is higher.

The framework is now in place to construct a neoclassical growth model which incorporates the impact of immigration.

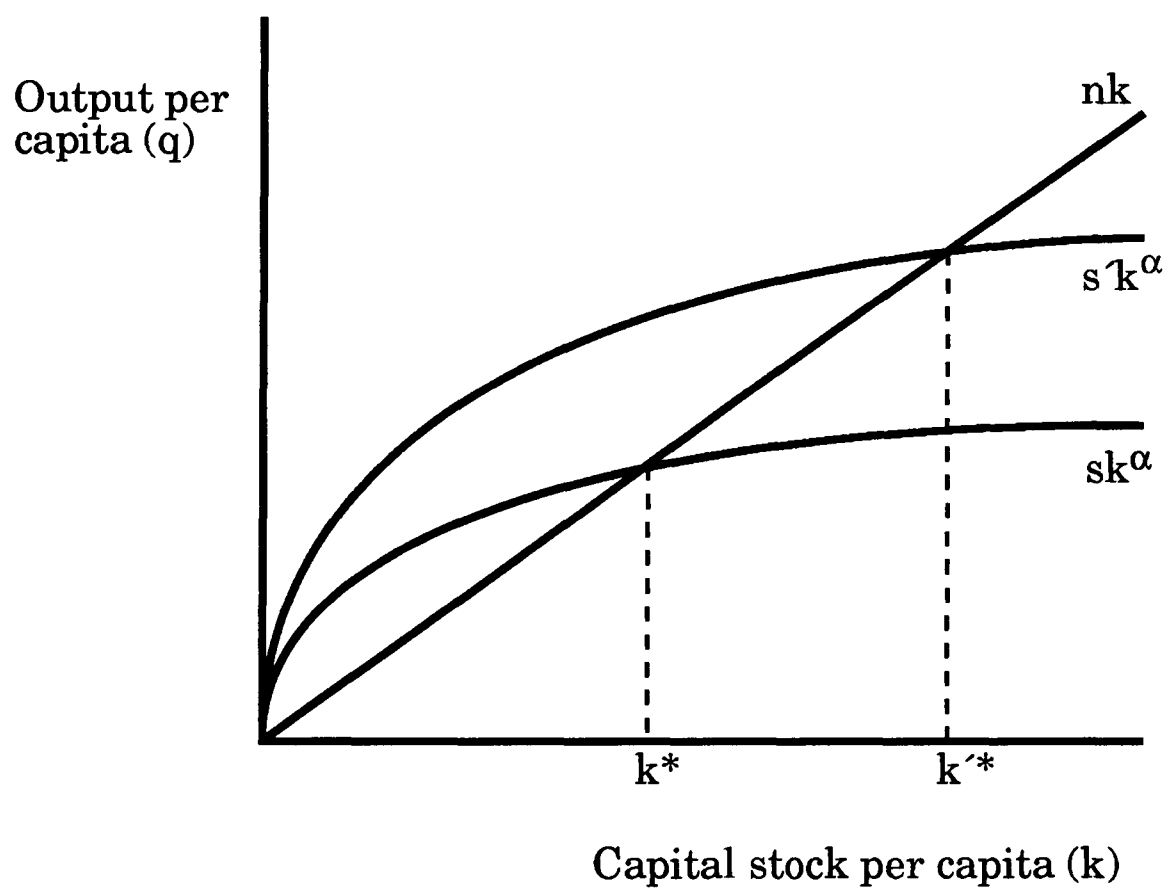
**SAVING AND STEADY STATE EQUILIBRIUM**

Figure 3.2

### 3.3 An extended model

#### 3.3.1 *Closed economy*

The model described in the previous section can be modified to accommodate financial immigration. Both factors of production are affected and the ramifications on economic growth can be negative or positive, depending on the amount of funds brought by immigrants to the receiving country. We consider each of the factors of production in turn.

The population can be thought of as comprised of two components: original residents,  $L_{\text{orig}}$ , and immigrants,  $L_{\text{imm}}$ . From equation (3), the original resident component of the population is given by:

$$L_{\text{orig}} = L_0 e^{nt} \quad (3.16)$$

Suppose that an immigration programme is implemented and the intake controlled so that it increases at a constant proportionate rate  $r$  relative to the initial population base. This may be expressed as:

$$L_{\text{imm}} = L_0(e^{rt} - 1) \quad (3.17)$$

The total population is then given by the sum of these two components:<sup>25</sup>

---

<sup>25</sup> Implicit here is an assumption that the rate of natural increase of the indigeneous component of the population remains the same after immigration commences. There is a traditional argument to the contrary in the United States associated with Francis Walker that immigrants are

$$L = L_{\text{orig}} + L_{\text{imm}} = L_0 e^{nt} + L_0(e^{rt}-1) \quad (3.18)$$

This is the impact of the immigration programme on population (and, by assumption, labour force<sup>26</sup>) growth.

Turning to capital accumulation, the assumption that saving is a constant fraction of output is retained. This is assumed to apply equally to all members of the population, including immigrants. The capital stock is also supplemented by investments which are made using funds transferred by immigrants. This addition to the capital stock may be included in the investment equation (3.4):

$$I = \frac{dK}{dt} = sQ + frL_0 e^{rt} \quad (3.19)$$

where  $f$  is the average level of funds transferred and invested per immigrant. At the same time, however, the capital stock is diluted by the increase in the population growth rate. Following the same procedure as before, we obtain an expression for the time path of per capita capital accumulation taking into account the impact of immigration on both factors of production:

$$\frac{dk}{dt} = sk^\alpha + \frac{1}{[e^{nt} + e^{rt} - 1]} \{fre^{rt} - nke^{nt} - rke^{rt}\} \quad (3.20)$$

---

perfect substitutes for native births, but it is not borne out by the evidence; see G. Withers (1987), 'Immigration and Australian Economic Growth', in L. Baker and P. Miller (eds), *The Economics of Immigration: Proceedings of a Conference at the Australian National University*, proceedings of a conference at the Australian National University, Australian Government Publishing Service, Canberra, 29-55, at 32-33.

<sup>26</sup> There is an implied demography; the age structure and labour force participation rates of the immigrant population are assumed to be identical to those of the original residents.

This is the fundamental equation governing the growth of a closed economy which is absorbing an immigration programme.

The evolution of  $k$ , the level of capital stock per capita, is critically dependent on the average level of funds transferred and invested by immigrants. The form of a solution to equation (3.20) is shown in Figure 3.3 for three levels of funds transferred per immigrant:

- (i) none ( $f=0$ );
- (ii) an amount equal to the pre-existing ratio of capital to labour ( $f=k^*$ );
- (iii) double that amount ( $f=2k^*$ ).

As one would expect, capital intensity and thus the standard of living remain unchanged when each immigrant transfers and invests sufficient funds to offset the capital dilution he or she causes.<sup>27</sup> The amount required is equal to the equilibrium value of the capital-labour ratio before the immigration commenced ( $k^*$ ). Where no funds are transferred, the level of saving is not sufficient to maintain the level of capital stock per head, since the additions to the work force are subject to diminishing returns. The ratio of capital to labour in the economy drops until it reaches a point where saving is equivalent to the necessary investment to maintain the capital stock. Where immigrants transfer an amount equal to twice the pre-immigration capital-labour ratio, the

---

<sup>27</sup> The analysis is complicated by the need to focus on the welfare of original residents and to take into account the existence of public property. These issues are dealt with in Chapter 4.

**EFFECT OF FINANCIAL IMMIGRATION ON  
CAPITAL FORMATION IN THE LONG RUN**

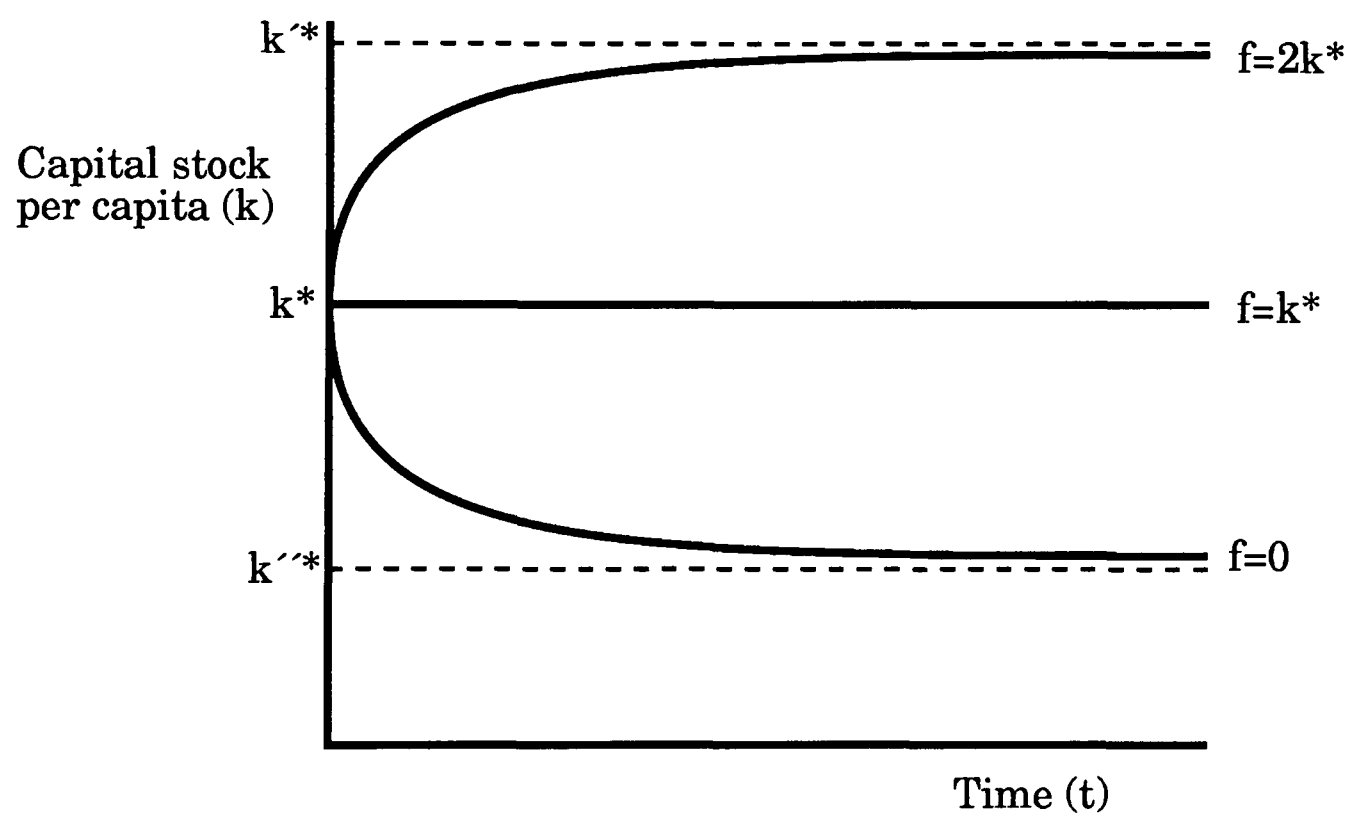


Figure 3.3

economy converges towards a steady state growth path which is characterised by a higher capital intensity and living standards.

The effect of immigration on the equilibrium level of capital per head in the very long run is shown in Figure 3.4.<sup>28</sup> Initially, the equilibrium level of capital per head in the economy is  $k^*$ . As a result of immigration, the rate of population growth increases so that saving is insufficient to maintain the level of capital per head, which falls to  $k'^*$ . Funds transferred and invested by immigrants, however, increase the capital stock and thus the total level of production in the economy. For the same net saving rate, a greater level of overall saving occurs. Figure 3.4 shows the case where the amount transferred per immigrant is equal to the pre-immigration level of capital stock per head. On their own, these fund transfers would raise the equilibrium capital-labour ratio to  $k'^*$ . Because of the increased population growth caused by immigration, the ratio in the event is the same as its pre-immigration value. The shift in the production function results in higher output per head at this capital intensity. The usual conclusions of growth theory with respect to population growth may need to be reversed; if fund transfers are large enough, living standards may increase as a result of immigration.

---

<sup>28</sup> This analysis assumes that the rate of growth of the immigration programme exceeds the rate of natural increase. If this is not the case, then the size of the immigration programme will become negligible compared with the population in the very long run. Since immigration programmes will not continue indefinitely, the analysis at this point should be regarded as fairly unrealistic. Nevertheless, a similar analysis (but excluding fund transfers) is found in many growth theoretic treatments of population growth. It is therefore appropriate to modify the conclusions of this approach by incorporating the financial dimension of immigration. In practice, the timescale which will be considered using the model will be restricted to 40 years.

IMMIGRATION AND STEADY STATE EQUILIBRIUM

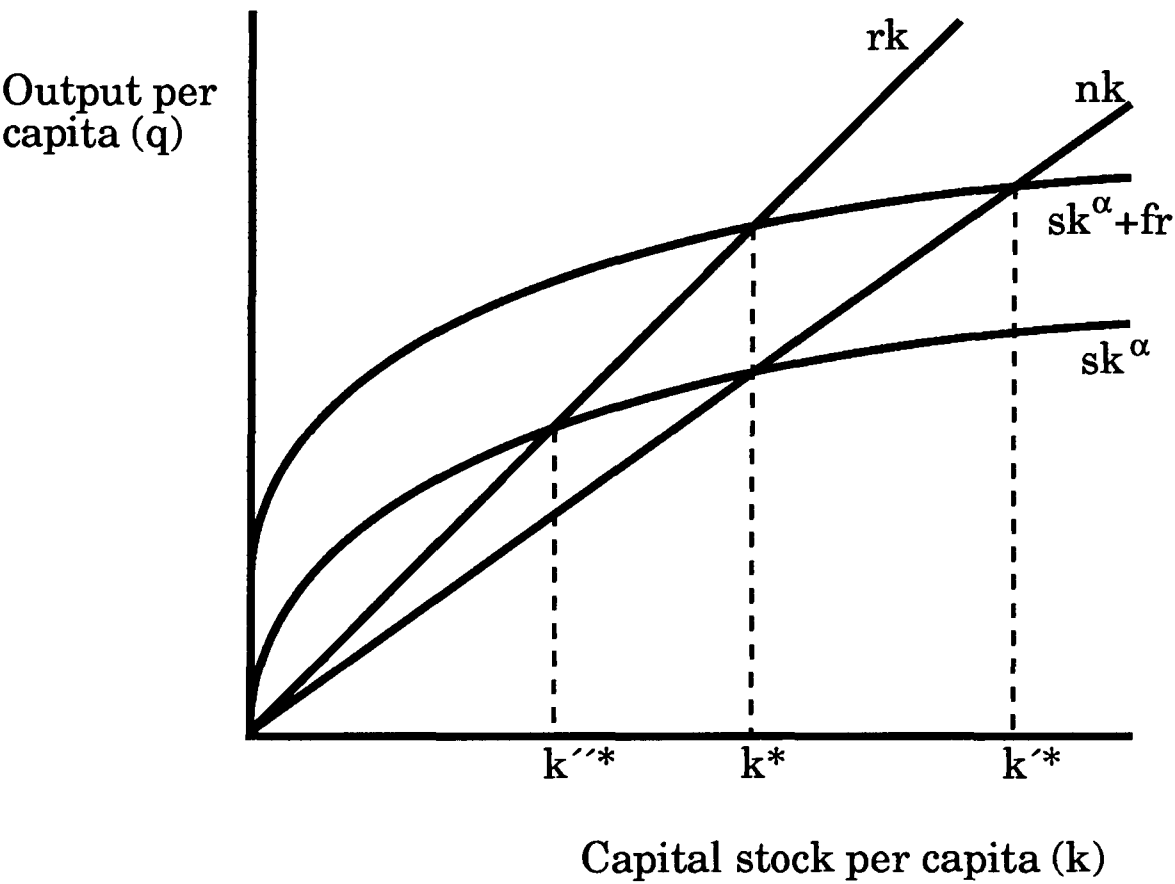


Figure 3.4

### 3.3.2 *Static population*

In order to isolate the effect of immigration on capital formation, it is instructive to consider the case where the pre-immigration population of the receiving country is static and the saving rate is just sufficient to maintain the level of capital stock per head. In these circumstances, capital accumulation is given by:

$$\frac{dk}{dt} = sk^\alpha + fr - rk \quad (3.21)$$

The solution to this equation is:

$$k = f - e^{rt}(fr - k^*) \quad (3.22)$$

Where no funds are transferred and invested by immigrants, this reduces to:

$$k = k^*e^{-rt} \quad (3.23)$$

Capital stock per head simply declines exponentially until it eventually vanishes. Similarly, if immigrants invest an amount equal to  $2k^*$  each, then capital accumulation is:

$$k = 2k^* - k^*e^{-rt} \quad (3.24)$$

The economy converges to a steady state growth path characterised by a capital-labour ratio which is twice the pre-immigration level.

Of course, these results pertain to the very long run. The implicit population levels are also extremely high, which would undoubtedly present other problems associated with congestion which are not captured in the model. Moreover, the scenarios it presents are unrealistic. It is clear that a society would not tolerate its capital stock to dwindle away as an exponentially expanding immigration programme continued unchecked.<sup>29</sup> Saving rates would be increased or, more probably, the programme curtailed.

Nevertheless, the case of a static population with no net saving is useful because it focuses on the underlying effect of immigration on capital formation. A society may choose to save more than enough to maintain its capital stock, and thereby increase the ratio of capital to labour in the economy.<sup>30</sup> Productivity may also improve as a result of technological progress. On both counts, output per capita will be rising, which will mask the retarding effects of any capital dilution due to immigration. A fraction of investment which would otherwise have been used to increase the capital per head of the existing population (capital deepening) will be used instead to maintain the level of capital per head for an expanded population (capital widening).

---

<sup>29</sup> Except for a sustained immigration programme of enormous proportions, living standards would at least be preserved by technological progress.

<sup>30</sup> This implies a lower current level of consumption per capita in the expectation of higher levels of future consumption.

It is important therefore to distil the secular impact of immigration on living standards. While this impact is unlikely to dominate the other factors which influence economic growth, it may nevertheless be significant, either detrimental or beneficial depending on the level of funds transferred and invested by immigrants. The magnitude of the effect for the Australian economy will be considered in the next section.

The model described so far analyses capital formation in a closed economy where capital (except that which accompanies immigrants) is confined to national boundaries. In summary, funds transferred by immigrants can be viewed as an exogeneous increase in domestic saving. In the absence of alternative investment outlets, this translates into an increase in domestic investment and hence capital formation.<sup>31</sup> The long run effect of immigration on capital formation then depends on the average amount of funds transferred and invested by immigrants. If it exceeds the level of capital stock per head before the immigration commenced, so that the increased rate of capital formation outweighs the increased rate of capital dilution due to a more rapidly expanding workforce, then the economy will converge to a steady state growth path characterised by a higher ratio of capital to labour. This results in greater capital intensity and thus a higher standard of living.

---

<sup>31</sup> As noted earlier, Keynesians would be dissatisfied at the easy equation of saving and investment. It is assumed that any government intervention necessary to achieve this outcome takes place.

### 3.3.3 Open economy

It is necessary to ask whether this conclusion would survive for an economy that is open to international capital flows. If domestic investment requirements exceed domestic saving, a country may finance additional investment by foreign borrowing and thus run a surplus on the capital account.<sup>32</sup> Equally, if domestic saving surpasses local investment opportunities, then a country may lend abroad and run a deficit on the capital account.

According to the orthodox view, set out in the preceding chapter, capital as a factor of production flows to equalise rates of return among countries.<sup>33</sup> One implication of this is the equality of factor intensity throughout the world. The rate of capital formation depends on the average world saving rate and the domestic population growth rate:<sup>34</sup>

$$\frac{dk}{dt} = \bar{s}k^{\alpha} - nk \quad (3.25)$$

where  $\bar{s}$  is the world average saving rate.<sup>35</sup> For a small country, where a change in the domestic saving rate makes a negligible

---

<sup>32</sup> In a regime of floating exchange rates, the counterpart is a current account deficit of equal proportions.

<sup>33</sup> G.D.A MacDougall (1960), 'The Benefits and Costs of Private Investment from Abroad: A Theoretical Approach', *Oxford University Institute of Statistics Bulletin* 22(3), 189-211; M.C. Kemp (1966), 'The Gain from International Trade and Investment', *American Economic Review* 56(4), 788-809.

<sup>34</sup> K. Hamada and K. Iwata (1989), 'On the International Capital Ownership Pattern at the Turn of the Twenty-First Century', *European Economic Review* 33, 1055-1079.

<sup>35</sup> The world average saving rate is simply a population weighted average of the domestic saving rate and the 'rest of the world' saving rate.

impression on the world saving rate, the rate of domestic capital formation is effectively independent of the domestic saving rate.<sup>36</sup> The role played by the domestic saving rate is simply to determine whether the country is a net borrower or lender in the international capital markets. It can be shown that the rate of foreign debt accumulation is given by:<sup>37</sup>

$$\frac{db}{dt} = (\bar{s} - s)k^\alpha - nb \quad (3.26)$$

where  $b$  is the per capita level of foreign debt. If the domestic saving rate is less than the world saving rate, then the country will accumulate foreign debt, and vice versa.

Evidence was presented earlier that investment induced by unfinancial immigration may have been sufficient to maintain capital intensity in the Australian economy.<sup>38</sup> This accords with the neoclassical view of international capital movements, and has been adopted as a working assumption.

It is now necessary to consider the impact of financial immigration. According to the orthodox neoclassical view of international capital movements, the increase in domestic saving as a result of fund transfers by immigrants has no effect on domestic investment; its only effect is to reduce the level of

---

<sup>36</sup> A large economy with a substantial current account deficit, for example the United States, makes considerable demands on the world's savings. This tends to drive interest rates up and therefore depress the rate of world capital formation. This is the 'large country' effect discussed in Section 2.3.1(b).

<sup>37</sup> Hamada and Iwata (1989), note 34, at 1059-1060.

<sup>38</sup> See Section 2.2.2.

foreign debt. In the previous chapter, a variety of arguments were adduced to counter this view, and an alternative habitat view was advanced. The arguments for the habitat view rest on two independent bases. The first is that the increase in domestic saving is more likely to boost domestic investment (saving-investment correlation) than it is to fund foreign investment.

The second basis for the habitat view of capital formation is that immigrants expand the set of available investment opportunities in the receiving country. Immigrant combinations of capital and labour (the 'entrepreneurial bundle') may be complementary to existing combinations of capital and labour and thus do not exert a downward pressure on rates of return.

The habitat view is not therefore a blanket rejection of the neoclassical assumption of international equalisation of rates of return on capital. The argument contains strands which would retain their force even if rates of return were equalised among countries. In its most eclectic form, these strands are combined with a view that rates of return are in fact not equalised due a complex array of factors, including a lack of international capital mobility per se, but also imperfect international goods markets, imperfect domestic capital markets and the distinction between financial and physical investment. The resulting picture is one in which international capital flows are viscous rather than fluid. This bears a closer resemblance to the international economy which has been observed in the rates of return studies reviewed in the previous chapter.

Immigrant fund transfers are thus more likely to be reflected in additions to domestic investment than the fluid approach would predict. Furthermore, as the arrival of immigrants expands the number of investment outlets in the economy (not just by dint of population growth, but also because of their entrepreneurial attributes), the rate of return on capital in the economy of the receiving country will not fall as more investment occurs. Accordingly, the level of international capital flow to that country will not necessarily change, even if equalisation of rates of return were a perfectly accurate assumption.

The basic model can be modified to reflect this view of the international economy. Funds transferred are assumed to result in net additions to the capital stock. Coupled with the earlier assumption that the level of capital stock is maintained in the face of immigration-induced population growth, the impact on capital formation is positive. This favourable impact is, however, accompanied by an increase in the level of foreign debt. The desirability or otherwise of this depends on the view taken of foreign debt.<sup>39</sup> The magnitude of these effects is estimated in the following Section.

---

<sup>39</sup> See Section 2.3.1(e), where it is argued that foreign debt is not per se undesirable, and may be highly beneficial.

### 3.4 Application to Australia

#### 3.4.1 Data requirements

The necessary data are presented in Table 3.1. Official estimates of the net capital stock have only become available quite recently.<sup>40</sup> Excluding dwellings, the net capital stock is estimated to be \$607 billion. The total population is approximately 17 million. Assuming a participation rate of 50 per cent,<sup>41</sup> the labour force is taken to be 8.5 million. Together with the gross domestic product (\$306 billion) and share of labour and capital in that product (0.64 and 0.36 respectively),<sup>42</sup> these data are sufficient to construct an aggregate production function for the Australian economy.

The model requires the estimation of several more parameters. One is the underlying rate of natural increase of the population. This is assumed to be 0.4 per cent.<sup>43</sup> The rate of population growth including immigration then depends on the size of the

---

<sup>40</sup> ABS estimates are now presented in a separate catalogue for 1973 onwards: *Australian National Accounts, Capital Stock 1988-89*, ABS Catalogue No. 5221.0. The methodology used is explained in R. Walters and R. Dippelsman (1986), 'Estimates of Depreciation and Capital Stock, Australia', ABS Occasional Paper No. 1985/3. Estimates of the net capital stock are given in greater detail in Section 4.4.1.

<sup>41</sup> The actual participation rate, defined as the ratio of the labour force to the population, was 49.5 per cent in June 1990: *The Labour Force, Australia*, ABS Catalogue No. 6203.0.

<sup>42</sup> This estimate of the factors' share of income is obtained from J. Carmichael and N. Dews (1987), 'The Role and Consequences of Investment in Recent Australian Economic Growth', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 163.

<sup>43</sup> Centre for International Economics (1988), 'The relationship between immigration and economic performance', in Committee to Advise on Australia's Immigration Policies (1988), *Immigration: A Commitment to Australia* (2 vols), Australian Government Publishing Service, Canberra, vol. 2, at 33.

**DATA FOR AUSTRALIA: 1988-89<sup>a</sup>**


---

|                                               |               |
|-----------------------------------------------|---------------|
| Net capital stock (excluding dwellings)       | \$607 billion |
| Gross domestic product                        | \$306 billion |
| Net international investment position         | \$145 billion |
| Population                                    | 17 million    |
| Labour force                                  | 8.5 million   |
| Projected rate of natural increase: 1990-2030 | 0.4%          |
| Labour's share of national income             | 0.64          |
| Capital's share of national income            | 0.36          |
| Net saving rate <sup>b</sup>                  | 0.05          |
| Net capital stock per member of labour force  | \$71,000      |
| Net foreign debt per member of labour force   | \$17,000      |

---

Sources: *Capital Stock, 1988-89*, ABS Catalogue No. 5221.0; *Australian National Accounts: National Income and Expenditure, 1988-89*, ABS Catalogue No. 5204.0; *Foreign Investment Australia, 1988-89*, ABS Catalogue No. 5305.0; *Australian Demographic Statistics, 1990*, ABS Catalogue No. 3101.0; *The Labour Force, Australia, 1990*, ABS Catalogue No. 6203.0.

(a) 1988-89 prices where applicable

(b) See Table 3.2

Table 3.1

**SAVING: 1984-89**  
**At current prices (\$A million)**

---

|                    | 1984-85 | 1985-86 | 1986-87 | 1987-88 | 1988-89 |
|--------------------|---------|---------|---------|---------|---------|
| Gross saving       | 41,331  | 46,057  | 50,067  | 62,823  | 76,874  |
| Depreciation       | 33,753  | 38,701  | 42,561  | 46,567  | 49,694  |
| Net saving         | 7,578   | 7,356   | 7,506   | 16,256  | 27,180  |
| Net saving/GDP (%) | 3.5     | 3.1     | 2.9     | 5.5     | 8.1     |

---

Source: *Australian National Accounts: National Income and Expenditure*, ABS Catalogue No. 5206.0

Table 3.2

immigration programme. Apart from the base case where no immigration occurs, three scenarios are considered here. The size of the immigration programme is given by equation (3.15):<sup>44</sup>

$$L_{\text{imm}} = L_0(e^{rt} - 1)$$

For  $r = 0.4$  per cent, the size of the intake in the first year of the programme is approximately 34,000. This figure represents the number of additions to the labour force; assuming the same participation rate for immigrants as for the population as a whole, the size of the programme is 68,000. The annual intake is about 0.4 per cent of the population.

Labour force projections based on the different immigration scenarios are illustrated in Figure 3.5. A 40 year period is considered. In the base case, the labour force would expand to 10 million by 2030. For the high, medium and low immigration scenarios, the size of the labour force by 2030 would be 17.6, 13.2 and 11.4 million, respectively.

Another parameter required by the model is the net saving rate. Net saving over a five year period is shown in Table 3.2. The average proportion of net saving to GDP was approximately 5 per cent; this is assumed to continue. The final information required is the amount of funds transferred by immigrants. The results presented here are based on the assumption that funds transferred are invested and that this investment represents a net

---

<sup>44</sup> The equation refers to net migration (permanent arrivals less permanent departures).

LABOUR FORCE PROJECTIONS

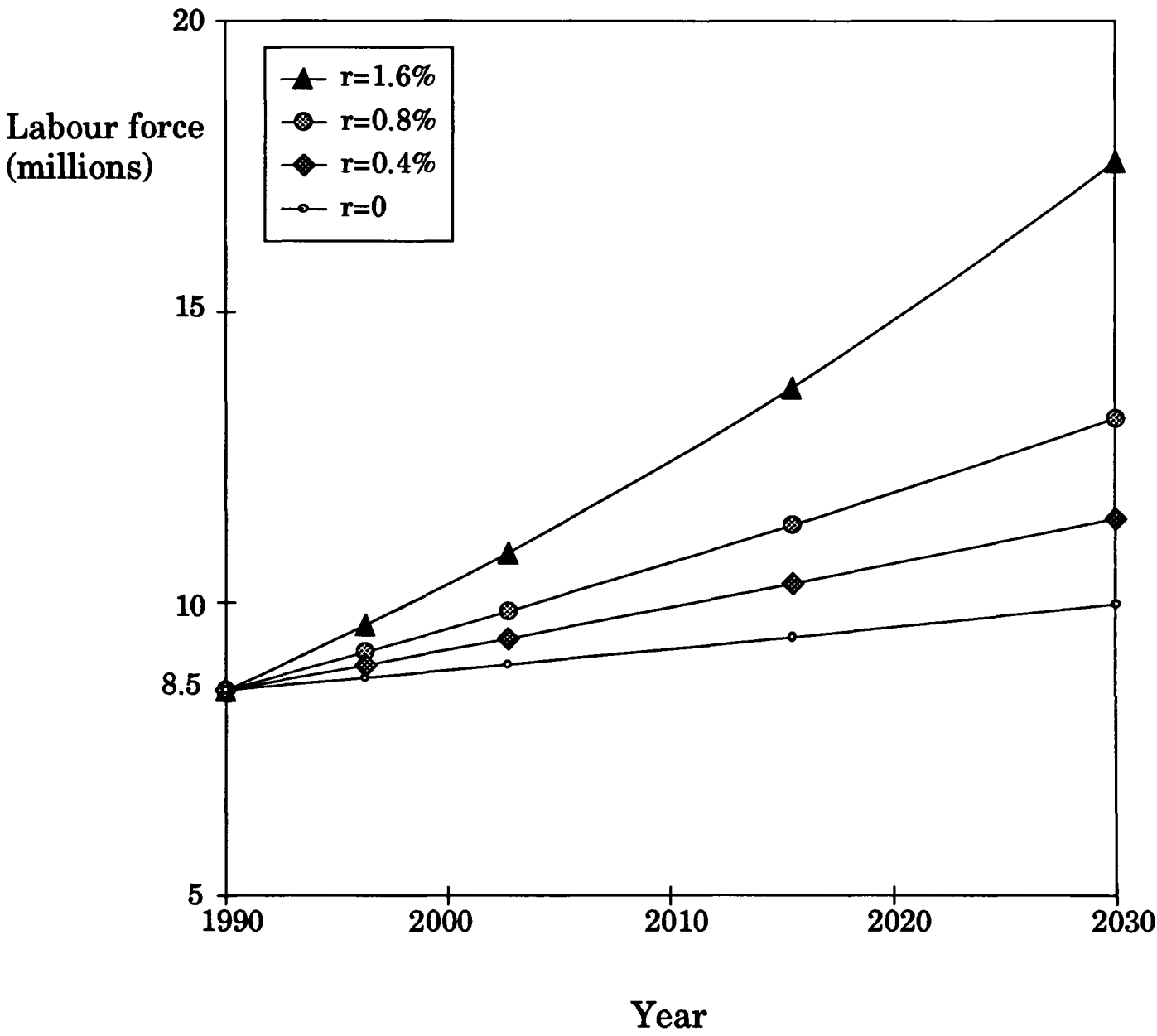


Figure 3.5

increase in the capital stock. Where this does not occur to the extent assumed, the amount of funds transferred may not be a reliable indicator of net new investment. In the closed economy case, this possibility is dealt with by simply assuming a lower level of funds transferred. In the open economy case, the possibility exists that fund transfers reduce the level of foreign debt. Various arguments have been marshalled against this view; the model is nevertheless capable of exploring its ramifications.<sup>45</sup>

A summary of the available statistics on immigrant fund transfers was presented in Chapter 2. It emerged that the average amount transferred per immigrant addition to the labour force was approximately \$60,000 in 1988-89. It is assumed that fund transfers will continue at the current level in real terms. This may be a conservative assumption, as the level of funds transferred has burgeoned over recent years and may continue to do so. The recent trend, however, is significantly influenced by the expansion of the Business Migration Programme. Some of the factors accounting for this expansion have been ephemeral, for example the reversion of Hong Kong to China in 1997. Whether the stream of business migrants will dry up or new sources will arise is uncertain. This is reflected in the assumption that the level transferred per immigrant will remain constant.

---

<sup>45</sup> The cases considered here assume that immigrant fund transfers increase domestic investment.

### 3.4.2 Results

The results of three simulations are presented. The first two simulations are prospective, extending to 2030. One assumes that the economy is closed and the other that it is open. The third simulation is historical and covers the period 1973-89.

#### (a) Closed economy

The effect of unfinancial immigration on the level of capital intensity over time is shown in Figure 3.6. The figure is constructed on the assumption that the economy is on a balanced growth path before immigration, so that net saving is just sufficient to maintain capital per head at the prevailing rate of natural increase.<sup>46</sup> In this base case where no immigration occurs, capital intensity remains at its initial level.

In the absence of any compensating fund transfers, the additional population due to immigration reduces the level of capital stock per head. The extent to which this happens is determined by the scale of the immigration programme. For the high immigration scenario the capital stock per head is reduced to 59 per cent of its original level. This implies a reduction of 17 per cent in living standards. As emphasised before, this downward pressure on living standards may be concealed by other positive effects. For example, an annual rate of technological progress of one per cent

---

<sup>46</sup> Actually, capital intensity tends to rise over time due to technological progress. Abstracting from this and other extraneous influences on the level of capital stock per head allows the impact of immigration to be isolated.

**EFFECT OF UNFINANCIAL IMMIGRATION  
ON CAPITAL INTENSITY IN A CLOSED  
ECONOMY**

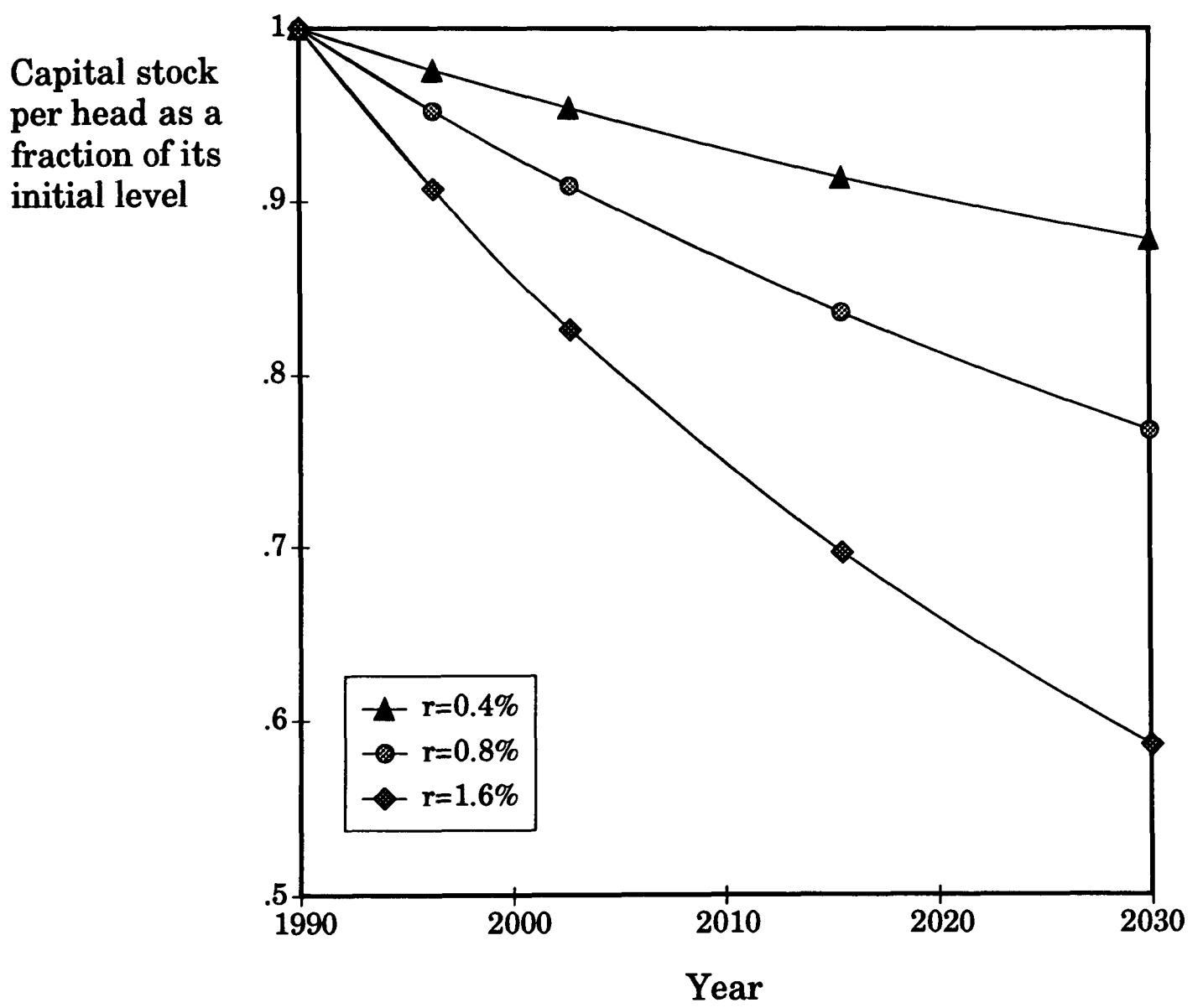


Figure 3.6

would increase living standards by 49 per cent by 2030. The net improvement would be 32 per cent.

The reduction in capital intensity is not as great as would be predicted by comparative statics, where the dilution factor would simply be the ratio of the labour force in 2030 to its 1990 level. For comparison, the capital intensity in 2030 would be 48 per cent. The reason for this difference is the saving by immigrants once they take up residence in Australia, which is assumed to be equal to the pre-immigration level of the original residents. Although the saving is inadequate to compensate fully for the capital dilution because of diminishing returns, it partly offsets the negative impact of immigration. For this reason, simple estimates based on comparative statics may be misleading.

The evolution of capital intensity is also shown for the medium and low immigration scenarios. Of particular interest is the medium scale programme which is similar in size to the existing programme. If the population expansion due to immigration were to continue at its current rate, the level of capital stock per head would fall to 77 per cent of its pre-immigration level, implying a 9 per cent reduction in living standards. This result of course depends on the assumptions of a closed economy and the absence of immigrant fund transfers.

If funds are transferred and invested by immigrants, the picture is altered. Figure 3.7 demonstrates the point for a variety of fund transfers under the high immigration scenario. The base curve where no funds are transferred corresponds to the high

EFFECT OF FINANCIAL IMMIGRATION ON  
CAPITAL INTENSITY IN A CLOSED  
ECONOMY

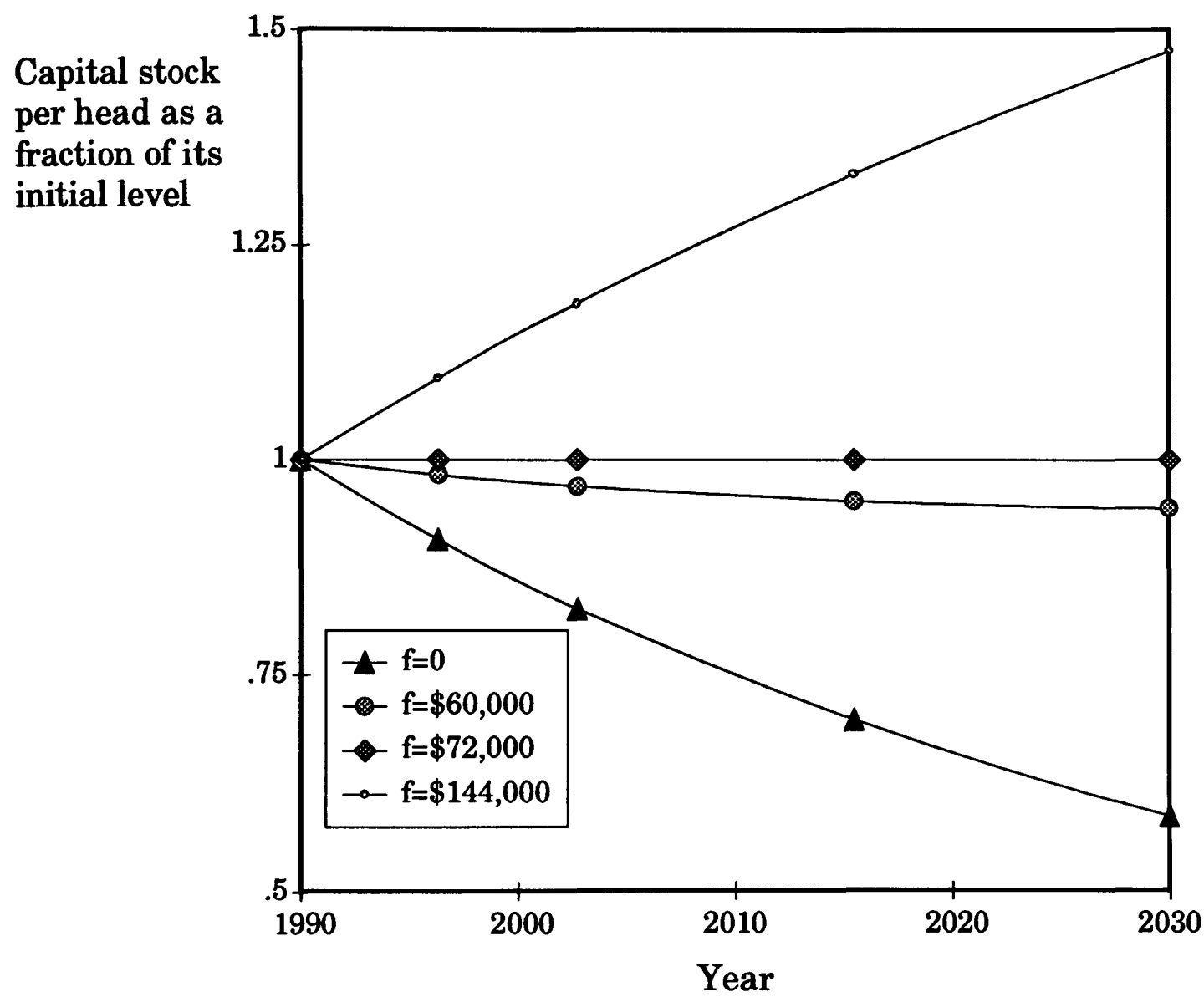


Figure 3.7

immigration curve in Figure 3.6. Where the funds transferred per immigrant are equal to the pre-immigration level of capital stock per head (\$71,000), then immigration would have no effect on capital intensity which remains at its initial level. If the level of funds transferred remains comparable to the 1988-89 level of \$58,000, then capital per head would fall to 94 per cent of its initial level. This would reduce living standards by just over 2 per cent. The inclusion of fund transfers reduces the negative impact of immigration on capital formation and economic growth. Living standards by 2030 are lowered by two per cent rather than 17 per cent.

For the medium immigration scenario, which is not shown in Figure 3.7, capital intensity is reduced by 3 per cent and living standards by only one per cent if fund transfers continue at the 1988-89 level. For realistic values of the main parameters, the threat of capital dilution is largely mitigated by immigrant fund transfers.

#### (b) Open economy

In reality, the Australian economy is not closed and foreign borrowing is available to bridge the gap between domestic saving and investment. If foreign borrowing is used to maintain capital intensity in the face of immigration, then the rate of foreign debt accumulation may be influenced by the rate of immigration.<sup>47</sup> For

---

<sup>47</sup> In this simple treatment, there is no international trade, so that the complication of a real exchange rate does not arise. The implicit assumption is that the real exchange rate is fixed, and the burden of maintaining capital intensity falls on foreign capital inflows. In Chapter

each time path, the level of capital stock per worker will, when multiplied by the increase in the labour force over the period, yield a value for the total capital stock. On the assumption that the investment demand induced by immigration is met solely by foreign borrowing, a rough measure of foreign borrowing necessary to maintain capital intensity may be obtained. Figure 3.8 shows the effect of immigration on foreign debt accumulation per worker.

The initial level of foreign debt is given by the net international investment position in Table 3.1 (\$145 billion). This includes both net foreign borrowing (\$110 billion) and net equity investment (\$36 billion).<sup>48</sup> For present purposes the two forms of liability are assumed to be equivalent and equity investment is subsumed under foreign debt. In the base case, no additional foreign borrowing is required to maintain the capital stock per head, because domestic saving is sufficient to cover additions to the labour force due to natural increase. Because the level of foreign debt remains constant as the labour force expands, foreign debt per head declines by 15 per cent.

In contrast, for all three immigration scenarios, foreign debt per head increases. High immigration is projected to increase foreign debt per head to over twice its initial level. The corresponding projections for the medium and low immigration scenarios show a 60 and 25 per cent increase, respectively. The assumption

---

5, an additional insight is gained by holding the current account (the counterpart of the capital account) fixed, and examining the structural adjustments that this necessitates.

<sup>48</sup> See Section 4.4.1 for greater detail.

### EFFECT OF IMMIGRATION ON FOREIGN DEBT ACCUMULATION

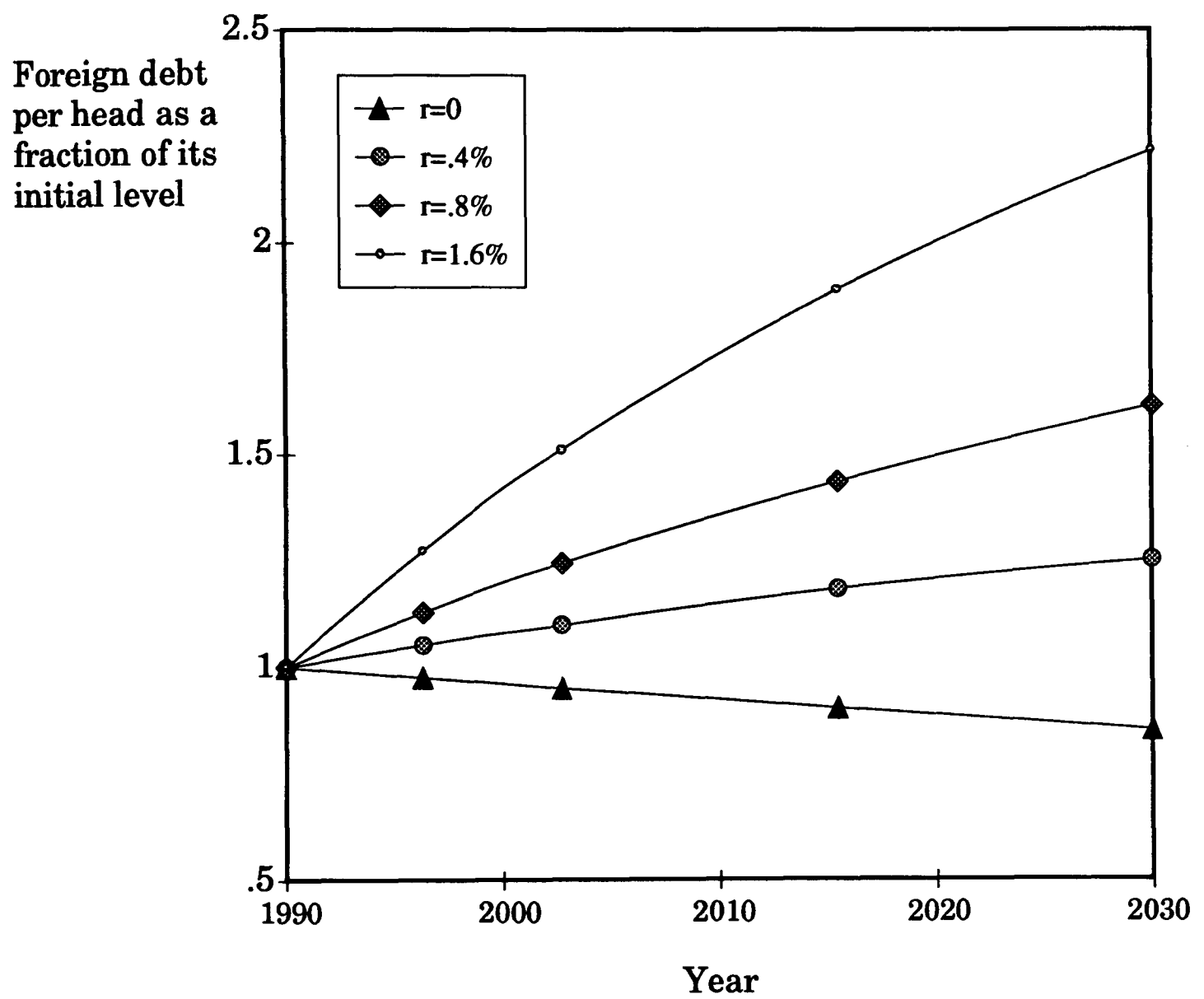


Figure 3.8

underlying these projections is that capital intensity is maintained by foreign borrowing. For reasons advanced earlier, this seems to be a reasonable assumption based on the evidence. The significance of the increase in foreign debt depends on the quality of the investments which are induced by immigration. If the rate of return on these projects is sufficient to cover the interest on the loans, then the existence of the debt per se is not problematic. It does mean, however, that an increasing fraction of the national income accrues to foreign residents.<sup>49</sup>

The magnitude of this effect may be gauged by assuming the rate of interest payable on foreign debt is eight per cent per annum.<sup>50</sup> The share of national income accruing to Australian residents (GNP) is national output (GDP) less income accruing to foreign residents (eight per cent of the outstanding foreign debt). For the high immigration scenario, if capital and thus GDP per worker is maintained at its initial level (\$36,000), GNP per worker falls by five per cent from \$34,640 to \$32,970.

The impact of fund transfers may be estimated on the basis that foreign borrowing remains sufficient to offset the dilution caused by the associated population growth. They are treated as an addition to the capital stock rather than a reduction in the level of foreign debt. Figure 3.9 shows the impact on capital intensity for the high immigration scenario if fund transfers continue at the

---

<sup>49</sup> The distinction between GDP per capita and GNP per capita as measures of living standards is discussed in the Section 4.4.1.

<sup>50</sup> This estimate is derived from the ratio of net investment income to net international investment. Source: *Foreign Investment Australia, 1988-89*, ABS Catalogue No. 5305.0.

EFFECT OF FINANCIAL IMMIGRATION ON  
CAPITAL INTENSITY IN AN OPEN  
ECONOMY

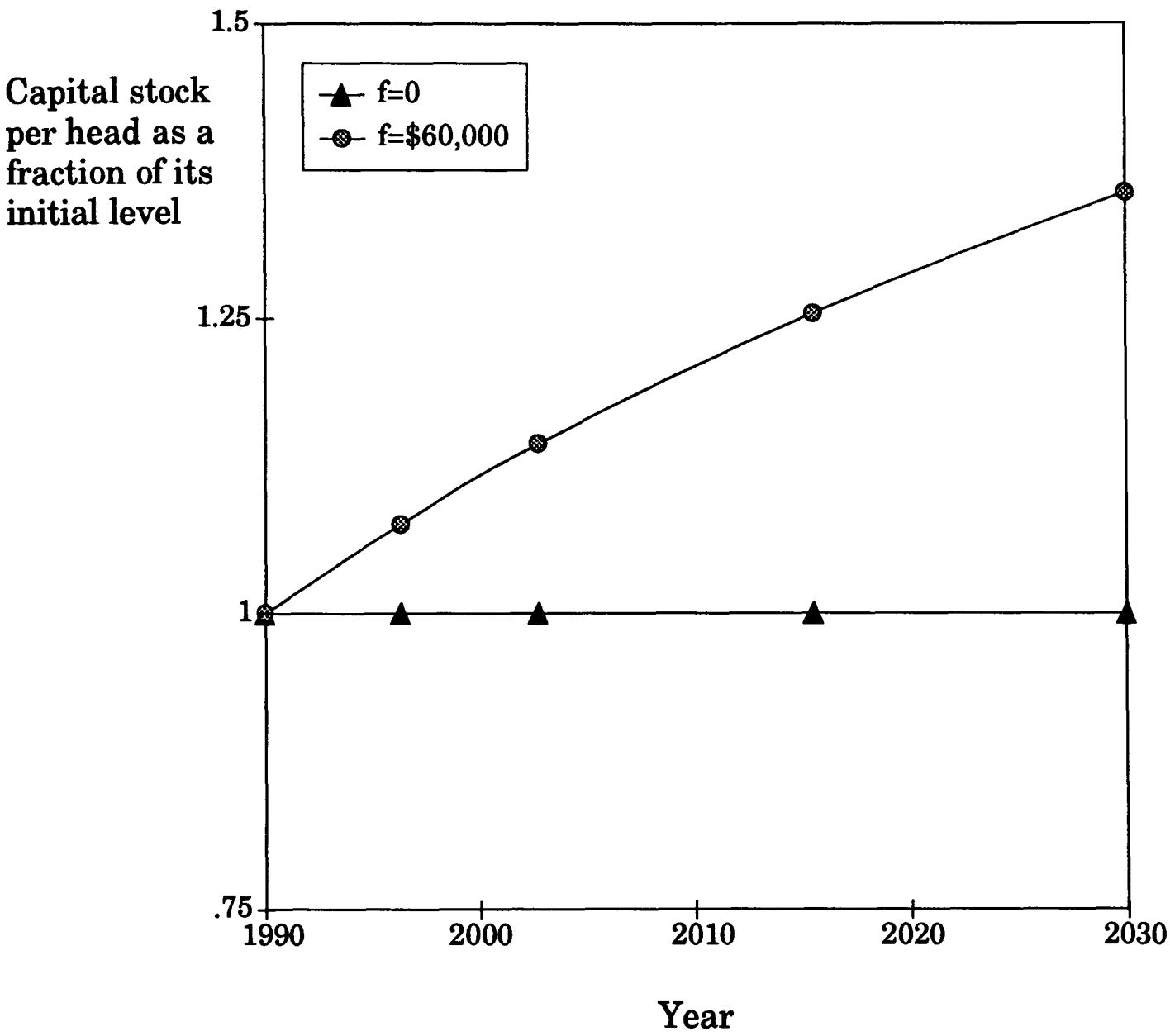


Figure 3.9

1988-89 level. Capital stock per head is projected to increase by 36 per cent. Output per worker in 2030 would be, *ceteris paribus*, 12 per cent higher. GNP per worker would be seven per cent higher.

The reason for this result is essentially that the rate of return on capital implicit in the production function exceeds the rate of interest on foreign debt. Evidence that this situation has pertained in Australia for some time is presented in Chapter 2. It may therefore be beneficial to finance domestic investment with foreign capital. This benefit is lost if immigrant fund transfers evaporate in a framework which treats them as simply a reduction in the level of foreign debt.<sup>51</sup> Capital formation is unaffected and the favourable differential between the return on capital and its cost is irrelevant. Nevertheless, the residual benefit associated with higher GNP per worker remains.

(c) Australian economy: 1974-89

Historically, the Australian economy has relied heavily on foreign capital to underwrite its economic growth. A central question is the extent to which immigration has caused this reliance. Using an aggregate production function estimated by Carmichael and Dews,<sup>52</sup> the impact of immigration on capital formation was investigated for the fifteen year period 1974-89.

---

<sup>51</sup> There is an additional benefit associated with additional domestic capital formation. The taxation system ensures that Australian residents receive a share of the income flowing from domestic investment. If capital formation is unchanged, implying that the funds transferred are effectively used to finance foreign investment, this advantage is lost.

<sup>52</sup> Carmichael and Dews (1987), note 43.

The data on which the simulation was based are contained in Table 3.3. Over the period, the population grew at a annual rate of 1.4 per cent, of which immigration contributed on average .6 per cent. The labour force grew from approximately 5.7 to 7 million. As Figure 3.10 shows, the secular effect of this expansion, in the absence of international capital flows would have been a seven per cent reduction in capital intensity in the economy. Over the entire period, the foreign borrowing necessary to maintain the level of capital per head at its initial level was \$18 billion (in 1979-80 prices).

Immigration may therefore be viewed as a contributing factor to the currently high level of foreign debt. The expansion of both the labour force and capital stock observed over the period has probably been achieved only by the accumulation of additional foreign debt. It is perfectly possible, however, that the debt which has been accumulated is 'benign' in the sense that it can be serviced and it has been used to finance profitable ventures. Whether the expansion in foreign debt is harmful can only be determined by reference to the investment which the debt was used to finance.<sup>53</sup> Again, these remarks are subject to the caveat that GNP per head is a closer proxy for economic welfare than GDP per head. As the rapid increase in fund transfers is a relatively recent phenomenon, it is unlikely to have offset the cost of capital dilution over this period significantly.

---

<sup>53</sup> There are other issues involved concerning national sovereignty (in the case of foreign direct investment) and credit rating. These are raised in Section 2.2.

**DATA FOR AUSTRALIA: 1974-75<sup>a</sup>**


---

|                                         |               |
|-----------------------------------------|---------------|
| Net capital stock (excluding dwellings) | \$197 billion |
| Gross domestic product                  | \$104 billion |
| Population                              | 11.4 million  |
| Labour force                            | 5.7 million   |
| Rate of natural increase: 1974-89       | .8%           |
| Rate of immigration: 1974-89            | .6%           |
| Net saving rate                         | .05           |

---

Sources: R. Walters and R. Dippelsman (1985), *Estimates of Depreciation and Capital Stock: Australia*, ABS Occasional Paper No.1985/3; *Australian National Accounts: National Income and Expenditure, 1988-89*, ABS Catalogue No. 5204.0; *Australian Demographic Statistics*, ABS Catalogue No. 3101.0.

(a) 1979-80 prices where applicable

Table 3.3

**EFFECT OF IMMIGRATION ON CAPITAL  
INTENSITY: 1974-89**

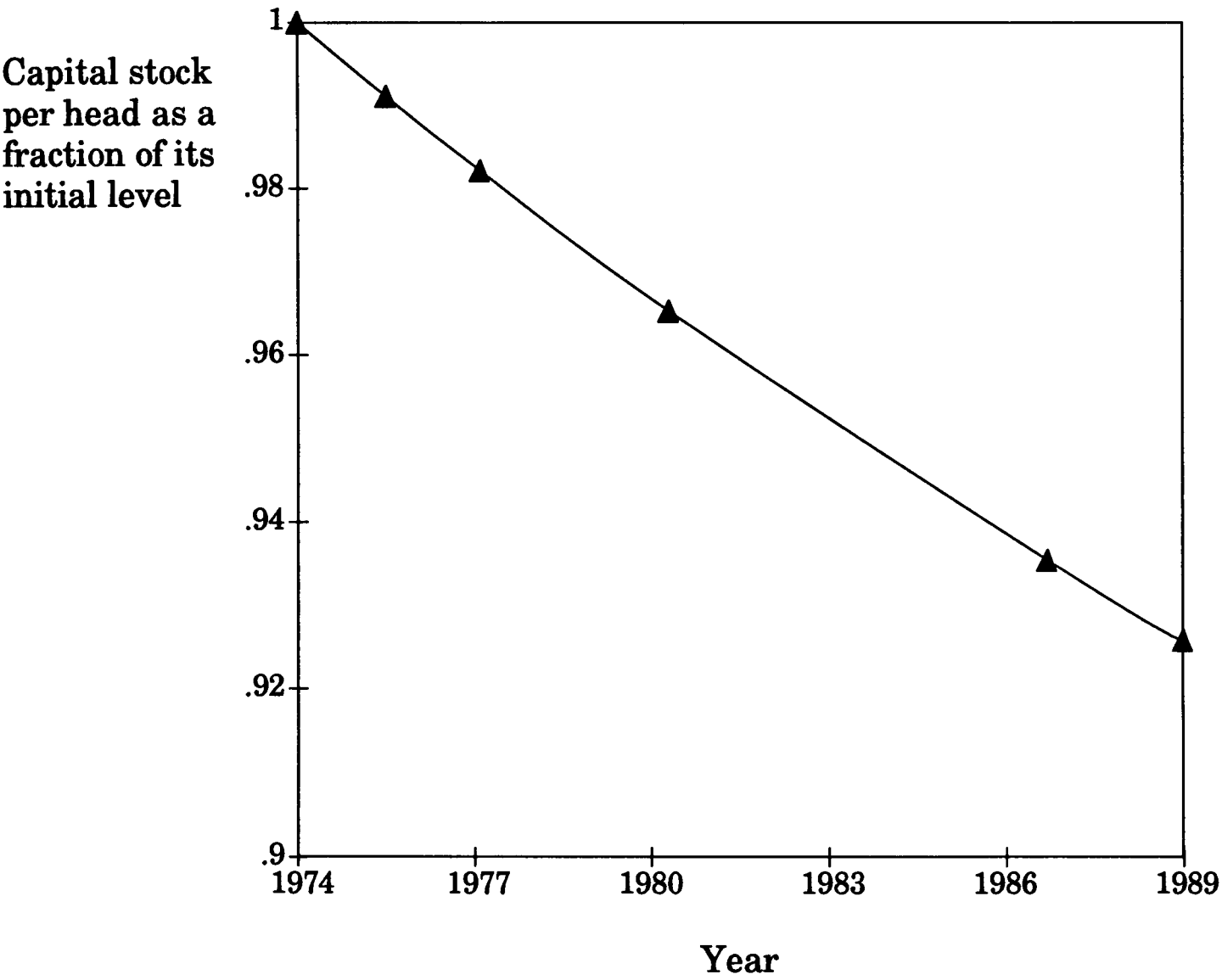


Figure 3.10

### 3.5 Conclusion

Capital dilution is at the heart of most substantial long run economic arguments against immigration. The purpose of the basic growth model described in this chapter is not to approximate a real economy, but rather to focus on this fundamental objection. For a closed economy, it rests on two essential premises: first, that the economy exhibits diminishing returns to labour; and, secondly, that immigration is exclusively a population phenomenon. One aim of this chapter is to discredit the second premise.

The problem with viewing immigration as a species of population growth is that it neglects the impact of fund transfers on capital formation. This has recently become of phenomenon of considerable importance. Including these in the analysis of the closed economy case reveals that the costs due to capital dilution associated with the immigration-induced expansion of the labour force would be dramatically curtailed.

Analysis of the open economy case was based on historical evidence which indicates that immigration to Australia has not caused a reduction in the level of capital intensity. It seems probable that foreign borrowing has expanded to prevent dilution of the capital stock. The simulations were based on the assumption that foreign borrowing was sufficient to maintain the level of capital intensity in the economy. The magnitude of the

foreign debt accumulated as a result of unfinancial immigration was estimated for Australia during the period 1974-89.

The treatment of immigrant fund transfers in the open economy case rested on the habitat view of capital formation. Fund transfers were assumed to represent net additions to the capital stock. They have recently become a phenomenon of some importance relative to the overall size of the Australian economy. If fund transfers continue at the 1988-89 level for the next 40 years, the productive capacity of the economy, and thus living standards in the long run, are projected to increase considerably.

The simple one-sector growth model constructed in this chapter to investigate the impact of fund transfers on capital formation is clearly a severe abstraction from reality. It nevertheless offers a broad estimate of the magnitudes involved. In Chapter 5, it is used to generate an estimate of the likely capital intensification associated with financial immigration.

## Chapter 4

### Capital ownership and economic welfare

*Arguably, the economic welfare of original residents should be central to any inquiry about the impact of immigration. One of the hallmarks of modern economies is the high degree of public ownership of capital. It has been argued that the acquisition of a share of public property by immigrants represents a major cost of immigration to original residents. This depends, however, on the relationship between immigration and capital formation, as well as the level of foreign and public sector debt. It is shown here that the welfare of original residents may actually be enhanced by immigration. Some estimates of the magnitudes involved are obtained for the Australian economy.*

## 4.1 Introduction

The familiar argument against immigration on the ground of capital dilution has been well rehearsed. For an economy which exhibits diminishing returns to labour, each additional worker reduces the capital stock available per head so that the increase in production which flows from a larger workforce is not sufficient to offset the increase in population. Inevitably, so the argument goes, the average level of income must fall. Immigration is therefore held to be inimical to economic welfare.

The purpose of this chapter is to demonstrate that this conventional wisdom is deficient in two respects. First, economic welfare is evaluated for the wrong group of persons; the focus should be restricted to original residents, rather than including the entire population after immigration. Secondly, the conclusion that immigration has a negative impact on average income fails to take into account various ways in which immigration may increase the rate of capital formation. In addition, the level of savings transferred by immigrants to the receiving country is now significant. This is a recent feature of international migration to certain countries which requires that the orthodoxy about capital dilution be modified. Elsewhere, it has been argued that the inflow of immigrant savings boosts the level of domestic capital formation.<sup>1</sup> Without further defence, this assumption will be made here.

---

<sup>1</sup> See Section 2.3.

An analysis of the welfare effects of immigration must reflect changes in the pattern of capital ownership as a result of immigration. This will be influenced by the level of funds transferred and invested by immigrants, as well as the investment induced by immigration. It will also be influenced by the amount of public capital to which immigrants automatically obtain a share. The main contribution of this chapter is the construction of a model which incorporates the financial dimension of immigration as well as the distinction between public and private capital.

This is done using four cases which illuminate the main features of the model. The effect of immigration on the average income of original residents will be seen to depend on the size of the immigration programme, the way in which ownership of the capital stock is distributed among original residents, immigrants and foreign residents, the extent to which immigrants add to the capital stock by investing funds they transfer from overseas, and the extent to which immigration induces investment. In a later section, the model is applied to the Australian economy to assess the relative importance of the main effects and to generate some estimates of the impact of immigration on economic welfare.

## 4.2 Whose welfare?

The contention that immigration reduces economic welfare begs the question: to which group should the measure of economic

welfare be applied?<sup>2</sup> The importance of this inquiry becomes apparent in even the most basic case where immigrants have no savings to transfer and invest in the receiving country. Let us assume that the best proxy for economic welfare is a measure of real income per capita.<sup>3</sup> It transpires that although the average income of the entire population after immigration is lower than it was before immigration, the average income of the original residents is higher. The reason for this result will be explained subsequently. In these circumstances, it is clearly necessary to specify the group to which the measure of economic welfare is to be applied, because the two possible choices of post-immigration groups - the entire population and the original residents - may lead to opposite policy implications. If the welfare of the original residents is the principal concern, then policy dictates may support immigration, even if this entails a reduction in average income across the population as a whole.

The welfare effects of migration have received most attention in the context of the brain drain debate. There the central issue was whether the emigration of highly skilled persons imposed a cost on the remaining population. The relevant group was clearly seen to be that portion of the population which did not emigrate. It was implicit in this approach that gains for the emigrant, presumably part of the motivation for the emigration, were not part of the appropriate welfare criterion. Similarly, it can be

---

<sup>2</sup> See also B.R. Parmenter, 'On the Economics of Immigration', presidential address to the Economic Society of Victoria, 11 October 1989, reprinted in Institute of Applied Economic Social Research, University of Melbourne, Working Paper No. 3/1990.

<sup>3</sup> The relative merits of gross domestic product (GDP) versus gross national product (GNP) as the measure of income are canvassed in a later section.

argued in the case of immigration that the welfare of the original residents is the appropriate criterion.

As far as immigrants are concerned, an increase in economic welfare can be inferred from the decision to migrate.<sup>4</sup> The extent of this increase can only be assessed relative to the incomes of the immigrants in their countries of origin. These are the proper benchmarks for any inquiry into the welfare effects on immigrants themselves as a result of immigration. How their average income after immigration compares with the average income for the entire population is irrelevant. It is quite possible for it to be substantially lower than the average income of original residents but still represent an improvement relative to their incomes before they migrated.

Assuming that immigrants benefit from immigration, the critical question is whether or not original residents benefit. If it can be shown that they do benefit, then there is a *prima facie* argument in favour of immigration, as the welfare of both groups is increased. This may occur despite a decrease in the average level of income of the population as a whole caused by immigration.<sup>5</sup> The problem with taking the whole population after immigration as the focus for a welfare inquiry is that there is no common benchmark. Although for both original residents and immigrants

---

<sup>4</sup> The decision to migrate may be influenced, or even dictated, by a variety of non-economic factors. Political refugees illustrate this point. Nevertheless, given the source countries of refugees, it is reasonable to infer an increase in economic welfare, even if this is not the motivation for the immigration.

<sup>5</sup> F.H. Gruen (1986), 'How Bad is Australia's Economic Performance and Why?', *Economic Record* 62(177), 180-193.

the comparison is with incomes prior to immigration, only in the case of original residents does the income prior to immigration relate to the receiving country. The use of average income for the whole population after immigration conflates two totally separate comparisons: relative income levels in the same country (for original residents) as opposed to relative income levels in different countries (for immigrants).

As a result, the use of the average level of income for the whole population after immigration may be misleading. A more informative indicator from an economic point of view is the average income of the original residents. There is also an important political reason for selecting this group. In order to justify the implementation or continuation of a policy, a government must appeal to its current citizens. If the appeal is couched in economic terms, it must generally demonstrate that the policy will have a positive impact on the economic welfare of these citizens or their children. Immigration policy is unusual in that prospective new citizens are introduced into the equation. Even so, the onus is on the government to demonstrate that an immigration programme will confer benefits on the existing population. This may best be accomplished by estimating the effects of immigration on the welfare of original residents.

### **4.3 The impact of immigration on original residents**

In order to investigate the costs and benefits of immigration to the original residents, a one-sector model is used in which output is produced by the two factors of production: capital and labour.

Production is governed by a function which displays the usual properties, including diminishing returns to each factor and constant returns to scale. For ease of exposition, we shall assume a Cobb-Douglas form:

$$Y = K^{\alpha}L^{1-\alpha} \quad (4.1)$$

Suppose that perfect competition prevails in the economy, so that the wage rate equals the marginal product of labour ( $w = \delta Y / \delta L$ ) and the rental rate on capital equals the marginal product of capital ( $r = \delta Y / \delta K$ ).<sup>6</sup>

Income may then also be represented as the sum of total wages and total returns to capital:

$$Y = wL + rK \quad (4.2)$$

where for a Cobb-Douglas production function:

$$w = \frac{\delta Y}{\delta L} = (1-\alpha)K^{\alpha}L^{-\alpha} \quad (4.3)$$

and:

$$r = \frac{\delta Y}{\delta K} = \alpha K^{\alpha-1}L^{1-\alpha} \quad (4.4)$$

---

<sup>6</sup> One consequence of this assumption is to preclude from consideration a number of ways in which immigration could affect economic welfare. These possible effects will be explored subsequently.

This is illustrated in Figure 4.1. The curve is the marginal product of labour for a fixed capital stock and shows diminishing returns to additional labour. For the labour force  $L^*$  the wage rate is given by  $w^*$ . The income (and output) of the economy is given by the area under the curve, which may be decomposed into a wage share ( $W=w^*L^*$ ) and a profit share ( $P=r^*K^*$ ).<sup>7</sup>

Furthermore, factor prices and proportions are assumed to be flexible so that full employment of labour and capital is maintained. The variation of relative factor prices is one mechanism by which changes in the level of income occur, as will be apparent from equation (4.2). Given that the labour force is readily divided into original and immigrant components, it becomes critical to know the pattern of capital ownership. Only with that information can the costs and benefits associated with movement of relative factor prices be allocated where they fall.

The impact of immigration under different regimes of capital ownership will be analysed in a comparative static framework which compares the position of the original residents before and after immigration. For the purpose of exposition, it is assumed that the economy is closed to international capital flows except for funds which accompany immigrants. This restriction will subsequently be relaxed. Four cases will be considered. The first two cases follow the analysis which Berry and Soligo use to assess

---

<sup>7</sup> An analogous marginal product of capital curve can be constructed, this time for a fixed labour force. In the case of immigration the marginal product of labour curve is a more sensible starting point, since the labour force will definitely be affected.

MARGINAL PRODUCT OF LABOUR

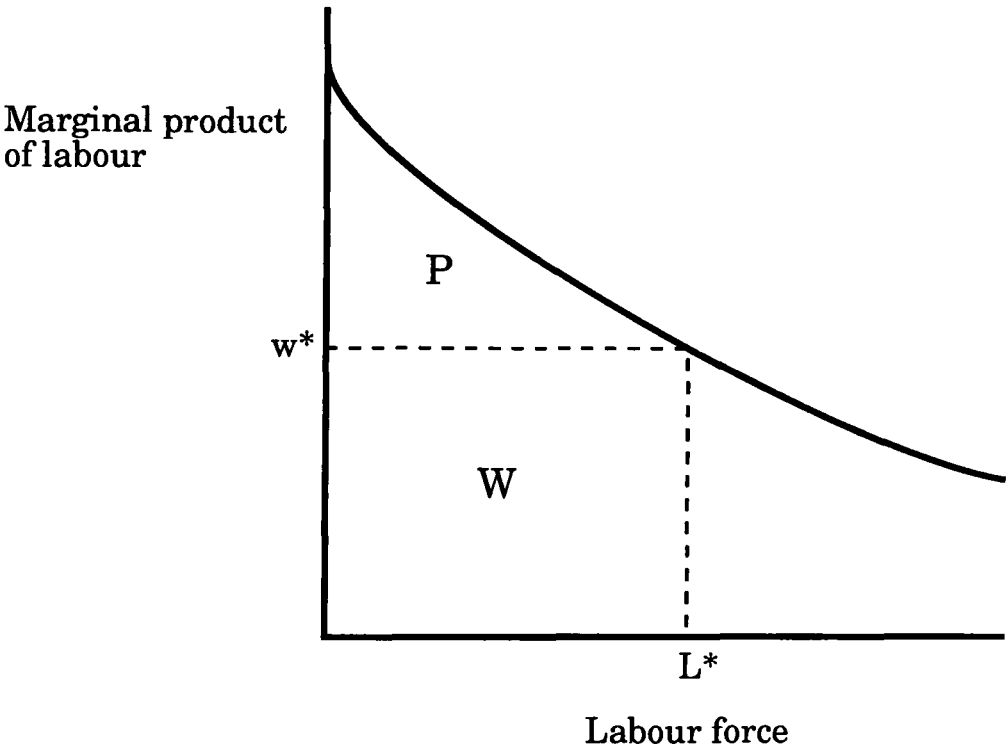


Figure 4.1

the welfare effects of the brain drain.<sup>8</sup> Although concerned with emigration, their analysis is equally applicable to immigration. The third case uses the same approach but recognises the existence of public property.<sup>9</sup> Finally, the fourth case combines both public property and immigrant investment.

*Case 1: (a) Private capital only*

*(b) No fund transfers*

This is the standard case relied upon in analyses of the detrimental impact of immigration on living standards. As foreshadowed above, it rests on an incorrect specification of the group whose welfare is relevant.

Consider Figure 4.2. Before immigration, the income of the population (the original residents) is represented by the area under the curve bound by  $OL_1AD$ . This is comprised of wages (corresponding to the area  $OL_1Aw_1$ ) and returns to capital ( $w_1AD$ ).

After immigration, the size of the labour force of original residents is obviously unchanged.<sup>10</sup> So too in this case is the capital owned by the original residents ( $K_2 = K_1$ ). The influx of additional workers affects the rate of return to both capital and labour. Figure 4.2 shows that the wage rate falls to  $w_2$ . The total wages

---

<sup>8</sup> R. Berry and R. Soligo (1969), 'Some Welfare Aspects of International Migration', *Journal of Political Economy* 77, 778-794.

<sup>9</sup> D. Usher (1977), 'Public Property and the Effects of Migration upon Other Residents of the Migrants' Countries of Origin and Destination', *Journal of Political Economy* 85(5), 1001-1020.

<sup>10</sup> There is an implicit assumption here that the hours worked per person and participation rates are independent of the wage rate.

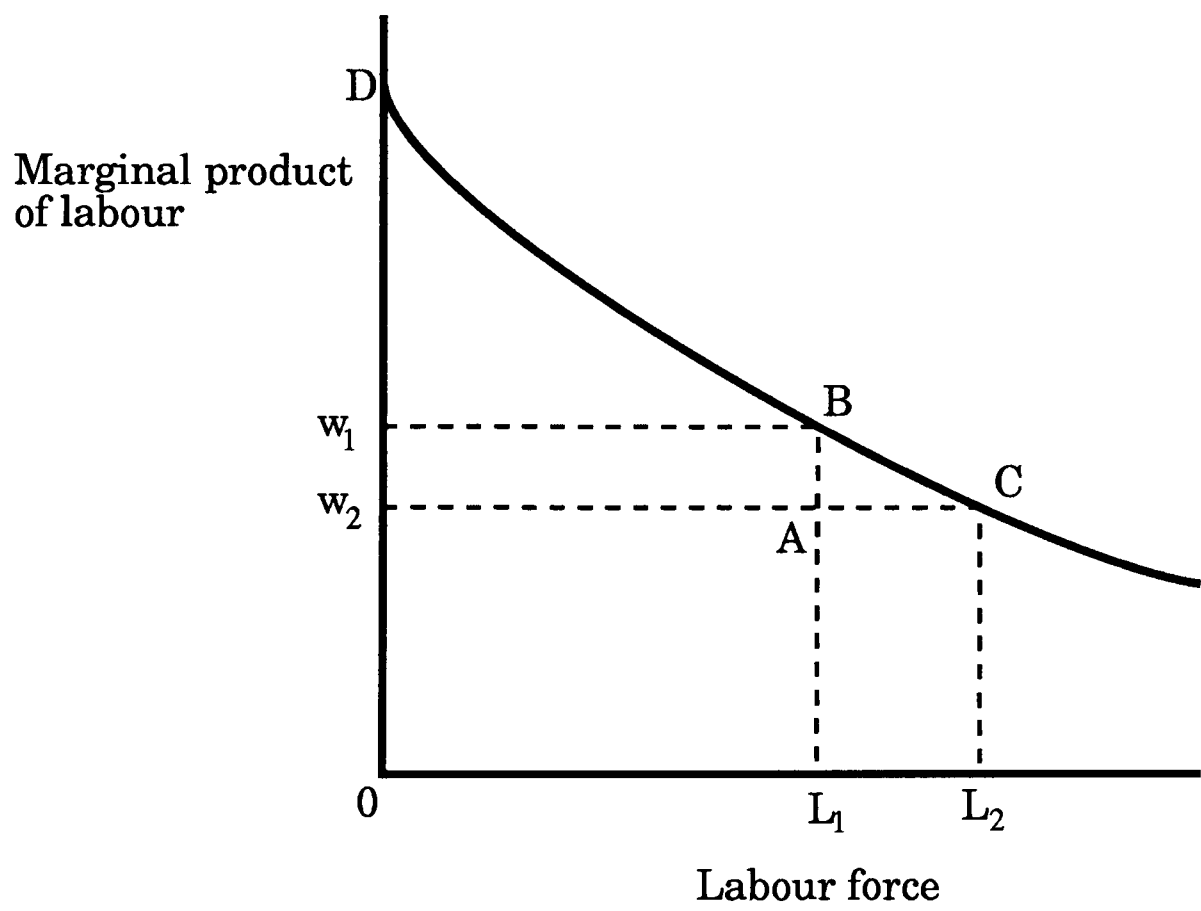
**IMMIGRATION AND THE LABOUR MARKET**

Figure 4.2

received by the original residents drop from  $w_1L_1$  to  $w_2L_1$ . Since the immigrants do not own any capital, their income is comprised purely of wages, and is represented by the area  $L_1L_2BC$ . The income appropriated by immigrants is therefore less than the additional output which is produced by them. The difference is the area  $ABC$  in Figure 4.2 and represents a benefit to the original residents; after immigration the income of the original residents is increased by an amount equal to  $ABC$ .

This result can be explained by noting that the loss to original residents as wage earners is more than compensated by their gain as owners of capital. Immigrants without capital confer a benefit to holders of capital by working with the capital without capturing any of the returns. While production is subject to diminishing returns, so that the average income of the population as a whole decreases, the average income of the original residents actually increases.

This case underlines the importance of identifying the group whose welfare is of interest. Its practical significance turns out to be limited, as the magnitude of the benefit conferred on original residents is fairly negligible. This has emerged in studies of immigration into the UK<sup>11</sup> and Israel.<sup>12</sup> It also turns out to be of negligible importance for Australia, as will be demonstrated in the next section.

---

<sup>11</sup> Usher (1977), note 9.

<sup>12</sup> J.L. Simon (1989), *The Economic Consequences of Immigration*, Basil Blackwell, Oxford, at 149-150.

*Case 2: (a) Private capital only*

*(b) Fund transfers*

Unlike the first case, it is impossible to represent the effects of immigration on the incomes of the original residents using a single marginal product of labour curve, because the aggregate level of capital stock changes as well as the labour force and alters the position of the curve. It is, however, straightforward to derive an expression for the income of the original residents after immigration. Denoting the rate of return on capital after immigration as  $r_2$ , we have:

$$Y_{or} = w_2 L_1 + r_2 K_1 \quad (4.6)$$

This expression may be interpreted as the remuneration for labour services of the original residents at the new wage rate plus returns to their capital at the new rate of return.

From equations (4.1), (4.3) and (4.4):

$$\begin{aligned} Y_{or} &= (1-\alpha) K_2^{1-\alpha} L_2^{-\alpha} L_1 + \alpha K_2^{\alpha-1} L_2^{1-\alpha} K_1 \\ &= Y_2 \left[ (1-\alpha) \frac{L_1}{L_2} + \alpha \frac{K_1}{K_2} \right] \end{aligned} \quad (4.7)$$

The return to labour received by the original residents is determined by their proportion of the total population after immigration. Similarly, the total return to capital is allocated according to the proportion of the total capital stock which is owned by the original residents. The change in income of the

original residents arises as a result of the movement in relative factor prices which is induced by a change in the ratio of capital to labour in the economy. This is analogous to a terms of trade effect.

One implication of equation (4.7) is that the income of the original residents always increases as a result of the immigration.<sup>13</sup> The original residents benefit irrespective of the amount transferred and invested by immigrants. Where capital dilution occurs, the rental rate on capital owned by the original residents is higher than it was prior to immigration, as capital is relatively more scarce in the economy. Although production is subject to decreasing returns so that additions to the labour force reduce productivity, the higher rental rate on capital is more than sufficient to compensate the original residents for the reduction in their wages.

The highest income of the original residents in this region corresponds to the first case where immigrants do not add to the capital stock at all. As the amount of funds transferred and

---

<sup>13</sup> A further implication is that the average income of the original residents is greater than the average income for the population as a whole if capital dilution occurs. This may be seen by recasting equation (4.7) in per capita form:

$$y_{or} = y_2 \left[ (1-\alpha) + \alpha \frac{k_1}{k_2} \right] \quad (4.7a)$$

where  $y_{or} = Y_{or}/L_1$ ,  $y = Y/L$  and  $k = K/L$ . For the first case in which the immigrants do not add to the capital stock at all, the income of the original residents is given by:

$$y_{or} = y_2 \left[ (1-\alpha) + \alpha \frac{L_2}{L_1} \right] \quad (4.7b)$$

from which it can be seen that the average income of the original residents exceeds the average income of the whole population for all  $L_2 > L_1$  (for all immigration).

invested by immigrants increases, the profit share captured by the original residents falls more rapidly than the income of the whole population (including immigrants) rises. Consequently, the benefit to the original residents declines.

Where immigrants transfer and invest sufficient funds to offset exactly the capital dilution that arises due to a larger work force, the income of the original residents remains unchanged. Ironically, it is more advantageous for the original residents if immigrants do not transfer any funds than if they transfer an amount sufficient to restore capital intensity to its level prior to immigration. The difference, as noted above, is fairly marginal.

The roles of the two effects are reversed where the funds transferred and invested by immigrants increase the ratio of capital to labour in the economy. The production effect begins to dominate; as a result of higher capital-labour ratio, production per capita and thus the average income of the entire population increases. Although the profit share of the original residents falls below its pre-immigration level, as the immigrants are now the greater capitalists, the income to which the share applies rises rapidly enough to outweigh the loss of profit share. The average income of the original residents steadily rises.

The second case may be summarised as follows: if the ratio of capital to labour in the economy changes as a result of the immigration, then the average income of the original residents will increase; if the ratio remains constant, the average income of the original residents will be unchanged.

*Case 3: (a) Private and public capital**(b) No fund transfers*

In mixed economies, a significant fraction of the nation's capital is publicly owned. It has been argued that this feature of modern economies gives rise to a cost of immigration which must be incorporated into a realistic cost-benefit analysis. According to Usher:

An assessment of the costs and benefits of migration need take account of the fact that a large portion of a country's property is publicly owned, so that a migrant on going from one country to another must as a rule abandon his share of publicly owned property in his country of origin and acquire a share of publicly owned property in his country of destination.<sup>14</sup>

Because immigrants capture a share of the returns to public capital, their arrival may be detrimental to the welfare of the original residents.

Productive capital, such as that employed in nationalised industries,<sup>15</sup> is subject to dilution in the same way as it is in the private sector. Rather than receive returns to this capital directly, the public receives a benefit in the form of reduced prices; alternatively, market prices will be charged and the surplus used

---

<sup>14</sup> Usher (1977), note 9, at 1002.

<sup>15</sup> Clearly, with increasing privatisation of nationalised industries, the amount of public productive capital is diminishing. The calculation performed by Usher for the UK in 1974, where public capital was estimated to be 58 per cent of the total capital stock, may now overestimate the impact of immigration.

to subsidise government expenditure elsewhere. Either way, the public benefits from reduced prices for certain services or a reduced tax burden. For a fixed stock of public productive capital, the benefits will be diluted by the arrival of immigrants who become entitled to a share of the proceeds.

The same is true for capital such as schools, hospitals and public housing, where the returns captured by the public are a range of essential services. This capital is essentially demographic in that the quality of service depends on the size and composition of the population. If immigration is not to cause a reduction in the standard of these services, then investment in demographic capital is necessary. Other types of public capital, however, are public goods in the sense that the benefits which flow from them are not diluted by additional members of the society. Indeed, the opposite may be true, as not only are the benefits flowing to the original residents unaffected, the burden of financing and maintaining the capital may be reduced by the presence of more taxpayers. Defence and the provision of urban infrastructure are examples where this is likely to be the case. Essentially, this argument turns on the existence or otherwise of scale economies.<sup>16</sup> The conservative assumption made here is that all public capital is subject to dilution.

The public also receives a share of the returns to privately owned capital through taxation, such as corporate income tax. In this way, immigrants deprive the original residents of a portion of the

---

<sup>16</sup> See Section 1.2.2.

returns to their privately owned capital. Whereas before immigration the original residents received the taxation levied on private capital back in its entirety in the form of public benefits, after immigration the immigrants appropriate a share of private capital through their entitlement to public benefits which are funded by the taxation of private capital. In this case, the loss to the original residents is not offset by contributions to the public purse through the taxation of private capital owned by immigrants.

Suppose the capital stock of an economy consists of capital owned by the public sector ( $K_g$ ) and capital owned by the private sector ( $K_p$ ). If profits are taxed at a rate  $\eta$ , then the return to private capital which accrues directly to the original residents is  $r(1-\eta)K_p$ . The remaining portion of the return to private capital flows into the public coffers. The total return to public capital is therefore  $r(K_g + \eta K_p)$ . One effect of immigration, assuming that immigrants receive the same rights to public property as the rest of the population,<sup>17</sup> is to dilute the amount of public capital over which the original residents have a claim. The second effect, as discussed in the first case, is to alter the relative prices of capital and labour.

The income of the original residents after immigration is thus given by:

$$Y_{or} = w_2 L_1 + r_2 K_{or}$$

---

<sup>17</sup> Guest worker policies, whereby immigrants do not receive equal rights to public property, are considered shortly.

$$\begin{aligned}
&= w_2 L_1 + r_2 \left\{ (1-\eta) K_p + [K_g + \eta K_p] \frac{L_1}{L_2} \right\} \\
&= Y_2 \left\{ (1-\alpha) \frac{L_1}{L_2} + \alpha (1-\eta) \frac{K_p}{K_1} + \alpha \left[ \frac{K_g + \eta K_p}{K_1} \right] \frac{L_1}{L_2} \right\} \quad (4.8)
\end{aligned}$$

The change in income resulting from immigration is determined by the movement of relative factor prices and the acquisition of a share of publicly owned capital by the immigrants. As in the second case, the return to labour received by the original residents is determined by the prevailing wage rate and the proportion of the population they now comprise ( $L_1/L_2$ ). Since the size of the labour force of the original residents remains the same as it was before immigration, and the wage rate is lower as a result of diminished productivity, the total wages earned by the original residents will decrease. In contrast, because the rental rate on capital is higher due to a lower ratio of capital to labour in the economy, the return to capital owned by the original residents will increase. Whereas in the first two cases this was sufficient to outweigh the loss of income from wages, the position of the original residents is now worsened by the existence of public property.

Because of the high level of public ownership of capital in modern economies, the latter effect is likely to be significant. Usher estimated the effect of the immigration of one million people into the UK in 1974. Without taking public property into account, and assuming instead that the entire capital is privately owned, there

is a slight benefit to the original residents.<sup>18</sup> When the rights acquired by immigrants to public property are included in the calculation, the position of the original residents worsens dramatically. Usher calculated that the present value of the loss to the original residents of a reduced share of public capital, despite the higher rental rate, was approximately 1.2 per cent of the national income.

Usher's calculations are restricted to the case where the capital stock in the economy remains unchanged after immigration. This may be extended by incorporating the transfer and investment of funds which immigrants have accumulated in their countries of origin.

*Case 4: (a) Private and public capital*

*(b) Fund transfers*

It is necessary to modify the third case to include the addition to the capital stock by immigrants from their own resources. One consequence of this will be to alter the ratio of capital to labour in the economy and thus the relative factor prices which prevail. How the factor prices compare with their levels before immigration will depend, as in the second case, on the amount transferred and invested by immigrants. Another consequence of the increase in the stock of privately owned capital in the economy is to increase the stock of capital over which the public has a claim. This occurs via taxation of the returns to capital

---

<sup>18</sup> The benefit calculated by Usher represented approximately .0015 per cent of GDP.

owned by immigrants. If the amount of such capital is denoted  $F$ , then the additional return to original residents  $r_2\eta F(L_1/L_2)$ .

The income of the original residents after immigration is then given by:

$$\begin{aligned}
 Y_{or} &= w_2 L_1 + r_2 K_{or} \\
 &= w_2 L_1 + r_2 \left\{ (1-\eta) K_p + [K_g + \eta(K_p + F)] \frac{L_1}{L_2} \right\} \\
 &= Y_2 \left\{ (1-\alpha) \frac{L_1}{L_2} + \alpha(1-\eta) \frac{K_p}{K_2} + \alpha \left[ \frac{K_g + \eta(K_p + F)}{K_2} \right] \frac{L_1}{L_2} \right\} \quad (4.9)
 \end{aligned}$$

In the following section, the implications of this equation are explored for the Australian economy.

## 4.4 Application to Australia

### 4.4.1 Data requirements

The basic requirements are the level of capital stock, the size of the labour force, and the gross domestic product at a selected time (30 June 1989 is the most recent time for which all the data are available). This allows the production function for the economy to be estimated. No attempt will be made here to justify the use of an aggregate production function on theoretical grounds; suffice it to say that empirically it appears to be a reasonable way to

describe the way in which production in the Australian economy has occurred over an extended period.<sup>19</sup>

Estimates of the net capital stock are contained in Table 4.1.<sup>20</sup> Including dwellings, the total value of the net capital stock is \$939 billion, approximately three times the gross domestic product (GDP). Excluding dwellings, the level of net capital stock is \$607 billion; this will be taken as a more suitable measure of the productive capital in the economy. Ownership of the non-dwelling capital stock by the public and private sectors is virtually equal, with the public sector accounting for \$304 billion and the private sector, \$303 billion.

The additional information required to estimate a production function is as follows: the labour force is assumed to be 8.5 million (representing 50 per cent of the total population) and the GDP is \$306 billion; the share of income accruing to capital, derived from a study of the Australian economy over the period from 1967 to 1986,<sup>21</sup> is assumed to be 0.36<sup>22</sup> and the share of income accruing

---

<sup>19</sup> J. Carmichael and N. Dews (1987), 'The Role and Consequences of Investment in Recent Australian Economic Growth', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 163.

<sup>20</sup> The estimates of gross capital stock and depreciation are made using the perpetual inventory method. This follows the approach set out in R. Walters and R. Dippelsman (1986), 'Estimates of Depreciation and Capital Stock in Australia', ABS Occasional Paper No. 1985/3. Estimates of gross capital stock are derived by accumulating past investment flows (adjusted for price level movements) and deducting the estimated value of past retirements from the stock. Estimates of depreciation and hence net capital stock are derived using a depreciation function based on the expected economic life of the assets. The methodology therefore depends on gross fixed capital expenditure and price index series, and assumptions about mean asset lives, asset life distributions and depreciation patterns.

<sup>21</sup> Carmichael and Dews (1987), note 19.

**NET CAPITAL STOCK<sup>a</sup>**  
**At 30 June 1989 (\$A million)**

---

**PUBLIC SECTOR-**

|                                    |                |
|------------------------------------|----------------|
| General government                 |                |
| Non-dwelling construction - roads  | 39,215         |
| Other non-dwelling construction    | 90,627         |
| Equipment                          | 8,405          |
| <i>Total (excluding dwellings)</i> | <i>138,247</i> |
| Dwellings                          | 2,278          |
| <i>Total</i>                       | <i>140,525</i> |
| Public enterprises                 |                |
| Non-dwelling construction          | 117,763        |
| Equipment                          | 47,584         |
| <i>Total (excluding dwellings)</i> | <i>165,347</i> |
| Dwellings                          | 16,784         |
| <i>Total</i>                       | <i>182,131</i> |
| Total public sector                |                |
| Non-dwelling construction          | 247,605        |
| Equipment                          | 55,989         |
| <i>Total (excluding dwellings)</i> | <i>303,594</i> |
| Dwellings                          | 19,062         |
| <i>Total</i>                       | <i>322,656</i> |

**PRIVATE SECTOR-**

|                                    |                |
|------------------------------------|----------------|
| Non-dwelling construction          | 161,480        |
| Equipment                          | 141,780        |
| <i>Total (excluding dwellings)</i> | <i>303,260</i> |
| Dwellings                          | 313,149        |
| <i>Total</i>                       | <i>616,409</i> |

**TOTAL PUBLIC AND PRIVATE SECTOR-**

|                                    |                |
|------------------------------------|----------------|
| Non-dwelling construction          | 409,085        |
| Equipment                          | 197,769        |
| <i>Total (excluding dwellings)</i> | <i>606,854</i> |
| Dwellings                          | 332,211        |
| <i>Total</i>                       | <i>939,065</i> |

---

Source: *Capital Stock, 1988-89*, ABS Catalogue No. 5221.0.

(a) Gross capital stock less consumption of fixed capital (depreciation).

Table 4.1

to labour, 0.64. With this information, it is possible to calculate the effect of immigration on the economic welfare of original residents in Australia.

Before undertaking this calculation, however, it is important to adjust the pattern of capital ownership to reflect both foreign ownership of the capital stock and other outstanding liabilities such foreign debt and public sector debt. Table 4.2 shows the net international investment position to be \$145 billion; this represents the difference between foreign investment in Australia and Australian investment abroad. The private sector accounts for \$112 billion of the total,<sup>23</sup> with the public sector responsible for the remaining \$33 billion. Within the private sector, the principal determinants of the net international investment position are foreign debt (\$75 billion) and foreign equity investment (\$36 billion). The principal determinant of the public sector position is foreign debt (\$38 billion), which is offset to a small degree by a favourable balance of accounts receivable and payments made.

The significance of the net international investment position is that a substantial portion of the returns to capital located in Australia is captured by foreign residents. This may take the form of after-tax returns from equity investment or interest repayments on debt owed by the Australian owners of capital. In

---

<sup>23</sup> In the private sector, international investment may be either direct investment, where the investor has a significant influence over the policies of the enterprise in which the investment is made (defined by the ABS as 10 per cent ownership), or portfolio investment, where the investor does not. At 30 June 1989, the level of net direct investment was \$47 billion; the level of net portfolio investment was \$62 billion.

**NET INTERNATIONAL INVESTMENT POSITION<sup>a</sup>**  
**At 30 June 1989 (\$A million)**

---

|                                        |                |
|----------------------------------------|----------------|
| <b>PUBLIC SECTOR<sup>b</sup>-</b>      |                |
| Net foreign debt <sup>c</sup>          | 37,571         |
| Net other investment <sup>d</sup>      | -4,727         |
| <i>Total public sector</i>             | <i>32,844</i>  |
| <br><b>PRIVATE SECTOR-</b>             |                |
| Net foreign debt                       | 72,341         |
| Net equity                             | 35,824         |
| Net other investment                   | 4,253          |
| <i>Total private sector</i>            | <i>112,418</i> |
| <br><b>TOTAL-</b>                      |                |
| Net foreign debt                       | 109,912        |
| Net equity                             | 35,824         |
| Net other investment                   | -474           |
| <i>Total public and private sector</i> | <i>145,262</i> |

---

Source: *Foreign Investment Australia, 1988-89*, ABS Catalogue No. 5305.0

- (a) Net international investment position equals foreign investment in Australia less Australian investment abroad.
- (b) The public sector includes general government (departments of state and similar entities that are the agents or instruments of Commonwealth, State, or local government), the Reserve Bank, and public trading and financial enterprises.
- (c) Foreign borrowing by Australian residents less the sum of reserve assets and Australian lending abroad.
- (d) Accounts payable/prepayments received (foreign investment in Australia) less accounts receivable/prepayments made (Australian investment abroad).

Table 4.2

either event, capital assets must be balanced against liabilities. One consequence is that GDP is unlikely to be an ideal proxy for the welfare of original residents when immigration has affected the relative price of capital and labour, since it incorporates the income accruing to foreign residents. For this reason GNP is a preferable proxy.

A second adjustment which should be made is to account for public sector debt. Just as immigrants may cause a loss to original residents by acquiring a share of publicly owned capital, they may confer a benefit by assuming responsibility for a share of the taxes required to service public sector debt.<sup>24</sup> The acquisition of a share of public property by immigrants may therefore be mitigated by the existence of public sector debt. The extent to which this happens depends on the level of public debt relative to public capital. Table 4.3 shows the level of public sector debt at 30 June 1988 as \$108 billion, which is a significant fraction of the public sector capital stock.

The impact of public sector debt on the incomes of domestic, as opposed to foreign, residents is determined by the relative proportions of domestic and foreign public sector debt, which is shown in Table 4.4. The public sector debt held by the domestic private sector on 30 June 1988 amounted to \$64 billion. Using the estimated level of public sector debt for 1989 shown in Table 4.3, and assuming that the domestic proportion remains constant, the

---

<sup>24</sup> M.R. McCarthy and T.G. McCarthy (1989), 'Irish Migration: The Search for the Efficiency and Equity Basis of a European Regional Policy', *Economic and Social Review* 21(1), 71-84.

**COMPOSITION OF PUBLIC SECTOR DEBT<sup>a</sup>**  
**At 30 June 1988 (\$A million)**

---

|                            |                |
|----------------------------|----------------|
| <b>DOMESTIC-</b>           |                |
| General government         | 20,668         |
| Public trading enterprises | 43,171         |
| <i>Total</i>               | <i>63,841</i>  |
| <b>FOREIGN-</b>            |                |
| General government         | 32,152         |
| Public trading enterprises | 12,340         |
| <i>Total</i>               | <i>44,492</i>  |
| <b>TOTAL-</b>              |                |
| General government         | 52,820         |
| Public trading enterprises | 55,511         |
| <i>Total</i>               | <i>108,333</i> |

---

Source: *Public Sector Debt, Australia, 30 June 1988, 1989 and 1990*, ABS Catalogue No. 5513.0

(a) Public financial enterprises are excluded from the public sector debt statistics compiled by the ABS; this includes the Reserve Bank.

Table 4.3

**LEVEL OF PUBLIC SECTOR DEBT: 1987-1990**  
**At current prices (\$A million)**

---

| <b>Net debt</b> |         | <b>Estimated net debt</b> |        |
|-----------------|---------|---------------------------|--------|
| 1987            | 1988    | 1989                      | 1990   |
| 107,542         | 108,333 | 102,482                   | 99,906 |

---

Source: *Public Sector Debt, Australia, 30 June 1988, 1989 and 1990*, ABS Catalogue No. 5513.0

Table 4.4

level of domestic public sector debt on 30 June 1989 may be estimated as \$60 billion. Interest payments by the public sector on this sum comprise part of the private income of the original residents prior to immigration; as a result, no part of this income is appropriated by the immigrants.<sup>25</sup>

The public sector debt held by foreign residents in Table 4.3 is \$44 billion. Following the same approach as for domestic public sector debt, the corresponding figure for 1989 is \$42 billion. The discrepancy between this figure and the net foreign debt figure for the public sector quoted in Table 4.2 is the product of several factors. First, the assumption that the relative proportion of domestic to foreign public sector debt remains constant may be incorrect. Secondly, the public sector debt statistics compiled by the Australian Bureau of Statistics do not include public sector financial enterprises.<sup>26</sup> As a result, the two sets of statistics relating to the public sector are not strictly comparable. For the present purposes, the difference in the public sector net foreign debt is not crucial; the figure from the net international investment series is preferable because it does not rely on an arbitrary assumption to update the data and also it includes public financial enterprises.

---

<sup>25</sup> The underlying assumption here is that the rate of interest is equal to the after-tax rate of return on capital, which should prevail in the absence of risk. It is further assumed that the income from interest is tax-free, while the income from capital is taxed.

<sup>26</sup> It is probable, however, that the liabilities of public financial enterprises would be comparable to the assets held by the Reserve Bank. There are additional technical reasons why the two sets of statistics are not strictly comparable. Long term trade credit is included in the public sector debt figures, but not in the net international investment figures. Also, public sector debt figures are based on face values for liabilities and assets, whereas foreign investment statistics are based on market valuations.

#### 4.4.2 Results

The effect of an immigration programme comprising 200,000 persons on the distribution of income is investigated. The participation rate of immigrants in the labour force is assumed to be 50 per cent, so that the labour force is expanded by 100,000 persons. Of paramount importance, for the reasons outlined earlier, is the change in the economic welfare of the original residents as a result of the immigration, although the investigation is extended to consider the impact on foreign residents.

Two sets of results are presented. The first set of results is based on the assumption that the economy is closed to international capital flows, except for the funds which accompany immigrants. The second set is based on the assumption that the economy is open to the inflow of foreign capital, and that this is sufficient to maintain the capital intensity in the economy.

##### (a) Closed economy

In the first instance, it is assumed that the immigrants do not transfer and invest funds. The results are summarised in Table 4.5. The overall effect of the immigration is to reduce the income of the original residents by \$886 million. The major source of loss is the lower wage rate which results from capital dilution, which reduces the amount of wages received by the original residents by \$822 million. This is partly offset by an increase of \$212 million in the returns to private capital owned by the original residents

# **IMPACT OF UNFINANCIAL IMMIGRATION ON THE DISTRIBUTION OF INCOME IN A CLOSED ECONOMY<sup>a</sup>**

|                              | Original<br>residents | Immigrants | Foreign<br>residents |
|------------------------------|-----------------------|------------|----------------------|
| <b>WAGES-</b>                |                       |            |                      |
| Before immigration           | 195,594               | -          | -                    |
| After immigration            | 194,772               | 2,291      | -                    |
| Change due to<br>immigration | -822                  |            | -                    |
| Present value<br>of change   | -7,378                | -          | -                    |
| <b>RETURNS TO CAPITAL-</b>   |                       |            |                      |
| <i>Private capital</i>       |                       |            |                      |
| Before immigration           | 28,194                | -          | 16,143               |
| After immigration            | 28,406                | -          | 16,264               |
| Change due to<br>immigration | 212                   | -          | 121                  |
| Present value<br>of change   | 1,902                 | -          | 1,089                |
| <i>Public capital</i>        |                       |            |                      |
| Before immigration           | 65,685                | -          | -                    |
| After immigration            | 65,409                | 770        | -                    |
| Change due to<br>immigration | -276                  | -          | -                    |
| Present value<br>of change   | -2,478                | -          | -                    |
| <b>INCOME-</b>               |                       |            |                      |
| Before immigration           | 289,473               | -          | 16,143               |
| After immigration            | 288,587               | 3,061      | 16,264               |
| Change due to<br>immigration | -886                  | -          | 121                  |
| Present value<br>of change   | -7,953                | -          | 1,089                |

(a) \$A million in 1988-89 prices

Table 4.5

that is generated by a higher rental rate. The gains made by the original residents as private capital owners are outweighed, however, by their losses as public capital owners. Their reduced share of the public capital stock causes a loss of \$276 million.

In the simplest case considered above, where all capital was assumed to be privately owned and debt and equity held by foreign residents was ignored, a benefit to the original residents was predicted on the basis that they gained more as owners of capital than they lost as wage earners. The size of this putative benefit can be extracted from Table 4.5 by abandoning the distinction between private and public capital and by allocating returns to foreign residents to original residents. It turns out to be \$5 million, or 30 cents per head, a negligible amount on any criterion.

The income accruing to foreign residents and the acquisition of a share of public property by the immigrants convert this miniscule benefit to a substantial loss. The higher rental rate on capital causes the income flowing to foreign residents to increase by \$121 million. The acquisition of a share of public property by immigrants costs the original residents \$770 million in forgone rentals. The principal driving force behind the loss of welfare by the original residents is therefore the dilution of the stock of public capital in the economy. The higher rental rate on capital is not sufficient to compensate the original residents for the share of public capital forfeited to immigrants.

The loss of income suffered by the original residents as a result of immigration is not confined to the year of arrival, but persists indefinitely into the future.<sup>27</sup> This is the rationale for using present values of the costs and benefits contained in Table 4.5. The appropriate rate of interest for converting the annual figures to present values is the after-tax rate of return on capital (11.1 per cent).<sup>28</sup> The total cost of immigration to the original residents is nearly \$8 billion.

This figure must be set against the funds transferred to Australia by immigrants. In 1989-90, the total amount of funds transferred by approximately 140,000 immigrants was about \$4 billion. Assuming that these funds are invested and increase the capital stock,<sup>29</sup> the recent phenomenon of large transfers could significantly lessen the impact of immigration on original residents. Although the capital in which the immigrants invest is privately owned by them, a portion of the returns are captured by original residents by virtue of the taxation system. Where the level of funds transferred and invested by immigrants becomes substantial, this mechanism for redistributing profits becomes an important feature of the post-immigration economy.

The implications of this argument were investigated for the case where immigrants transfer and invest an amount similar to the amount transferred per immigrant in 1989-90, which was

---

<sup>27</sup> Usher (1977), note 9, at 1016.

<sup>28</sup> By definition, this is given by the ratio of gross operating surplus to value of the capital stock, multiplied by the corporation tax rate.

<sup>29</sup> This is a vital assumption in the argument. It is elsewhere defended at length. See Section 2.3.

approximately \$30,000. The results are shown in Table 4.6. The direction of the welfare effect is the same as in the case where no funds are transferred, but the relative importance of the various costs and benefits is different. The reduction in wages received by original residents is \$131 million (cf. \$822 million), because the ratio of capital to labour in the economy is partly restored by the investment of immigrant funds and so the wage rate is nearly restored to its pre-immigration level. Similarly, the benefits to original residents in their capacity as owners of private capital is only \$34 million (cf. \$212 million), since capital is relatively less scarce in the economy than it was in the 'no funds' case and the rate of return is accordingly lower, although still higher than it was before immigration. The loss due to the acquisition of public capital by immigrants is actually greater in this case, as the same reduced share owned by original residents earns a relatively lower rate of return. The overall effect is to reduce the income of original residents by \$364 million. At the discount rate implicit in Table 4.6, the present value of this loss is \$3.3 billion.

The level of funds transferred and invested by immigrants, provided that the capital stock is increased, can influence the effects of immigration on the economic welfare of original residents. In Figure 4.3, the impact of an immigration programme of 200,000 persons on the present value of the income of original residents is illustrated for a range of funds invested per immigrant. Returns to capital captured by original residents is always less than it was before immigration, due to dilution of their ownership of public capital, and declines as the level of funds transferred increases, due to a decreasing rental rate as the

# **IMPACT OF FINANCIAL IMMIGRATION ON THE DISTRIBUTION OF INCOME IN A CLOSED ECONOMY<sup>a</sup>**

|                              | Original<br>residents | Immigrants | Foreign<br>residents |
|------------------------------|-----------------------|------------|----------------------|
| <b>WAGES-</b>                |                       |            |                      |
| Before immigration           | 195,594               | -          | -                    |
| After immigration            | 195,463               | 2,300      | -                    |
| Change due to<br>immigration | -131                  | -          | -                    |
| Present value<br>of change   | -1,183                | -          | -                    |
| <b>RETURNS TO CAPITAL-</b>   |                       |            |                      |
| <i>Private capital</i>       |                       |            |                      |
| Before immigration           | 28,194                | -          | 16,143               |
| After immigration            | 28,228                | 664        | 16,162               |
| Change due to<br>immigration | 34                    | -          | 19                   |
| Present value<br>of change   | 303                   | -          | 174                  |
| <i>Public capital</i>        |                       |            |                      |
| Before immigration           | 65,685                | -          | -                    |
| After immigration            | 65,418                | 770        | -                    |
| Change due to<br>immigration | -267                  | -          | -                    |
| Present value<br>of change   | -2,410                | -          | -                    |
| <b>INCOME-</b>               |                       |            |                      |
| Before immigration           | 289,473               | -          | 16,143               |
| After immigration            | 289,109               | 3,733      | 16,162               |
| Change due to<br>immigration | -364                  | -          | 19                   |
| Present value<br>of change   | -3,289                | -          | 174                  |

(a) \$A million in 1988-89 prices

Table 4.6

**EFFECT OF FINANCIAL IMMIGRATION ON  
THE INCOME OF ORIGINAL RESIDENTS IN  
A CLOSED ECONOMY**

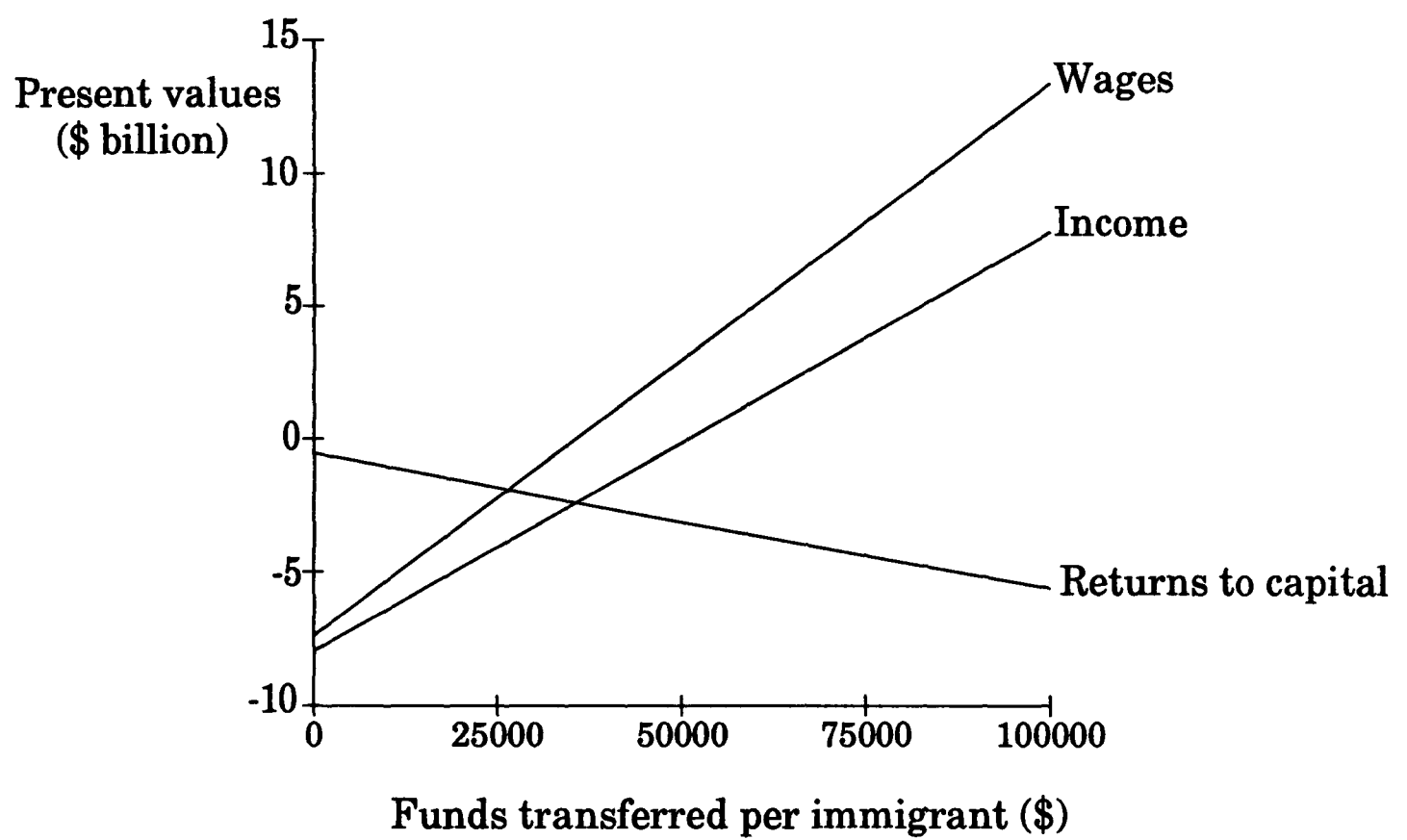


Figure 4.3

capital-labour ratio in the economy rises. When no funds are invested by immigrants, the total wages received by original residents drop as a result of immigration, as explained above. As the level of immigrant investment increases, the concomitant rise in the wage rate causes the total return to their labour to rise more rapidly than the return to their capital declines. The income of original residents is thus an increasing function of the funds invested by immigrants. Figure 4.3 shows that the break-even point is about \$50,000 per immigrant.

(b) Open economy

In Chapter 2, it was suggested on the basis of historical evidence that immigration induces sufficient investment to maintain the ratio of capital to labour in the economy. In addition, it was argued that immigrant fund transfers may represent an addition to domestic capital formation over and above the investment induced by immigration. The results presented here are based on this habitat view of the effect of immigration on capital formation.

Table 4.7 shows the impact of immigration on the distribution of income where the amount transferred per immigrant is \$30,000. The first point to note is the much higher return to capital accruing to foreign residents (\$685 million), which reflects the large capital inflow necessary to preserve the capital intensity in the economy. For original residents, the impacts on returns to labour and private capital are reversed. The higher capital-labour ratio leads to a higher wage rate, so the total wages to original residents increase by \$686 million. Returns to private capital fall

# **IMPACT OF FINANCIAL IMMIGRATION ON THE DISTRIBUTION OF INCOME IN AN OPEN ECONOMY<sup>a</sup>**

---

|                              | Original<br>residents | Immigrants | Foreign<br>residents |
|------------------------------|-----------------------|------------|----------------------|
| <b>WAGES-</b>                |                       |            |                      |
| Before immigration           | 195,594               | -          | -                    |
| After immigration            | 196,280               | 2,309      | -                    |
| Change due to<br>immigration | 686                   | -          | -                    |
| Present value<br>of change   | 6,241                 | -          | -                    |
| <b>RETURNS TO CAPITAL-</b>   |                       |            |                      |
| <i>Private capital</i>       |                       |            |                      |
| Before immigration           | 28,194                | -          | 16,143               |
| After immigration            | 28,019                | 664        | 16,827               |
| Change due to<br>immigration | -175                  | -          | 685                  |
| Present value<br>of change   | -1,592                | -          | 6,230                |
| <i>Public capital</i>        |                       |            |                      |
| Before immigration           | 65,685                | -          | -                    |
| After immigration            | 65,431                | 770        | -                    |
| Change due to<br>immigration | -254                  | -          | -                    |
| Present value<br>of change   | -2,312                | -          | -                    |
| <b>INCOME-</b>               |                       |            |                      |
| Before immigration           | 289,473               | -          | 16,143               |
| After immigration            | 289,730               | 3,733      | 16,827               |
| Change due to<br>immigration | 257                   | -          | 685                  |
| Present value<br>of change   | 2,338                 | -          | 6,230                |

---

(a) \$A million in 1988-89 prices

Table 4.7

by \$175 million due to a lower rental rate. Even when the dilution of public capital by immigrants is taken into account (a loss of \$254 million), the total income of original residents increases by \$257 million. The present values of these gains and losses are shown in Table 4.7.

The effect of different levels of immigrant fund transfers on the income of original residents is shown in Figure 4.4. Where no funds are transferred and invested by immigrants, the effect on the income of original residents is negative. While the wage and rental rates remain constant due to the inflow of foreign capital which is assumed to maintain capital intensity, the dilution of public capital reduces the total income of the original residents. As with the closed economy case, the returns to capital accruing to original residents decline as the level of immigrant fund transfers rises. Because the returns to labour increase more rapidly than the returns to capital fall, the net effect on the income of original residents is positive. Fund transfers of less than \$20,000 per immigrant are required for original residents to break even.

#### *4.4.3 Guest worker policies*

The analysis has proceeded on the basis that immigrants acquire the same rights to public property as original residents. Consequently, they become entitled to social security and the public provision of health, education and other essential services. It is clear that the reduced share of public property is the dominant cost borne by original residents as a result of immigration.

**EFFECT OF FINANCIAL IMMIGRATION ON  
THE INCOME OF ORIGINAL RESIDENTS IN  
AN OPEN ECONOMY**

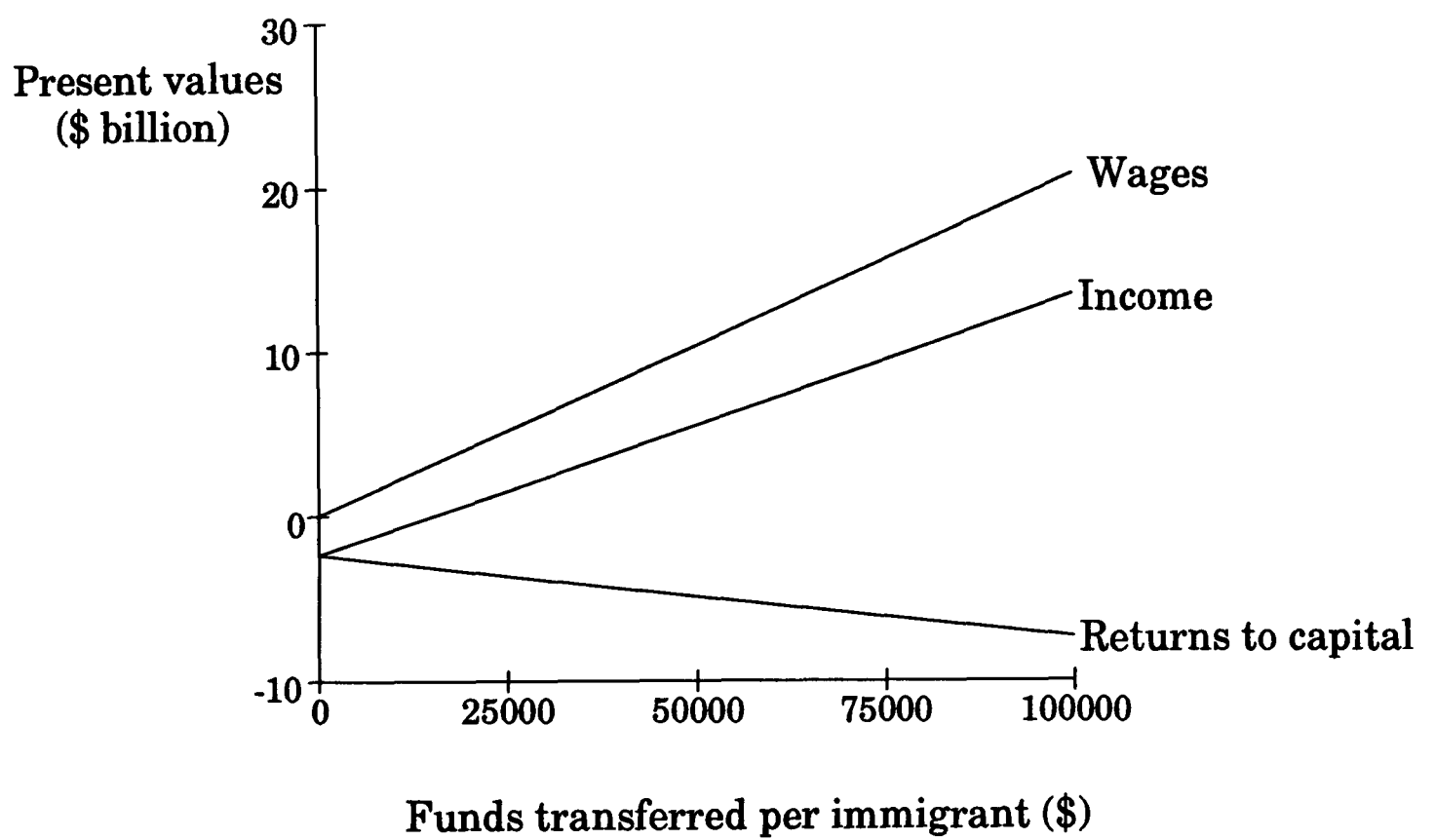


Figure 4.4

Minimising this cost is one of the rationales behind guest worker policies which have been integral to the immigration programmes of a number of European countries. While immigrants of necessity have equal rights to certain benefits such as access to basic infrastructure (for example, roads and public transport) and subsidised services from nationalised industries, their access to public property which is most susceptible to congestion - demographic capital - is strictly limited. With the cost associated with public capital dilution reduced, the benefit to original residents by virtue of the higher rental rate on capital may dominate the welfare equation.<sup>30</sup> This is reinforced by the taxes paid by guest workers which transfer income to original residents. Moreover, the depressing impact of an increase in the labour force on the real wage rate may be felt primarily by the guest workers themselves, as they tend to occupy the least skilled and lowest paid jobs in the receiving country, so that the cost to most original residents as wage earners is avoided.<sup>31</sup>

Despite the superficial attractiveness of guest worker policies in offsetting the major costs to original residents, while preserving the benefits, they have never featured prominently in the

---

<sup>30</sup> The net international investment position will again play a part in the welfare equation. The terms of trade benefit to original residents as a result of the change in the ratio of capital to labour in the economy may be undermined or reversed if foreign residents capture a significant portion of the returns to capital.

<sup>31</sup> This is a version of the argument that the labour supplied by guest workers is complementary to domestic labour, which will be raised later. There is also a distributional issue here; although the depressing effect of immigration on wages will be felt disproportionately by the guest workers themselves, inevitably it will be felt also by original residents in low socioeconomic groups who compete with the guest workers for employment. A guest worker policy is thus likely to exacerbate the income disparities in the receiving country. This point will be taken up shortly with respect to immigration generally.

Australian immigration programme. One drawback of guest worker schemes is that often the guest workers will overstay their contractual period and settle permanently in the receiving country, which is the reason for the large Turkish community in Germany. It is possible that this problem could be alleviated by financial incentives for guest worker to return after the entry permit expires, such as social security payments remitted to the country of origin.<sup>32</sup>

A guest worker policy also seems inappropriate where the immigrants bring to the receiving country substantial skills or financial assets. More fundamentally, it runs contrary to the ethos which permeates Australian immigration policy that a person who is admitted should aspire to citizenship. This is based on a view that the key quality is a commitment to Australia, and that such a commitment is much more likely to be forthcoming where there is a willingness to reciprocate.<sup>33</sup> It is an intrinsically long run view of the potential for immigrants to contribute to the national good.

#### 4.4.4 *Immigration taxes*

One proposal which has attracted some academic attention is the idea of an auction of the right to immigrate, essentially a tax on immigration.<sup>34</sup> There are already schemes operating along these

---

<sup>32</sup> Simon (1989), note 12, at 311.

<sup>33</sup> This theme runs through the report of the Committee to Advise on Australia's Immigration Policies (1988), *Immigration: A Commitment to Australia* (2 vols), Australian Government Publishing Service, Canberra (the Fitzgerald Report).

<sup>34</sup> See, for example, Simon (1989), note 12, at 329-335.

lines in certain countries, such as Belize<sup>35</sup> and Tonga,<sup>36</sup> although in these cases it seems to be a passport of convenience rather than a right of residence which is sold. The auction proposal in its most basic form is a blunt policy instrument. It is a classic case of a simple market solution being advocated for a problem which requires the delicate balance of a number of economic and non-economic considerations. It is also highly unlikely in its most explicit version to be politically feasible.

Nevertheless, it is arguable that the inclusion of capital requirements in immigration selection criteria represents an implicit auction. The Business Migration Programme is the prime example.<sup>37</sup> Indeed, eligibility for any of the economic categories in the immigration programme hinges on the education, skills and financial assets of the applicant. Such an approach is inevitably discriminatory. The essence of immigration policy, at least in economic terms, is discrimination which benefits original residents.<sup>38</sup> That part of the auction proposal which appears unattractive - discrimination on the basis of wealth - occurs in any event. Ultimately, the question is whether an auction would be superior to the current points system by which selection is

---

<sup>35</sup> In 1986, the government of Belize announced a plan to offer citizenship in return for the purchase of a US\$25,000 bond purchase, half of it non-refundable: *New York Times*, 25 March 1986, at 2.

<sup>36</sup> The King of Tonga recently announced a revised scheme for the sale of passports: *Independent*, 9 March 1990.

<sup>37</sup> The resemblance between the BMP and an auction plan is brought home by proposals which would require business migrants to lock their funds into government-approved interest bearing trusts for five years. This practice has gained some currency in Western Australia, but has been rejected by the federal government on the grounds that it constitutes 'passive' investment. See Chapter 7.

<sup>38</sup> It is outside the domain of the present argument to reconcile this rationale with any international obligations that may exist.

made. One weakness of a simple auction is that by restricting the relevant considerations to wealth alone, it excludes those with as yet unrealised potential. It is a moot point, however, whether the points system generally applied to economic immigration performs much better in this respect.<sup>39</sup>

If, as has been proposed, the auction plan allowed persons without liquid assets to repay their admission fee out of future income,<sup>40</sup> it is difficult to see how this would involve any greater discrimination than already exists. Incidentally, it is also difficult to envisage how the basis on which admission is made would then differ from the current system. The decision about who was most likely to be in a position in the future to repay the admission fee would involve the same considerations. The central issue is therefore whether the imposition of an admission fee is an appropriate policy.

Once the role of discrimination in the selection of immigrants is properly understood, there is no obvious objection to the imposition of an admission fee. Immigrants receive a benefit (a windfall share of public property in the receiving country) for which they are subject to a levy. This may take the form of a lump sum or an annual tax. The amount of the charge necessary to restore the income of original residents to its pre-immigration level depends on the movement of relative factor prices as a

---

<sup>39</sup> Applicants for the Business Migration Programme are not required to satisfy the points test; the most important criterion is a successful business record, in practice demonstrated by the possession of substantial capital.

<sup>40</sup> See Simon (1989), note 12, at 333.

result of immigration, which in turn depends on additions to the stock of private capital by immigrants.

The simplest case, where immigrants do not own any private capital in the post-immigration economy, is illustrated in Figure 4.5 for a variety of admission fees.<sup>41</sup> A closed economy is assumed; to the extent that the economy is open, an inflow of foreign capital mitigates the depressing effect of capital dilution on the wage rate. A fee of about \$25,000 per immigrant would leave the income of original residents unchanged. This is equivalent to an annual tax of about \$3,000. If in addition immigrants invest their own funds and thereby increase the level of private capital in the economy, the fee or tax required to maintain the economic welfare of original residents would be reduced.

#### *4.4.5 Distributional issues*

One of the principal criticisms of immigration is that it redistributes income from labour to capital. The beneficiaries of immigration are the owners of private capital, although the size of the benefit to original residents is reduced by high levels of foreign debt and investment. Original residents who derive their income primarily from wages bear the cost of immigration. To date, the total income of original residents has been calculated as though each received a uniform wage and possessed an equal fraction of the capital stock. Although equal returns are

---

<sup>41</sup> The admission fees are assumed to add to the stock of public capital.

**EFFECT OF ADMISSION FEES ON THE  
INCOME OF ORIGINAL RESIDENTS IN A  
CLOSED ECONOMY**

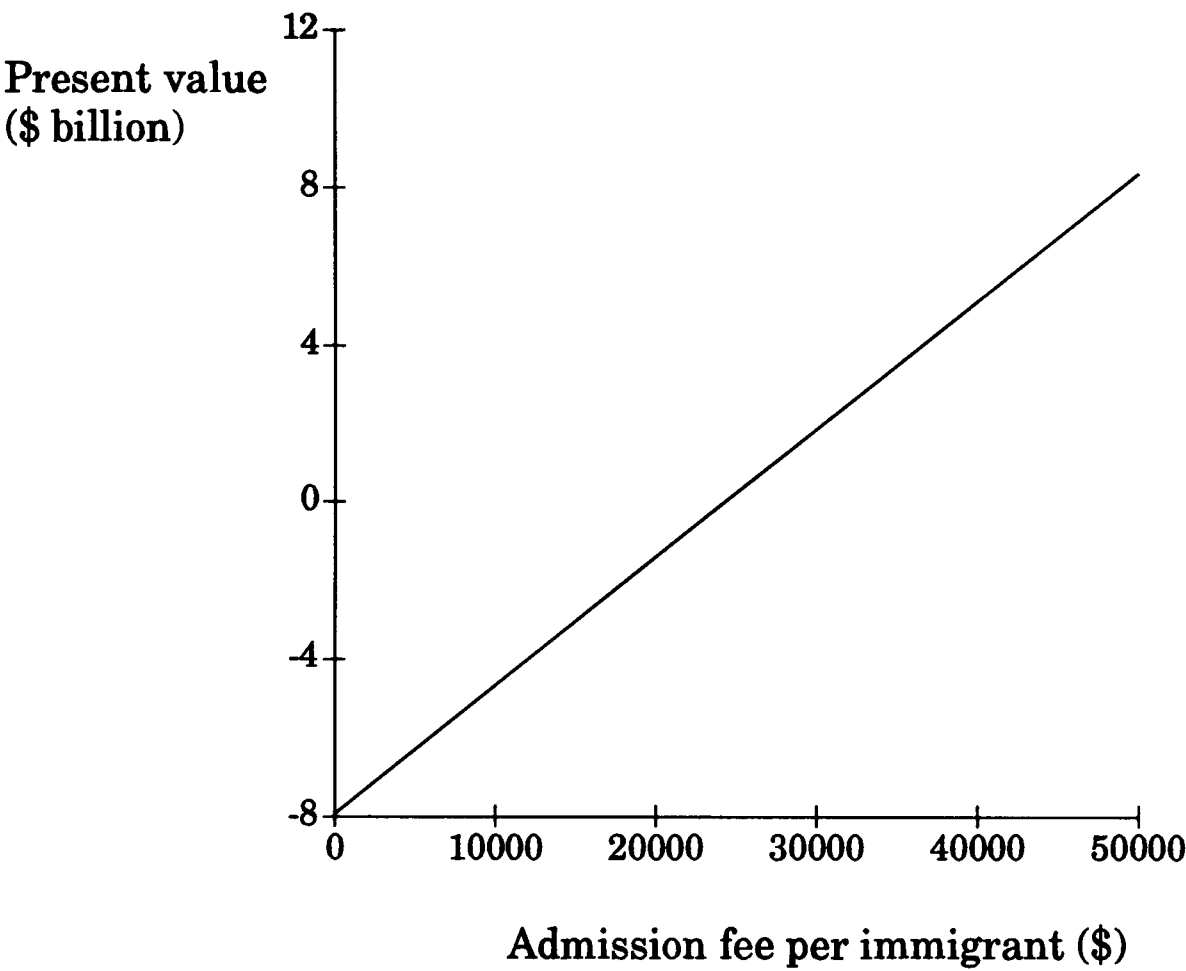


Figure 4.5

approximately true with respect to public capital, it is obvious that there is a wide distribution of both wage-earning capacity and private capital ownership throughout society. In these circumstances, the costs and benefits associated with immigration may be distributed unequally.

This point is made trenchantly by Stilwell:

Employer groups have made no secret of their preference for an increased immigration inflow: they implicitly understand the role of the reserve army of labour in a capitalist economy. In circumstances where the principal economic benefits of immigration are privatised but the costs largely socialised, the interests of business are far from synonymous with the national interest.<sup>42</sup>

This is a variation of the more general argument that population growth is favourable to capital.<sup>43</sup>

Business representative groups in Australia have consistently expressed support for a large-scale immigration programme.<sup>44</sup> No doubt this support has been predicated to some extent on the enhanced profitability resulting from lower wage costs. If this were their exclusive motivation, however, it would be difficult to explain the support which business has also demonstrated for the Business Migration Programme. Business migrants compete with local entrepreneurs in much the same way as immigrant workers

---

<sup>42</sup> F. Stilwell (1987), 'Immigration policy: sound economic foundations?', *Journal of Australian Political Economy* 21, 49-65, at 59.

<sup>43</sup> See, for example, P.A. Baran (1957), *The Political Economy of Growth*, reprinted by Pelican (1973), Harmondsworth, England, at 178-191.

<sup>44</sup> 'The Australian Immigration Program - A Business View', *Business Council Bulletin* 40, February 1988, 15-19.

compete with local labour. Profitability is reduced by competition as above-average rates of return prevailing in oligopolies are reduced and as the average rate of return on capital is itself lowered by increasing capital intensity in the economy.

It is therefore necessary to modify the standard conclusions about the distributional impact of immigration on the welfare of original residents by taking into account the additional capital in the economy. For the closed economy case, although it remains true that the economic benefits are privatised and the costs socialised for the current level of funds transferred and invested per immigrant, the extent to which this occurs is significantly reduced. For the open economy case, the distributional impact of financial immigration benefits wage earners for all levels of funds transferred.<sup>45</sup>

#### 4.5 Limitations of the model

The simple model employed in this chapter assumes that all workers receive the same wage. Immigrants might, however, compensate original residents via the payment of higher than average taxes. This will occur where the average wages earned by immigrants are higher than those earned by original residents. Also, the proportion of immigrants in the labour force may be higher than for original residents. While the share of public services to which each person is entitled is the same, the relative contribution by immigrants to the tax system which finances the

---

<sup>45</sup> Recall Figure 4.5.

services is greater. As far as the possibility of higher wages is concerned, the benefit to original residents would be further accentuated by a progressive tax system which applies a higher tax rate to higher wage earners.<sup>46</sup> Of course, this argument can be reversed if immigrants earn less than the average wage. A key factor also is the relative level of reliance on social security, as it may be that the share of benefits appropriated by immigrants is on average greater or less than that appropriated by original residents.

It is likely also that the model considerably overestimates the cost of immigration borne by original residents. The broad sources of the overestimate are twofold. First, dwellings are excluded from the capital stock used to derive the production function. This reduces the value of the private capital stock to \$332 billion, while only reducing the public capital stock by \$19 billion, so enhancing the fraction of the total capital stock which is publicly owned. Balanced against that, it is likely that a considerable fraction of the funds transferred by immigrants would be used towards the purchase of housing. Secondly, it is assumed that the entire public capital stock is subject to dilution. In reality, a significant part of the public capital stock consists of public goods, and indeed in the provision of infrastructure scale economies may exist. The dilution of public property may therefore not be as great as the simple proportion of the number of immigrants to the entire population.

---

<sup>46</sup> Usher (1977), note 9, at 1008.

One final possibility which is not recognised within the simple framework of the model is that the labour supplied by immigrants may be complementary to local labour, and thus not exert a downward pressure on the wage rate. Immigration may act to reduce a labour shortage; this is the explicit rationale for the Skilled Labour (Occupational Shares Scheme) and the Employer Nominated Scheme. Another way in which it has been suggested that immigrant labour may be complementary to local labour is a willingness to perform the most menial tasks in society.<sup>47</sup> This implies, however, the creation of a permanent underclass, apparently so far avoided in Australia.<sup>48</sup> It is also an inappropriate argument as the skills, education and financial assets of immigrants are comparable to those of original residents.<sup>49</sup>

Immigrants may introduce certain abilities which are peculiar to them and complementary to those possessed by original residents. The range of restaurants in the major Australian cities is striking evidence of this phenomenon. Recently, the advent of financial immigration has opened up new possibilities relating to the provision by immigrants of unique combinations of factors of production. Elsewhere, this has been termed the 'entrepreneurial

---

<sup>47</sup> As noted before, the labour supplied by immigrants is unlikely to be totally complementary, since some fraction of original residents are still likely to perform these tasks. This group stands to suffer most from the depressing effect on wages caused by competition with immigrants for employment.

<sup>48</sup> G. Withers (1987), 'Immigration and Australian Economic Growth', in L. Baker and P. Miller (eds), *The Economics of Immigration*, proceedings of a conference at the Australian National University, Australian Government Publishing Service, 29-55.

<sup>49</sup> Furthermore, as the procedures by which these skills are recognised are liberalised, the argument will carry even less weight.

bundle'.<sup>50</sup> Whether it is based on proprietary technology, specific skills or entrepreneurial attributes, or a combination of these factors, the capacity to finance a part or all of the project increases the likelihood that immigrants will make the necessary investment.

The essential part of the argument is that the set of investment opportunities available in the economy is expanded by the entrepreneurial bundle, because of the unique combinations of skill and capital which are formed. As a result, the rate of return on capital will not be lowered by the increased size of the total capital stock. More investment occurs, but this is not because certain projects are undertaken which offer a return below the going rate, but because there are now more profitable projects from which to choose. In this way, the influx of unique combinations of capital and labour which characterises financial immigration is complementary to the existing combinations of original residents, and therefore does not depress the wage rate.

#### 4.6 Conclusion

When immigration occurs on a large scale, it changes the relative prices of capital and labour in the economy of the receiving country. Typically, where immigration reduces the ratio of capital to labour, the wage rate will be lower relative to the rental rate on capital, causing a redistribution of income from labour to capital. In a fashion analogous to gains from trade, original residents

---

<sup>50</sup> See Section 2.3.2.

benefit from this movement in relative factor prices provided that they are the sole owners of capital in the economy. It turns out, however, that the size of the benefit is fairly negligible.

Moreover, it is readily reversed. One of the hallmarks of a modern economy is that a substantial portion of the capital stock is publicly owned. Where immigrants acquire a share of public property, the cost of the lost share incurred by original residents, together with the reduction in wages, far outweighs their gains from the higher rental rate on capital. In addition, the cost to original residents is compounded by foreign investment and debt, as a proportion of the increased returns to capital accrue to foreign residents.<sup>51</sup>

Implicit in this argument is the assumption that the stock of capital available is fixed. There are, however, a variety of ways in which investment may be induced as a result of immigration. These include the stimulus to investment arising from the specific capital requirements of immigrants, the more favourable investment climate created as a result of an expanding population, which heightens expectations and reduces risk, and the higher rental rate on capital.<sup>52</sup> The evidence suggest that unfinancial immigration boosts investment per capita, so that the ratio of capital to labour in the economy is not greatly affected. Including the direct contribution by immigrants in the form of fund transfers, the overall expansion of the capital stock may be

---

<sup>51</sup> The cost to original residents may be alleviated by the existence of public sector debt.

<sup>52</sup> See Section 2.2.1.

sufficient to compensate original residents for their lost share of public property, and perhaps increase their income.

The crucial assumption on which this argument rests is that the funds invested by immigrants result in a net increase in the capital stock. The two supporting pillars for this assumption are that an increase in domestic saving is likely to be reflected in an increase in domestic investment and that, in any event, the opportunities for domestic investment are increased by both the entrepreneurial attributes of the immigrants and an expanding population.<sup>53</sup> The impact of immigration on the economic welfare of original residents depends on the validity of this assumption. If it is not valid, and the funds transferred by immigrants simply reduce the level of foreign debt, then the cost to original residents associated with the acquisition of a share of public property by immigrants is not offset at all by an increase in the level of funds transferred.

The effect of immigration on capital ownership and the economic welfare of original residents thus depends on the relationship between immigration and capital formation. In addition, the outcome is influenced by the existence of public property and the levels of foreign and public sector debt. The contribution of this chapter is the integration of these various factors into a coherent whole.

---

<sup>53</sup> These arguments are developed more fully in Section 2.3.

## Chapter 5

### A general equilibrium analysis of immigration

*The economic impact of immigration involves a complex set of interactions which are usefully analysed within a general equilibrium framework. The recent development of computable general equilibrium (CGE) models has greatly expanded the application of this branch of economic theory to policy analysis. In this chapter, a multisectoral CGE model of the Australian economy is described, and then used to investigate the macroeconomic and structural consequences of immigration. The detailed insight into the problem which the model affords is considered to justify the present extended excursion into some fairly esoteric territory.*

### 5.1 Policy analysis using general equilibrium modelling

The hallmark of general equilibrium theory is a focus on the allocation of resources throughout an economy, an issue which lies at the heart of most policy analysis. With the advent of computable general equilibrium (CGE) models, the scope for a general equilibrium approach to policy analysis has dramatically expanded. The purpose of this section is to outline the principal characteristics of CGE models and to demonstrate their usefulness and limitations in policy analysis.

Although there is no exact definition of a CGE model, a number of distinctive features may be identified.<sup>1</sup> The first is that quantities and relative prices throughout the economy are determined simultaneously by CGE models. Interactions between different sectors of the economy are captured. This may be contrasted with partial equilibrium analysis which is confined to price and quantity changes in a single market, thereby ignoring linkages with other markets and the possibility of feedback effects.

A second characteristic of CGE models is that a market clearing condition can be applied to each of the commodity and factor markets to yield unique prices. Certain behavioural assumptions underpin the attainment of general equilibrium. In their demand for inputs and supply of outputs, producers are assumed to minimise costs and maximise profits subject to a technology

---

<sup>1</sup> L. Bergman (1990), 'The Development of Computable General Equilibrium Modelling', in L. Bergman, D. Jorgenson and E. Zalai (eds), *General Equilibrium Modelling and Economic Policy Analysis*, Basil Blackwell, Oxford, 3-30.

constraint. Similarly, households are assumed to maximise utility subject to a budget constraint. Pure general equilibrium theory rests on these assumptions, although the requirement of market-clearing in all commodity and factor markets is often relaxed in CGE models.<sup>2</sup> For this reason, it has been suggested that one criterion by which CGE models can be distinguished from each other is the extent to which they are consistent with general equilibrium theory.<sup>3</sup> It should be added that different applications of the same CGE model may also vary in this respect.<sup>4</sup>

A third feature of CGE models is that they are usually concerned with the real side of the economy, so that financial variables are excluded from consideration. Generally, the models determine relative rather than absolute price levels.

A fourth feature is that CGE models abstract from fluctuations associated with the business cycle and focus instead on the allocation of resources in the economy. Most CGE models are designed for comparative statics analysis rather than forecasting.<sup>5</sup> The essence of comparative statics analysis is illustrated in Figure 5.1. The vertical axis measures some endogenous variable, for example GDP. The point I indicates the initial (equilibrium) level

---

<sup>2</sup> In this respect, there is a distinction between models in the Johansen tradition which tend to incorporate rigidities that reflect real economies and those in the Harberger-Scarf-Shoven-Whalley tradition which emphasise consistency with general equilibrium theory. The different types of CGE models are briefly reviewed in the next section.

<sup>3</sup> Bergman (1990), note 1, at 8.

<sup>4</sup> For example, a common treatment of the labour market in short run applications is to assume real wage rigidity.

<sup>5</sup> A forecasting version of ORANI exists, although the dynamics it incorporates are quite primitive. For this reason, it is not thought to offer any advantage in the current work.

COMPARATIVE STATICS

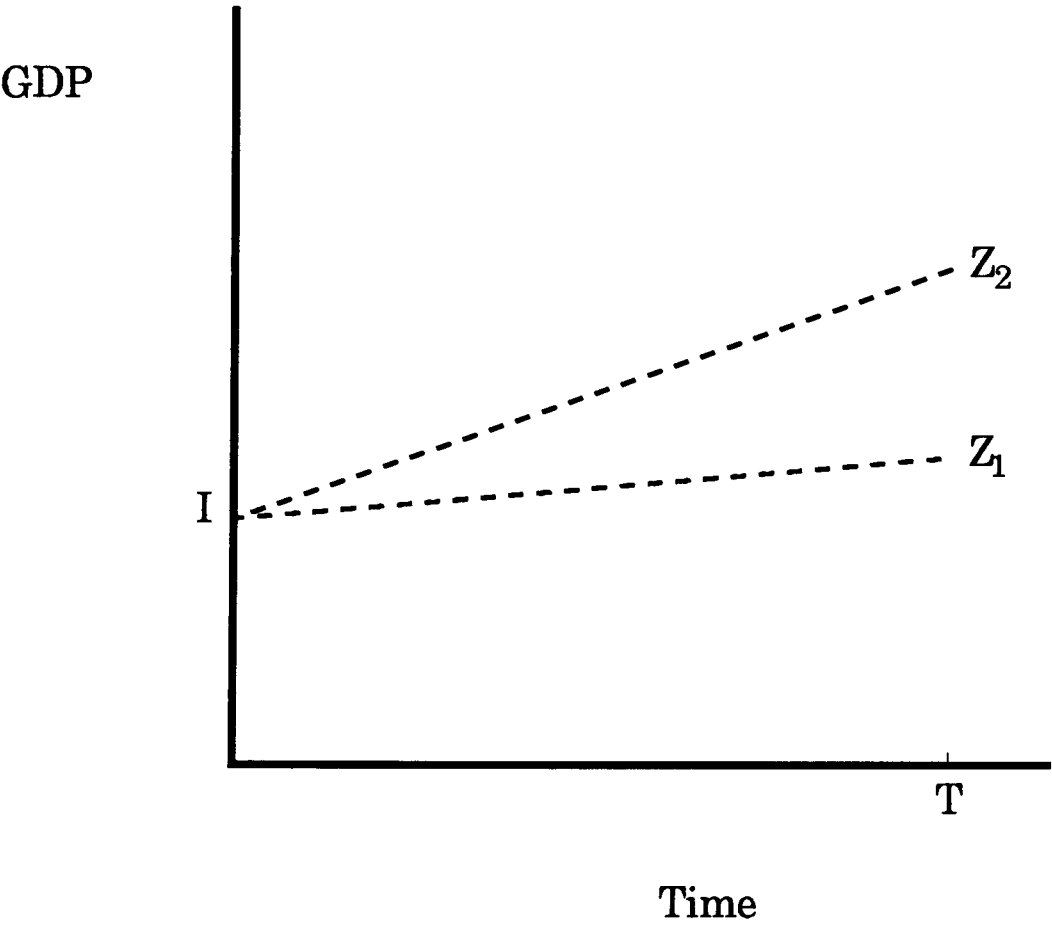


Figure 5.1

of GDP. Suppose that as a result of evolving economic conditions the level of GDP after a period of  $T$  years would be given by  $Z_1$ ; this is the control solution and also represents an equilibrium point. Suppose further that some permanent shock is applied to one or more of the exogenous variables in the base year and that the level of GDP in the solution year would be given by  $Z_2$ .

The purpose of comparative statics is to determine the difference between the two values of  $Z$  at time  $T$ . It is ideally suited to answer questions of the following sort: how would a shock to the exogenous variables (for example, due to a policy change) affect the level of GDP in the solution year, *ceteris paribus*? It is critical to appreciate the effect of the *ceteris paribus* assumption. No information is provided about the position of  $Z_2$  with respect to  $I$ . A related point is that no information is provided about the time path connecting the initial and solution year values. This information is the domain of forecasting.<sup>6</sup> In contrast, comparative static analyses project the future levels of endogenous variables above or below what they would otherwise be.

CGE models are limited by the correctness of the behavioural assumptions upon which they are based. Optimising behaviour is assumed for all economic agents. In this connection, it is important to distinguish between prescriptive and descriptive

---

<sup>6</sup> Some CGE models have been designed to incorporate a time dimension. For example, a model of the Korean economy constructed by Adelman and Robinson links a static within-period model with a dynamic intertemporal model; see I. Adelman and S. Robinson (1978), *Income Distribution Policy in Developing Countries*, Oxford University Press, Oxford.

optimality.<sup>7</sup> Essentially, the results obtained from CGE models apply to a hypothetical set of economic agents who act rationally and with peculiarly complete information. To apply these results to the real world requires a demonstration that the optimising behaviour attributed to economic agents is in fact a fair approximation to reality.

CGE models also lack the capacity to trace paths of dynamic adjustment. Nevertheless, they represent a powerful technique for investigating the economy-wide ramifications of a policy change. Their strength is that they take account of constraints in the economy, such as the availability of factors of production and macroeconomic policy targets. Within these constraints, relative price changes induce adjustments in the pattern of production and consumption in the economy, and hence the allocation of resources.

The obvious relevance of resource allocation to economy-wide planning, combined with computational advances, has led to the rapid growth of CGE modelling. The approach has proved particularly popular in development economics.<sup>8</sup> As tools for policy analysis, CGE models fill a vacuum between macroeconometric models relied on by finance ministries for short-term analysis of macroeconomic policy and the partial

---

<sup>7</sup> W.D. Macmillan (1991), 'Computable Equilibrium and the Analysis of Spatial Economies', paper presented to the Annual Meeting of the Association of American Geographers, Miami, April.

<sup>8</sup> For references to about 200 applications of CGE models to developing countries, see S. Devargan, J.D. Lewis and S. Robinson (1986), 'A Bibliography of Computable General Equilibrium (CGE) Models Applied to Developing Countries', Division of Agriculture and Natural Resources, University of California, Berkeley, Discussion Paper No. 400.

equilibrium approaches used by sectoral ministries for longer term analysis.<sup>9</sup>

CGE models are thus well suited to an analysis of the effect of a policy such as immigration, which impacts in a complex way on the economy of the receiving country.<sup>10</sup> In this chapter, the effect of immigration on the Australian economy is investigated using a CGE model (ORANI). This has been undertaken in the past, but it will be argued that these studies were deficient in several respects.

## 5.2 ORANI: a multisectoral model of the Australian economy

It is useful first to trace the heritage of ORANI within the evolution of CGE models. In a recent survey of the development of CGE modelling, Bergman identified four categories of models:<sup>11</sup> input-output, welfare economic, econometric and activity analytic.<sup>12</sup> The input-output approach originates from Johansen's multisectoral growth (MSG) model, which was the first CGE model.<sup>13</sup> Designed to analyse sectoral features of economic growth in Norway, and how different policies could influence growth, the MSG model has become widely used in Norwegian economic planning. Johansen clearly constructed the MSG model

---

<sup>9</sup> K. Dervis, J. de Melo and S. Robinson (1982), *General Equilibrium Models for Development Policy*, Cambridge University Press, Cambridge.

<sup>10</sup> See Chapter 1.

<sup>11</sup> Bergman (1990), note 1.

<sup>12</sup> The terminology is drawn from Macmillan (1991), note 7.

<sup>13</sup> L. Johansen (1960), *A Multi-sectoral Study of Economic Growth*, North-Holland, Amsterdam.

with its usefulness as a tool of policy analysis in mind.<sup>14</sup> For this reason the model departs in some respects from the strictures of general equilibrium theory, most notably in its treatment of the remuneration of labour and capital. Although containing only one type of labour, wage rates differ across sectors according to some exogeneously imposed wage structure. Similarly, although aggregate capital is assumed to be homogeneous and perfectly mobile, rates of return on capital are not equalised across sectors. According to Bergman:

The underlying assumption behind this formulation was that the observed intersectoral wage and profit differentials reflected persistent phenomena such as intersectoral differences with respect to composition of the labour force, working conditions, uncertainty of future prospects and degree of monopolisation, i.e. factors that would not be easily incorporated into the MSG model.<sup>15</sup>

Models belonging to the input-output school generally have one household. In contrast, welfare economic models have a number of households and are designed to address questions of income distribution and efficiency. Within this second school, however, there is a sharp divergence between models with respect to their adherence to general equilibrium theory. Models based on the approach developed by Harberger,<sup>16</sup> Scarf,<sup>17</sup> and Shoven and

---

<sup>14</sup> Johansen (1960), note 13, at 1.

<sup>15</sup> Bergman (1990), note 1, at 8.

<sup>16</sup> A.C. Harberger (1962), 'The Incidence of the Corporate Income Tax', *Journal of Political Economy* 70(3), 215-240.

<sup>17</sup> H.E. Scarf (1967), 'On the Computation of Equilibrium Prices', in W.J. Feliner (ed.), *Ten Economic Studies in the Tradition of Irving Fischer*, Wiley, New York.

Whalley<sup>18</sup> tend to be numerical extensions of theoretical general equilibrium analysis. In contrast, the development planning models referred to in the previous section, although similarly concerned with income distribution, incorporate ad hoc constraints to reflect aspects of the real world.

The implementation of both input-output and welfare economic models is based on a single observation of a general equilibrium (a 'reference equilibrium') and a set of elasticities estimated outside the model. This method suffers from the drawback that the functional forms chosen to represent preferences and technology (for which the parameters are estimated) may be too restrictive. The econometric school has improved upon this limitation by using stochastic specification models and estimating the parameters of these models by econometric means. Since this technique would allow less restrictive parameterisations of production and utility functions, and also incorporate estimates of the accuracy of model predictions, it is clearly a fruitful avenue to pursue in terms of policy analysis. Econometrically estimated production and consumption models have been constructed. To date, however, they have not been integrated into a complete general equilibrium framework.

The final school, activity analysis general equilibrium (AGE) models,<sup>19</sup> was developed in response to the deficiencies of

---

<sup>18</sup> J.B. Shoven and J. Whalley (1973), 'General Equilibrium with Taxes: A Computation Procedure and an Existence Proof', *Review of Economics Studies* 60, 475-490.

<sup>19</sup> As Bergman notes, the classification of AGE models within the broad ambit of CGE models is a matter of interpretation, at 23.

mathematical programming models. These deficiencies stemmed from a confusion between the two distinct purposes of mathematical programming: descriptive and computational.<sup>20</sup> Because of the computational advantages associated with mathematical programming, theoretical formulations of a model had to conform to particular specifications, thereby restricting its descriptive power. Arbitrarily imposed restrictions often militated against a sensible interpretation of model results. The contribution of AGE modelling was to ground the necessary restrictions in economic theory.

This gives some impression of the range of CGE models which have been developed. ORANI belongs to the input-output school of CGE models. As with the MSG model, its creators stress the policy relevance of the model as the principal design objective:

It will be clear that we, and the Impact Project, came into CGE analysis from the "muddy boots" arena, not the cloisters of Arrow-Debreu theory. Data and policy relevance have always been the imperative driving the work...<sup>21</sup>

The 'Impact Project' referred to is located at the University of Melbourne.<sup>22</sup> It was established by the federal government in 1975 to provide information about the economy-wide implications of economic, demographic and technological change. It has closely

---

<sup>20</sup> Macmillan (1991), note 7.

<sup>21</sup> A.A. Powell and T. Lawson (1990), 'A Decade of Applied General Equilibrium Modelling for Policy Work', in Bergman et al (eds), note 1, 241-290, at 261.

<sup>22</sup> The principal focus for continued development of ORANI is the Institute of Applied Economic and Social Research (IAESR), also at the University of Melbourne.

collaborated with a number of government agencies, most notably the Industries Assistance Commission (IAC).<sup>23</sup> The historical and institutional background of the Impact Project, of which ORANI is the most prominent contribution, is well summarised elsewhere.<sup>24</sup>

Because of its association with the Industries Assistance Commission, an independent statutory authority which advises the federal government on industry assistance matters, many of the applications of ORANI have dealt with industry policy, in particular protection. One of its seminal contributions to Australian public policy debate was to call into question the orthodoxy that tariffs protected domestic employment.<sup>25</sup> Such conclusions have not always met with a warm reception from the trade union movement:

One urgent and essential condition for rejuvenating Australia's manufacturing industry is the disbanding of the IAC, in its present form, and the destruction of the ORANI model.<sup>26</sup>

To balance that remark, it should be noted that the limitations of models in policy formulation are acknowledged:

They are not policy studies; nor can they, without the intervention of a policy adviser, produce policy prescriptions. Essentially, they are nothing more nor less than analytical tools designed to assist in reaching a better

---

<sup>23</sup> Now called the Industries Commission.

<sup>24</sup> Powell and Lawson (1990), note 21.

<sup>25</sup> Powell and Lawson (1990), note 21, 259-261.

<sup>26</sup> J. Halfpenny (1986), 'Union View', in Bureau of Industry Economics, *Revitalising Australian Industry - the Paths and Prospects for Long Term Growth*, Australian Government Publishing Service, Canberra, 87-99, at 89.

informed understanding of issues to which judgments must ultimately be applied.<sup>27</sup>

This is the spirit in which ORANI is used for the present investigation.

### 5.3 Structure of ORANI

#### 5.3.1 *Theoretical structure*

The equation system for ORANI is well documented.<sup>28</sup> Rather than setting out the full equation system here, a summary of ORANI will be presented. This will be sufficient to highlight the main features of the theoretical structure underpinning the model.

ORANI is a highly disaggregated model which distinguishes 112 producing activities, 114 commodity categories, ten types of labour occupations and seven types of agricultural land. The behaviour of economic agents is based on assumptions derived from standard neoclassical microeconomic theory. Essentially, these are that costs are minimised and profits and utility are

---

<sup>27</sup> Industries Assistance Commission (1987), 'A Guide to the IAC's Use of the ORANI Model', Information Paper, Australian Government Publishing Service, Canberra.

<sup>28</sup> The principal documentation is P.B. Dixon, B.R. Parmenter, J. Sutton and D.P. Vincent (1982), *ORANI: A Multisectoral Model of the Australian Economy*, North-Holland, Amsterdam (hereafter DPSV). Various modifications and additions to the model are contained in G. Codsì, M. Horridge and K. Pearson (1988), 'An Implementation of ORANI Using the GEMPACK Program TABLO', Impact Project, Computing Document No. C8-01. Further additions have been made to the model in the course of this research which will be noted subsequently.

maximised.<sup>29</sup> In addition, perfect competition is assumed so that both producers and consumers are price takers.

The economy is characterised by a series of equations which fall into one of the following categories:

- (a) Industry demands for inputs to current production;
- (b) Industry supplies of commodities;
- (c) Industry demands for investment;
- (d) Household and other final demands for commodities;
- (e) Demands for margins;
- (f) Pricing;
- (g) Market-clearing; and
- (h) Miscellaneous.

These will be considered in turn.

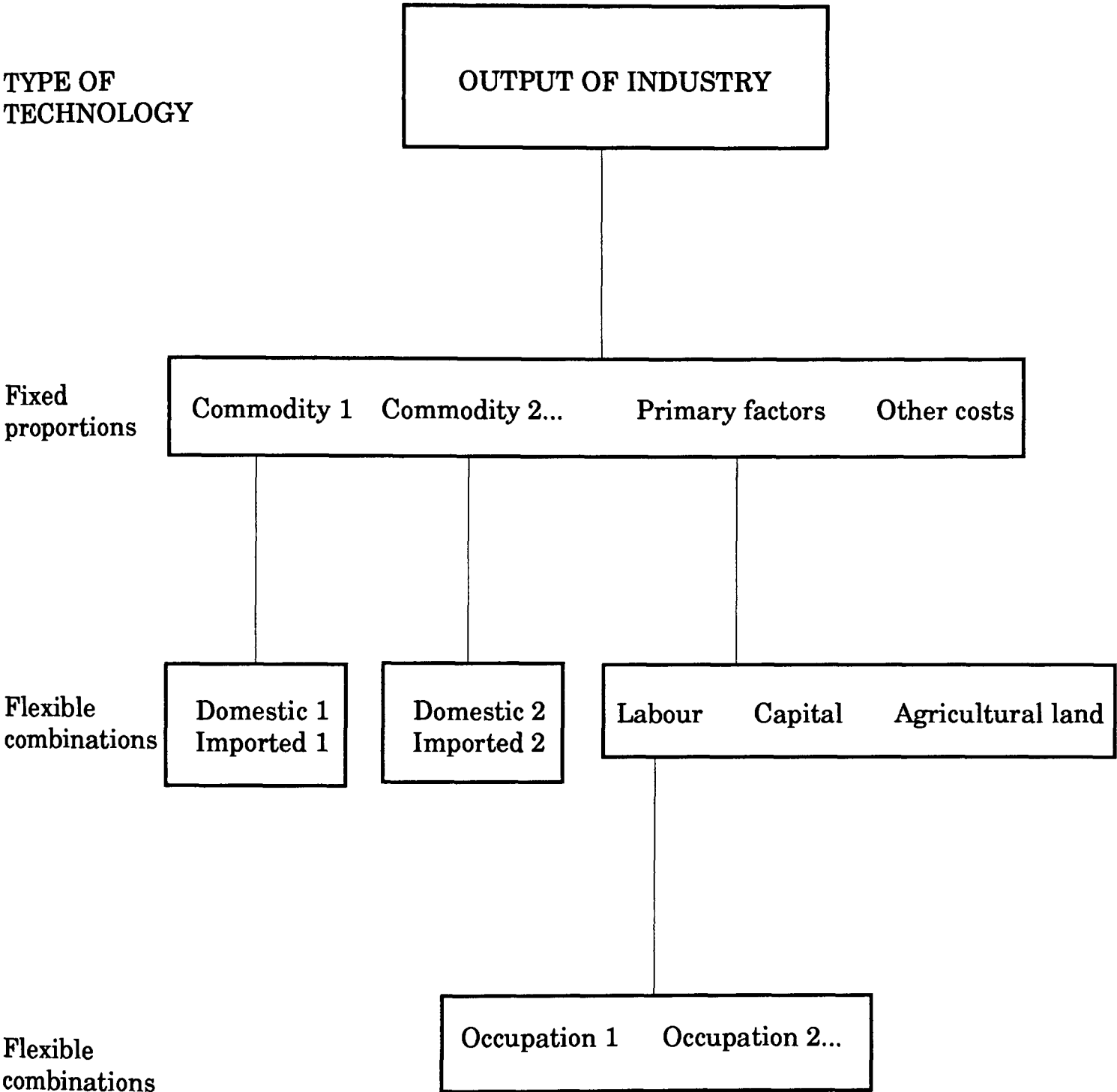
(a) Industry demands for inputs to current production

Producers are assumed to minimise the costs of generating a given level of output. They operate, however, under the constraint of an assumed production technology. This is illustrated in Figure 5.2. The production technology assumed in ORANI represents an intermediate position between two extremes. One is fixed proportions production where producers have no flexibility to adjust the input mix at any stage in the production process. The other is complete flexibility which allows producers simply to

---

<sup>29</sup> Underlying the assumption of rational economic behaviour is the assumption of perfect information.

**PRODUCTION TECHNOLOGY IN ORANI:  
CURRENT PRODUCTION**



(After Industries Assistance Commission (1987), note 28, at 19)

Figure 5.2

choose the cheapest input to the exclusion of others. The production technology assumed in ORANI allows producers a measure of flexibility in their efforts to minimise costs by adjusting the input mix to take advantage of relative price changes. Inputs to production include both commodities (intermediate inputs) and the primary factors. The flexibility at various stages of the production process is shown in Figure 5.2.<sup>30</sup>

At the most basic level, producers are able to substitute different types of labour to minimise the cost of whatever labour services may be required. One stage further along the production process, producers are able to adjust the combination of total labour services, capital and land (in the case of agricultural industries) to minimise the costs of the primary factors of production. In addition, producers may switch between domestic and foreign sources to minimise the cost of commodities for use as intermediate inputs. In the final stage of production shown in Figure 5.2, however, producers may combine commodities, total primary factors and other cost factors (for example, inventory) in fixed proportions. No substitution is therefore allowed between materials and primary factors, nor between different materials.<sup>31</sup> The assumed production technology reflects data inadequacies. Nevertheless, it is thought to capture the important substitution possibilities in the production process.

---

<sup>30</sup> Constant elasticity of substitution (CES) production functions are used for the flexible combinations shown in Figure 5.2.

<sup>31</sup> On occasion, in particular applications, this production technology can be modified. For example, the possibility of substitution between different fuels was considered in T.P. Truong (1986), 'ORANI FUEL: Incorporating Interfuel Substitution into the Standard ORANI Framework', Impact Project Preliminary Working Paper No. OP-58.

The extent of the response by producers to relative price changes of inputs depends on the relevant elasticities of substitution and the relative importance of each of the inputs in the industry concerned. These are estimated econometrically where data is available. For example, the elasticity of substitution between primary factors is estimated to be 0.5 in the short run and 1.3 in the long run.

Several additional points should be noted. Technological change may be imposed exogeneously; it may be neutral, labour-augmenting or capital-augmenting. Since the treatment of production in ORANI is predicated on the assumption of constant returns to scale, the possibility of scale economies in certain industries may only be simulated as technical change. Finally, full capacity is implicitly assumed, so that additional output can only be achieved by employing more labour at increasing unit cost. This is likely to be a reasonable assumption in long run applications of ORANI.

(b) Industry supplies of commodities

The ORANI theory recognises the possibility that an industry may produce more than one type of commodity.<sup>32</sup> Accordingly, producers may choose an output mix to maximise revenue, subject to technological constraints associated with the production process. In practice, the use of multiproduct production functions

---

<sup>32</sup> DPSV, at 90-94.

is confined to the agricultural sector.<sup>33</sup> In that sector, the same commodity is also produced by a number of industries. For all other industries, the output mix is assumed to be in fixed proportions.

(c) Industry demands for investment

ORANI investment theory consists of two separate parts. The first describes the technology for the creation of fixed capital in each industry.<sup>34</sup> This is shown in Figure 5.3. Unlike current production, capital creation does not require the input of primary or other cost factors, as these are already reflected in the commodities which are used to produce capital.<sup>35</sup> Producers of fixed capital may minimise investment cost by substituting between domestic and foreign sources of each commodity they require, but the commodities are assumed to combine in fixed proportions. A separate production function for each industry recognises that the composition of capital varies among industries. A given increase of investment will therefore have a different impact in different industries. For example, an increase in railway investment will produce a larger increase in demand for locomotives than investment in other industries.

---

<sup>33</sup> This can be modified to suit particular investigations. For example, different product mixes were modelled for a study of the textile, footwear and clothing industries: IAC (1986), *The Textile, Clothing and Footwear Industries*, vol.3 (Appendices), Report No. 386, Australian Government Publishing Service, Canberra.

<sup>34</sup> DPSV, at 94-96.

<sup>35</sup> The term 'commodity' includes both goods and services. In the present context, the most important inputs to the production of fixed capital are the services of the construction industries. These in turn depend on a range of primary factor and material inputs.

**PRODUCTION TECHNOLOGY IN ORANI:  
CAPITAL CREATION**

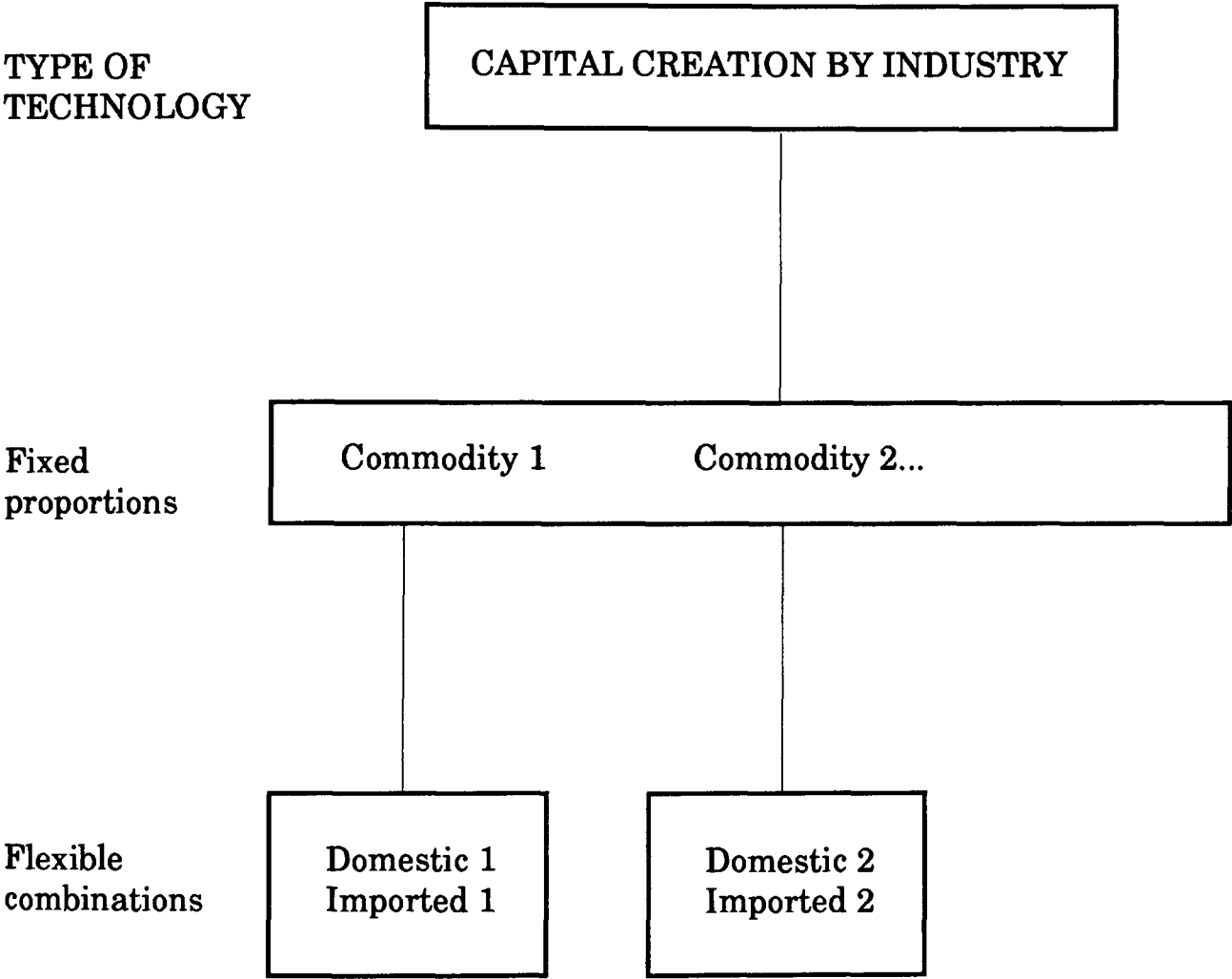


Figure 5.3

The production technology for fixed capital explains the way in which capital creation influences demand for commodities. It does not determine the level of investment in each industry. This is the domain of the second part of the ORANI investment theory.<sup>36</sup> As originally conceived, ORANI made no attempt to determine aggregate investment. Indeed, the creators of the model explicitly eschewed the task: 'Our view is that aggregate investment is best explained in a macroeconomic model which captures the effects of monetary phenomena and government macroeconomic policy.'<sup>37</sup> The model is therefore agnostic about the determinants of aggregate investment, and simply explains the allocation of investment across industries.

The driving force behind the allocation of private sector investment is the equalisation of expected rates of return.<sup>38</sup> In each industry, the expected rate of return is held to depend on the current rate of return and the level of investment. An above average rate of return will attract a relatively greater share of total investment, but this in turn will reduce the expected rate of return in that industry. In some industries, such as those dominated by government and housing, the rate of return criterion is deemed inappropriate and the level of investment is usually linked to aggregate private investment.

---

<sup>36</sup> DPSV, at 118-122.

<sup>37</sup> DPSV, at 118.

<sup>38</sup> In the implementation of the investment equations, the assumption is made that investors plan to expand capacity to the point where the expected, risk-adjusted net rate of return equals the safe bond rate.

The remarks made in connection with the neoclassical theory of international capital movements are to some extent applicable to this theory of domestic capital allocation. Investment is not always motivated by a simple optimisation of rates of return which leads ultimately to their equalisation across industries. Persistent differentials are often observed across and indeed within industries. One of the principal objectives of businesses is to erect and maintain strategic barriers which allow them to earn above average rates of return. Often this will entail investment in a project which does not itself offer a superior rate of return but allows a firm to preserve an oligopolistic advantage. Furthermore, certain industries may offer below average returns but additional investment is justified by the existence of high exit barriers.

The assumption of a perfectly competitive environment which underpins the ORANI investment theory is thus deficient in certain respects. This observation could be generalised to include other aspects of the ORANI theory which rest upon the assumption of perfect competition. Nevertheless, expected rate of return is an important determinant of investment allocation in the private sector.

(d) Household and other final demands for commodities

Households are assumed to be price takers and to maximise the utility associated with the consumption of commodities, subject to a budget constraint (aggregate consumption expenditure). The pattern of consumption is determined by how demand for various commodities responds to changes in both aggregate consumption

expenditure and the relative prices of commodities. The response to a change in aggregate consumption is an expenditure elasticity. One example reflected in the data base is the decreasing proportion of expenditure allocated to necessities as total expenditure increases.<sup>39</sup> Similarly, the response to a change in relative prices is a price elasticity. Estimates for these elasticities are contained in the ORANI data base.

In making their consumption decisions, consumers are assumed to minimise their expenditure on a particular commodity by substituting between domestic and foreign sources. Following Armington, domestically produced and imported commodities are assumed to be imperfect substitutes. The extent of the response to relative price changes of domestically produced vis-a-vis imported commodities depends on the perceived or actual difference between the products.

Taste changes may be accommodated within ORANI consumption theory, but must be determined outside the model. This is useful in the context of demographic change. Although the theory only embraces one representative consumer, knowledge about household consumption patterns enables demographic change to be represented as a change in household consumption preferences.<sup>40</sup>

---

<sup>39</sup> As one would expect according to Engel's law.

<sup>40</sup> Using Household Expenditure Survey information obtained by the Australian Bureau of Statistics, the impact of different spending patterns of immigrant households on overall consumption patterns can be estimated. This can then be represented as taste changes.

One of the behavioural assumptions embodied in ORANI consumption theory is that preferences for one commodity are not directly affected by preferences for another commodity.<sup>41</sup> In reality, goods may be specific complements or substitutes. This is not a major problem, however, since the commodity groups are fairly broad.<sup>42</sup>

A second category of final demand is the demand for exports. This is assumed to respond to changes in prices denominated in foreign currencies, with the magnitude of the responses given by export demand elasticities. Where the amount of a commodity supplied by Australia is a small proportion of the world market, the price will be unaffected by a change in the volume of its exports. Where Australia has a considerable market share, however, as is the case for certain agricultural commodities, especially wool, the world price will be depressed by an expansion of export volumes.

A third category of final demand is government demand for goods and services. In the ORANI framework, the government does not directly demand primary factors. Rather it purchases from the defence industry, the public administration industry, the health industry, and so forth. These industries directly employ primary factors. There is no formal theory determining government consumption expenditure, either in aggregate or in terms of

---

<sup>41</sup> Indirectly, they are affected by the existence of a budget constraint.

<sup>42</sup> Specific substitution relationships are more important when dealing with disaggregated commodity groups. For example, in an analysis of the effect of tax changes on the South Australian wine industry, specific substitution relationships between wine, beer and spirits were analysed.

allocation. There is flexibility to specify any level and pattern which may be desired.

(e) Demands for margins

The various demands described above create indirect demands for the services which facilitate transactions between sellers and purchasers. These include transport, insurance and wholesale and retail trade. These activities account for approximately 20 per cent of GDP, so that a detailed treatment of margins is a valuable exercise.<sup>43</sup> The demands for the services provided by margins industries are generally assumed to be proportional to the direct demand for the commodity concerned.

(f) Pricing

ORANI contains several different commodity pricing systems, relating to the activities of current production, capital creation, transport, exporting and importing.<sup>44</sup> Each is derived from the competitive pricing assumption that no pure profits are made.<sup>45</sup> This implies that revenue per unit of activity is equal to cost per unit of activity. A distinction is made between the price paid by purchasers and the amount received by producers. The difference between the two prices exactly reflects sales taxes and margins

---

<sup>43</sup> These include simulation of the effects on the margins industries of structural change in other sectors of the economy, the variation in purchasers' prices across different users (for example, prior to and after transportation) and the effects of technological advances in margins industries on the rest of the economy: DPSV, at 3.

<sup>44</sup> DPSV, at 108-117.

<sup>45</sup> That is, profits not accruing to a factor of production.

costs. Similarly, the domestic currency prices of exports and imports differ from the domestic currency values by exactly the export subsidy or import tariff involved.

(g) Market-clearing

The model gains its general equilibrium character from a series of equations which ensure that demand equals supply for the primary factors of production and domestically produced commodities. The supply of labour by occupation across all industries is equal to the demand for it. Thus labour of each type is assumed to be homogeneous and mobile between industries. This does not necessarily entail an assumption of full employment. While this can be imposed exogeneously by setting the supply in each occupation of labour at full employment levels, it is equally open to fix some or all of the wage rates and allow the corresponding employment levels to be generated by the model.

In contrast to labour, capital is assumed to be specific to each industry.<sup>46</sup> This precludes the possibility that capital in one industry is deployed in another industry. Market clearing sets the supply of capital in each industry equal to the demand for it. A similar assumption is made with respect to agricultural land, although the rationale is entirely different. Because ORANI classifies the agricultural industries on a primarily regional basis, rather than by commodity, this is a natural assumption to make.

---

<sup>46</sup> This assumption has been adopted to some extent to offset the unrealistic levels of specialisation often implied by general equilibrium models including international trade: DPSV, at 118.

The market clearing requirement on which ORANI is based has attracted some criticism. It has been argued that prices are in fact not very sensitive to demand conditions. This is not necessarily indicative of markets not clearing, but may simply reflect that supply in the markets concerned is relatively elastic.<sup>47</sup>

(g) Miscellaneous

In order to facilitate a variety of applications, a number of additional equations are contained in ORANI. These include equations for aggregate exports and imports, the balance of trade, aggregate capital stock and employment. There are also a number of useful macroeconomic indices, including consumer and capital-goods price indices.

This completes the summary of the principal equations underpinning ORANI.<sup>48</sup> They are represented schematically in Table 5.1. The second key component of ORANI is the data base to which this theoretical structure is applied.

---

<sup>47</sup> A.R. Pagan and J.H. Shannon (1987), 'How Reliable are ORANI conclusions?', *Economic Record* **63**, 33-45.

<sup>48</sup> The precise functional forms selected to capture the economic linkages between economic actors are not of particular interest here.

## SCHEMATIC REPRESENTATION OF THE ORANI EQUATION SYSTEM

---

### *Commodity demand equations*

|                                          |                                |
|------------------------------------------|--------------------------------|
| Domestic demand for domestic commodities | $D = f_D(Z, C, P_D, P_M, Q_D)$ |
|------------------------------------------|--------------------------------|

|                                          |                                |
|------------------------------------------|--------------------------------|
| Domestic demand for imported commodities | $M = f_M(Z, C, P_D, P_M, Q_M)$ |
|------------------------------------------|--------------------------------|

|               |                     |
|---------------|---------------------|
| Export demand | $E = f_E(P_E, Q_E)$ |
|---------------|---------------------|

### *Factor demand equations*

|        |                                  |
|--------|----------------------------------|
| Labour | $L = f_L(Z, P_L, P_K, P_N, Q_L)$ |
|--------|----------------------------------|

|         |                                  |
|---------|----------------------------------|
| Capital | $K = f_K(Z, P_L, P_K, P_N, Q_K)$ |
|---------|----------------------------------|

|      |                                  |
|------|----------------------------------|
| Land | $N = f_N(Z, P_L, P_K, P_N, Q_N)$ |
|------|----------------------------------|

|                           |                        |
|---------------------------|------------------------|
| <i>Commodity supplies</i> | $Y = f_Y(Z, P_D, Q_Y)$ |
|---------------------------|------------------------|

### *Pricing equations*

|                                       |                                                 |
|---------------------------------------|-------------------------------------------------|
| Domestic commodities for domestic use | $V(P_D, Q_V) = W(P_D, P_M, P_L, P_K, P_N, Q_W)$ |
|---------------------------------------|-------------------------------------------------|

|         |                    |
|---------|--------------------|
| Exports | $P_D = P_E \theta$ |
|---------|--------------------|

|         |                      |
|---------|----------------------|
| Imports | $P_M = P_M^* \theta$ |
|---------|----------------------|

### *Market clearing equations*

|             |             |
|-------------|-------------|
| Commodities | $D + E = Y$ |
|-------------|-------------|

|                 |                                                  |
|-----------------|--------------------------------------------------|
| Primary factors | $\Sigma L = L^*; \Sigma K = K^*; \Sigma N = N^*$ |
|-----------------|--------------------------------------------------|

---

|                 |                                                   |
|-----------------|---------------------------------------------------|
| D               | Demand for domestically produced commodities      |
| Z               | Activity/output levels for each industry          |
| $P_D$           | Domestic prices for domestic commodities          |
| $P_M$           | Domestic prices for imports                       |
| M               | Demand for imports                                |
| E               | Demand for exports                                |
| $P_E$           | Foreign currency prices for exports               |
| $P_M^*$         | Foreign currency prices for imports               |
| L, K, N         | Demands for primary factors                       |
| $P_L, P_K, P_N$ | Prices of primary factors (wage and rental rates) |
| $\theta$        | Exchange rate (A\$/US\$)                          |
| $L^*, K^*, N^*$ | Aggregate factor employment level                 |

Table 5.1

### 5.3.2 *Data base*

The core of the ORANI data base is input-output information which records the sales and purchase patterns of different industries. Two main types of information are contained in input-output tables. The first is the distribution of industry outputs to satisfy the demand for intermediate inputs by other industries and the final demand by households, investors, government and foreign purchasers. The second is the cost structure of industries, including intermediate inputs, primary factors of production, taxes and other subsidies.

The ORANI input-output data base is constructed from the Australian Bureau of Statistics (ABS) Input-Output Tables. The details of the methodology are well documented elsewhere.<sup>49</sup> The ABS data are modified in several respects for use with ORANI. The data for agricultural industries are supplemented by information from surveys of the financial position of those industries made by the (former) Bureau of Agricultural Economics. The need for re-specification of the agricultural sector is connected with the multiproduct nature of its industries mentioned earlier. In the ABS input-tables six product groups are identified as agricultural industries. Since most production of these products actually occurs on multiproduct farms, the inputs cannot be allocated on a product by product basis. In addition, the ABS treatment fails to take into account regional variations in production technology which are important in the Australian

---

<sup>49</sup> The definitive statement is contained in DPSV, at 149-198.

context. Because of the importance of agriculture in Australia's international trade, the ORANI data base modifies the ABS treatment to avoid arbitrary cost allocations.

A second modification is that coal and crude oil production, which are treated as a single product in the ABS input-output tables, are disaggregated. This is unsuitable for ORANI as it conflates an export commodity (coal) with an import-competing commodity (crude oil). A third modification is that inventory changes which are recorded in the ABS tables are excluded on the basis that they may not reflect a typical percentage over a longer period. This raises the broader issue of the extent to which the ORANI data base drawn from historical input-output statistics can be regarded as representing an economy in equilibrium, as required by the comparative static methodology.

A related issue is the delay involved in the compilation of input-output tables. Currently, ORANI is implemented on a 1980-81 data base.<sup>50</sup> To the extent that cost, revenue and sales shares supplied by the data base have shifted in the intervening period, the ORANI results may be dated. This is, however, only likely to pose a significant problem where particular industries are being investigated, particularly where technological change has altered the production process.<sup>51</sup> For broader investigations the 1980-81 data base is still adequate because it captures the structure of the

---

<sup>50</sup> G.A. Meagher (1990), 'A Consistent 1980-81 Database for ORANI-F', *mimeo*, Institute of Applied Economic and Social Research, University of Melbourne.

<sup>51</sup> D.P. Vincent (1990), 'Applied General Equilibrium Modelling in the Australian Industries Assistance Commission: Perspectives of a Policy Analyst', in Bergman et al (1990), note 1, 291-347.

Australian economy, and most shares seem to move only slowly over time. It is therefore likely to be adequate for an investigation of the effect of immigration on the long run structure of the economy.

In addition to the input-output data, the ORANI data base contains estimates for the numerous elasticities necessary to implement the model. The more important of these are import, labour (by occupation<sup>52</sup>) and primary factor substitution elasticities, and export and household demand elasticities. Ultimately, it is these parameters which determine the ORANI results, as they dictate the shape of the relevant supply and demand curves. Since ORANI essentially determines industry prices and outputs subject to the condition that markets clear, the shape of the supply and demand curves is crucial to the nature of the response.<sup>53</sup>

For example, one of the key features of ORANI is the high values of most of the export demand elasticities.<sup>54</sup> Such values are consistent with Australia exercising no power in the world markets for the commodities concerned. One consequence of this is that a shock to the economy translates more into output rather than price changes in the export sector.<sup>55</sup> The size of the export

---

<sup>52</sup> Where occupational wage relativities remain fixed, the labour-labour substitution parameters play no part in ORANI results. This assumption is in fact made in the results reported here.

<sup>53</sup> Pagan and Shannon (1987), note 47, at 35.

<sup>54</sup> The main exceptions being wool and prepared fibres where Australia has a dominant position in the world market. See DPSV Table 29.5, at 196. The estimates are probably more suited to the long run, a point acknowledged in the study from which the estimates are derived; see Pagan and Shannon (1987), note 47, at 40.

<sup>55</sup> The magnitude of the effect depends upon assumptions made about the labour market. This involves the question of macroeconomic closure

demand elasticities has generated considerable debate,<sup>56</sup> although this has mostly been directed towards their appropriateness in the short run. High export demand elasticities imply that the world price would be essentially unaffected by a change in the volume of Australian exports. The counterpart to this is that a reduction in the price of Australian exports should have a large positive impact on volumes traded. It has been argued, however, that the existence of non-tariff barriers<sup>57</sup> would militate against such an impact. This raises the possibility of an asymmetry in the demand response associated with price changes, where the response is greater for a price rise than for a price decline.<sup>58</sup>

There is no facility for including this type of response in ORANI. The current specifications are defended on the basis that the sensitivity of results to varying export demand elasticities between two and infinity is fairly minimal.<sup>59</sup> Setting the export demand elasticities any lower would require substantial evidence that Australia was dominant in the relevant market or that trade barriers were of central importance in that instance.

---

which characterises the economic environment. It is discussed in the following sub-section.

<sup>56</sup> M.R. Cronin (1979), 'Export Demand Elasticities with Less Than Perfect Markets', *Australian Journal of Agricultural Economics* 23, 69-72; Industries Assistance Commission (1984), 'The ORANI Trade Parameters', Impact Project, General Paper No. G-58.

<sup>57</sup> The operation of the Common Agricultural Policy is a good example.

<sup>58</sup> This point is made by Pagan and Shannon (1987), note 47. This asymmetry stems from the nature of non-tariff barriers, of which quotas are the most obvious example. It is far easier to reduce export volumes than expand them. Hence a price rise may tend to reduce export volumes by more than a corresponding price fall increases them.

<sup>59</sup> P.B. Dixon (1985), 'The Sensitivity of ORANI Projections of the Short-Run Effects of Increases in Protection to Variations in the Values Adopted for Export Demand Elasticities', in K. Jungenfelt and D.C. Hague (eds), *Structural Adjustment in Developed Open Economies*, Macmillan, London.

As far as import-competing industries are concerned, the crucial parameters determining the shapes of the demand curves are the elasticities of substitution between domestically produced and imported goods and services. These parameters indicate the degree of competition between these two sources of supply. Considerable confidence in the estimates for import substitution elasticities has been expressed by the creators of ORANI.<sup>60</sup> There is, however, some evidence that the econometric studies underlying the estimates for certain industries have been mis-specified.<sup>61</sup>

The most influential parameters in determining the shapes of supply curves are the primary factor substitution parameters.<sup>62</sup> The estimation of these by industry has proved very difficult, and the practice has been to set a uniform value across the board. The distinction between long and short run applications is particularly important in the context of primary factor substitution. For long run applications, the substitution elasticities are set at approximately 1.3.<sup>63</sup>

The final major set of parameters are the household expenditure and price elasticities of demand. The role of these parameters in determining the allocation of aggregate consumption expenditure was discussed earlier.

---

<sup>60</sup> Dixon (1983), note 59.

<sup>61</sup> The evidence is reviewed in Pagan and Shannon (1987), note 47, 38-39.

<sup>62</sup> For agricultural sector, the product transformation elasticities are also important. These tend to be highest when at least one of the products includes grains: DPSV, at 191-194.

<sup>63</sup> The source of this estimate is discussed in V. Caddy (1981), 'Empirical Estimation of the Elasticity of Substitution: A Review', Impact Project, Preliminary Working Paper No. OP-09.

These are the principal parameters on which the ORANI results rest. While no effort will be made to alter the underlying data base in the context of this study, an understanding of the role played by the parameters is crucial to interpreting the results which are obtained. The weakness in some respects of the ORANI data base casts some doubt on the widespread practice of presenting results in an unequivocal fashion. Even if the estimates are derived from well-specified econometric studies, there will still be associated errors which would justify sensitivity analyses.<sup>64</sup> Although this task will not be attempted, the results which are presented in this chapter will focus on broad trends rather attaching particular significance to the magnitude of changes in specific industries.

### 5.3.3 *Solution of the model*

As described in section 5.2.1, many of the ORANI equations are nonlinear. To solve the model the equations are expressed in a linear form in terms of percentage changes in the variables.<sup>65</sup> This is a technique which was pioneered by Johansen.<sup>66</sup> The rationale for adopting a Johansen-style solution procedure is threefold.<sup>67</sup> First, it allows flexibility in setting the economic

---

<sup>64</sup> This is the central argument of Pagan and Shannon (1987), note 47.

<sup>65</sup> This procedure inevitably introduces approximation errors into the results, particularly where the changes involved are large. For the magnitude of change considered here, the linearised solution procedure should not introduce substantial error.

<sup>66</sup> Johansen (1960), note 13.

<sup>67</sup> The reasons for adopting the Johansen-style solution procedure are discussed in A.A. Powell and T. Lawson (1990), 'A Decade of Applied General Equilibrium Modelling for Policy Work', in Bergman et al (eds), note 1, 241-290, at 265-266.

environment which is crucial to policy analysis. Secondly, it avoids the need to construct tailor-made algorithms which would need to be changed whenever the model was re-specified or a new closure contemplated. Finally, the results decompose additively into effects which can be attributed to specific shocks, which assists in interpreting the results.

Once the equations are in a linear form, the model can be written as:<sup>68</sup>

$$Az = 0 \quad (5.1)$$

where  $z$  is a  $(q \times 1)$  vector of the variables expressed in percentage change terms and  $A$  is a matrix containing the coefficients from the linearised equations. The dimension of the matrix  $A$  is  $(r \times q)$  where  $r$  is the number of equations. The number of variables exceeds the number of equations so that  $(q-r)$  variables must be set exogeneously. The decision about which variables to set exogeneously (model closure) is discussed in the next sub-section. It is sufficient to note at this stage that the ability to assign variables to either list offers great operational flexibility.

When the choice of exogeneous variables is made, the model may be written as:

---

<sup>68</sup> This discussion of the solution technique is based on B.R. Parmenter and G.A. Meagher (1985), 'Policy Analysis Using a Computable General Equilibrium Model: A Review of Experience at the Impact Project', *Australian Economic Review* (Q1), 3-15.

$$A_1 z_1 + A_2 z_2 = 0 \quad (5.2)$$

where  $z_1$  and  $z_2$  are the  $(r \times 1)$  and  $((q - r) \times 1)$  vectors of endogenous and exogenous variables, and  $A_1$  and  $A_2$  are  $(r \times r)$  and  $(r \times (q - r))$  submatrices of  $A$ . The procedure is then to calculate a matrix  $E$  which represents the elasticities of the endogenous variables with respect to the exogenous variables.

For computational reasons, this is performed in an indirect way to yield  $E$ . Then it is possible to calculate the effects on the endogenous variables of shocks to the exogenous variables using:

$$z_1 = E z_2 \quad (5.3)$$

Solutions to ORANI consist of percentage changes in endogenous variables as a result of the percentage change shocks which are applied to the exogenous variables. Thus shocks can be devised which simulate the impact of a change in domestic or international economic conditions (for example, a rise in real wages or a decline in terms of trade) or a policy change (for example, alteration of the level of protection).

The operational details of implementing ORANI are well documented.<sup>69</sup> Currently, it is installed on the Oxford University mainframe. Using the software package General Equilibrium Modelling Package (GEMPACK), a variety of modifications were

---

<sup>69</sup> Codsì et al (1988), note 28.

made to the standard version of ORANI in order to conduct the present investigation.<sup>70</sup>

#### 5.3.4 *Model closure*

The selection of exogeneous variables is a prerequisite to solving ORANI. This decision is more than an arbitrary assignment of certain variables to the exogeneous category so that the number of endogeneous variables corresponds to the number of equations. Rather, it represents the construction of a particular economic environment. Details of the economic environments used to investigate the impact of immigration are given in the next section.

### 5.4 **Modelling the effect of immigration using ORANI**

#### 5.4.1 *Previous studies*

ORANI has been used on two previous occasions to investigate the long term economic consequences of immigration. The first project formed part of a study commissioned by the Committee for Economic Development of Australia (CEDA)<sup>71</sup> and prepared in conjunction with the Department of Immigration and Ethnic

---

<sup>70</sup> These included the addition of a series of equations to determine the effects of immigration on original residents (see Chapter 4) and the incorporation of a primitive consumption function relating real household consumption to GDP.

<sup>71</sup> N.R. Norman and K.F. Meikle (1985), *The Economic Effects of Immigration on Australia* (2 vols), Committee for Economic Development of Australia (CEDA). The ORANI simulations are reported in Chapter 9 of vol. 2. CEDA is an independent public policy think tank.

Affairs, as it was then called.<sup>72</sup> This was the first application of a CGE model to analyse the effect of immigration.<sup>73</sup> The second project was again part of a larger inquiry into immigration, commissioned by the federal government at a time of rising scepticism about the benefits of continuing the programme. A study was undertaken by the Centre for International Economics (CIE) for the Committee to Advise in Australia's Immigration Policies (CAAIP).<sup>74</sup>

The results which emerged from two studies were similar. Both found that in the absence of productivity improvements due to scale economies, enhanced labour force skill levels or accelerated technical change, living standards would be basically unaffected. Measured as GDP per worker, the standard of living was projected to decline slightly, while measured as GDP per head, it was projected to increase slightly.<sup>75</sup>

In their preferred projections, both studies incorporated assumed productivity improvements. In the CEDA study, the possibility of scale economies was emphasised, whereas in the CIE study the opportunity for enhancing the skill level of the labour force was

---

<sup>72</sup> The portfolio has since been extended to include local government as part of the brief.

<sup>73</sup> Earlier studies utilised simple general equilibrium models. See, for example, L. Epstein (1974), 'Some Economic Effects of Immigration: A General Equilibrium Analysis', *Canadian Journal of Economics* 7(2), 174-190.

<sup>74</sup> Centre for International Economics (1988), 'The Relationship between Immigration and Economic Performance', in Committee to Advise of Australia's Immigration Policies, *Immigration: A Commitment to Australia* (2 vols), Australian Government Publishing Service, Canberra, vol. 2.

<sup>75</sup> Similar results were also obtained in a New Zealand study using a CGE model. See J. Poot, G. Nana and B. Philpott (1988), *International Migration and the New Zealand Economy*, Victoria University Press, Wellington.

stressed.<sup>76</sup> These assumptions produced a projected increase in living standards. Because the empirical basis for these assumed productivity improvements is fairly insubstantial,<sup>77</sup> no attempt is made in the present investigation to incorporate them by way of ad hoc assumptions.

Instead, the investigation is directed towards two ends. The first is a detailed understanding of the long run structural impact of immigration, in terms of patterns of industry growth and employment trends. To date no detailed information of this sort has been available.<sup>78</sup> The CEDA and CIE studies concentrated on the macroeconomic impact of immigration. The view taken here is that structural consequences are likely to be of more importance in the long run, and in any event are better modelled by ORANI.

The second purpose is to investigate the long run significance of funds transferred by immigrants. This issue was given minimal attention in the CEDA study, which is perfectly understandable given that the level of funds transferred in the year the report was released was less than a fifth of the current level. The

---

<sup>76</sup> Although this is not acknowledged in either report, the implications of the source of productivity improvement for the welfare of original residents is potentially quite significant. If the improvement comes about because the larger labour force and domestic market allow scale economies to be reaped, then this externality will confer a benefit on the whole population. In contrast, if the improvement is based on characteristics of the immigrants such as higher skill levels, then it is likely to be rewarded in the form of higher wages, and thus represent no benefit to the original residents. See B.R. Parmenter (1989), 'On the Economics of Immigration', Institute of Applied Economic and Social Research, University of Melbourne, Working Paper No. 3/1990.

<sup>77</sup> The theoretical arguments that immigration enhances factor productivity were canvassed in Chapter 1. As yet, however, there is little empirical support for them.

<sup>78</sup> The CEDA study contains a cursory discussion of the structural consequences of immigration.

existence of fund transfers was simply noted and their possible impact on the balance of payments acknowledged, but no attempt was made to incorporate the fund transfers into the ORANI simulations which were conducted.

The CIE study explores the issue somewhat more closely. The potential significance of fund transfers is recognised:

To the extent that funds are transferred to Australia then such funds can be used to improve the foreign account position by, for example, reducing the rate of growth of foreign debt. Alternatively they could be used to support a higher level of aggregate expenditure than would otherwise be the case.<sup>79</sup>

Of the two channels of influence postulated, only the second has a real effect on the economy. For reasons which are canvassed at some length in Chapter 2, immigrant fund transfers are likely to have a real effect on the economy. In a subsequent study of the short term consequences of immigration, the CIE acknowledged the significance of investment projects initiated by immigrants:

Many immigrants would come to Australia precisely with investment opportunities in mind. Some of the funds they transfer to Australia may be used not just to cover a short term gap between earnings and current expenses but also to finance investment projects once they arrive.<sup>80</sup>

---

<sup>79</sup> CIE(1988), note 74, at 45.

<sup>80</sup> CIE (1990), 'Immigration and Economic Management: Short Term Consequences of Minor Variations in Immigration', Report to the Bureau of Immigration Research.

This is undoubtedly correct, especially in view of the rapid expansion of the Business Migration Programme.<sup>79</sup> The impact of immigrant investment spending was not considered in the CIE study of short term effects to be significant over that time period. In the long run, however, immigration can be expected to have a net effect on the level of capital formation both as immigrant skills create new capital requirements and immigrants undertake their own investment projects. This real effect may operate in addition to, or instead of, a reduction in the level of foreign debt.<sup>80</sup>

Fund transfers have become a prominent feature of recent immigration to Australia, but are not treated adequately in the literature. It is no exaggeration to observe that the current level of fund transfers is potentially as important to the economy as the additional labour force. The present work attempts an assessment of their significance within an economy-wide framework.

#### 5.4.2 *Economic environment*

The implementation of ORANI requires the selection of exogeneous variables which form a suitable economic environment. Mostly, the selection is straightforward. A list of exogeneous variables is given in Table 5.2.

---

<sup>79</sup> See Chapter 7.

<sup>80</sup> This approach may be contrasted with that adopted in B.R. Parmenter and M.W. Peter (1990), 'Australia's Medium-Run Economic Prospects, Including an Analysis of the Role of Immigration', Institute of Applied Economic and Social Research, University of Melbourne (draft). There the impact of fund transfers is solely to reduce the level of foreign debt, leaving the level of real activity in the economy unaffected.

## ECONOMIC ENVIRONMENT

---

### Principal exogeneous variables

#### *Labour markets*

Aggregate employment  
Occupational wage relativities  
Industry wage relativities

#### *Capital markets*

Industry rates of return  
Economy-wide rate of return<sup>a</sup>

#### *Macroeconomic closure*

Balance of trade  
Aggregate real investment<sup>b</sup>

#### *Miscellaneous*

Consumer price index  
Import prices  
Export volumes<sup>c</sup>  
Tariff rates  
Agricultural land  
Technical change terms  
Household preferences  
Household formation

---

(a) Scenario I only

(b) Scenario II only

(c) Volumes for major export commodities are determined endogeneously.

Table 5.2

(a) Labour markets

The key issues concerning the operation of labour markets are the degree of both aggregate and relative wage flexibility, coupled with labour force mobility. A characteristic feature of Australian labour markets is real wage rigidity, at least in the short run. If real wages are too high relative to the level of demand for labour, then unemployment is likely to increase.<sup>83</sup> Recent research has demonstrated this link between real wages and employment levels in Australia.<sup>84</sup>

There is considerable debate about the extent to which real wage rigidity reflects an institutional setting where nominal wages are centrally fixed by a compulsory arbitration system. Certainly, evidence of consumer price trends is relied upon by the Arbitration Commission to make its awards. Full or partial indexation of nominal wages to the consumer price index may in the past have prevented real wages from fully adjusting downwards to accommodate a downturn in demand for labour.<sup>85</sup> In the postwar period, wage flexibility in Australia, while fairly comparable with Britain and the United States, has been significantly less than in Japan, where market imbalance (excess

---

<sup>83</sup> R. Layard and S. Nickell (1987), 'The Labour Market', in R. Dornbusch and R. Layard (eds), *The Performance of the British Economy*, Clarendon Press, Oxford, 131-179; A. Lindbeck and D. Snower (1985), 'Explanations of Unemployment', *Oxford Review of Economic Policy* 1(2), 34-59. The explanations for unemployment are obviously complex and lie at the heart of modern macroeconomic debate. A full discussion of them is clearly beyond the scope of the present work.

<sup>84</sup> B. Russell and W.J. Tease (1988), 'Employment, Output and Real Wages', Reserve Bank of Australia, Research Discussion Paper No. 8806.

<sup>85</sup> G. Withers (1987), 'Labour', R. Maddock and I.W. McLean (eds), *The Australian Economy in the Long Run*, Cambridge, 248-288.

or shortage of labour in the relevant market) is a central criterion in wage determination.<sup>86</sup> The similarity between the Australian and the US experience, despite the sharp contrast between wage-setting practices in the two countries, suggests that Australian arbitration arrangements provide far from a complete explanation of the failure of real wages to adjust to market imbalance.

Underlying the historical performance of the labour market is the rigidity of relative wages of different groups. Relative industry earnings have been stable in the postwar period in the face of considerable changes in the pattern of industrial employment.<sup>87</sup> Wages by both industry and occupation have been unresponsive to the demand for labour measured in terms of relative unemployment and job vacancies.<sup>88</sup> Similar experiences in other countries with entirely different wage-fixing systems suggest that more fundamental forces influence relative wage determination than centralised wage-fixing systems.<sup>89</sup>

Recently, the Australian economy has been characterised by a significant degree of wage restraint. In large part this is attributable to a consensus which has been actively sought by the Australian government embracing itself, business and the trade union movement, a policy known as the Accord. One striking

---

<sup>86</sup> D. Grubb, R. Jackman and R. Layard (1983), 'Wage Rigidity and Unemployment in OECD countries', *European Economic Review* 21, 11-39.

<sup>87</sup> M. Keating (1983), 'Relative Wages and the Changing Industrial Distribution of Employment in Australia', *Economic Record* 59(167), 384-397.

<sup>88</sup> J. Freebairn and G. Withers (1977), 'The Performance of Manpower Forecasting Techniques in Australian Labour Markets', *Australian Bulletin of Labour* 4(1), 13-31.

<sup>89</sup> Withers (1987), note 85, 271-272.

achievement of this triangular consensus is a fairly widespread recognition that a decline in the rate of real wage growth is necessary to ensure an internationally competitive economy. In some respects, the nexus between wages and inflation, so steeped in the public psyche, has been weakened. Gradually, it is being replaced by a realisation that wage agreements must reflect productivity improvements. This has been accompanied by a drive to rationalise existing inefficiencies in the labour market by removing restrictive work practices. Significantly, the impetus for this change has been provided by the leadership of the apex trade union organisation, the Australian Council of Trade Unions. The continued success of this triangular consensus holds out the prospect of improved real wage flexibility.

In modelling the labour market in ORANI, the average real wage throughout the economy is generally assumed to adjust to maintain full employment<sup>90</sup> in the face of additions to the labour force due to immigration. This is the mechanism by which the aggregate demand for labour increases to absorb the additions to the labour supply caused by immigration. This corresponds to an assumption that immigration does not affect the level of unemployment.

To reflect institutional and other rigidities in the various labour markets, occupational and industrial relativities are held fixed.

---

<sup>90</sup> No attempt is made here to define full employment. Strictly, the assumption which is made is that immigration does not affect the level of unemployment in the economy, based on the evidence presented in Chapter 1. The sole implication of this assumption is that the percentage of unemployed remains constant before and after immigration.

The result of this compromise is that while the average real wage for the whole economy adjusts, relativities between occupations and industries are preserved. Occupational and industrial employment levels are assumed to adjust to accommodate the changes resulting from immigration. This is consistent with evidence that the Australian labour force is highly mobile measured in terms of job duration.<sup>91</sup> It is interesting to note that this mobility has been attributed in part to the historically high levels of immigration.<sup>92</sup>

Other assumptions about the operation of the labour markets are clearly possible. For example, a fixed real wage environment could be assumed so that the demand for aggregate labour in response to immigration. This postulates a link between immigration and unemployment which does not seem to be supported by the evidence. It may nevertheless be appropriate to particular investigations.

#### (b) Capital markets

As noted earlier, ORANI does not explicitly incorporate a time dimension. Rather, it is implicit in the nature of the adjustments which are allowed to occur under the model closure.<sup>93</sup> The distinction between long run and short run applications rests primarily on the treatment of capital accumulation.<sup>94</sup> In short run

---

<sup>91</sup> Withers (1987), note 85, at 273-274.

<sup>92</sup> See Section 1.2.1.

<sup>93</sup> It is also explicitly used in the projections used to calculate of certain of the exogenous shocks, for example, labour force growth.

<sup>94</sup> In addition, the elasticity of substitution between primary factors is higher.

applications of ORANI, the time period is deemed to be sufficient for investment decisions to be taken, but not long enough for them to come to fruition. As no additional capital is available for production, investment affects only the demand side of the economy.<sup>95</sup> Capital stocks by industry are held fixed, and the allocation of investment is determined by rates of return prevailing in each industry.

In long run applications, the roles of industry capital stocks and rates of return are typically reversed. This reflects the view that, in the long run, changes in the relative sizes of industries due to net investment will restore the established pattern of profitability across industries. Usually coupled with this treatment of domestic capital accumulation is the assumption that Australia is a small open economy in world capital markets. Accordingly, whatever foreign capital is required to finance domestic investment is available at the prevailing world interest rate. The level of domestic investment is determined by the number of domestic investment opportunities offering a rate of return above the prevailing world interest rate. According to this view, investment funds brought by immigrants to Australia do not increase the rate of domestic capital formation.

---

<sup>95</sup> While easy to formulate, this criterion may be difficult to apply in practice, as the lag between investment decision and capital formation varies across industries. The short run is frequently interpreted as one to two years. There is some evidence that the lag between investment decision and installation is about eight quarters for mining, four quarters for manufacturing and two quarters for finance. See J. Carmichael and N. Dews (1987), 'The Role and Consequences of Investment in Australian Economic Growth', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 163. This underlines the difficulty in attaching an interpretation to the ORANI short run. This difficulty is avoided in the long run where capital stocks are allowed to adjust.

In Chapter 2, the assumption that international capital flows equate domestic rates of return with the world interest rate was questioned, as it implies that domestic investment is completely independent of domestic saving.<sup>96</sup> Instead, it was argued there that an increase in domestic saving would be reflected in a higher level of domestic investment, on the basis of the observed link between the two phenomena. This was referred to as the habitat view of domestic capital formation.

Because of the substantial fund transfers which now characterise the Australian immigration programme, and thus represent an increase in the level of domestic saving, the consequences of this alternative view are explored here. It is assumed that the funds transferred by immigrants boost domestic investment and therefore increase the capital stock available to the economy in the long run.<sup>97</sup> This may be contrasted with the orthodox view according to which fund transfers merely reduce the level of foreign debt. In both approaches, domestic investment is induced by immigration because capital is relatively more scarce in the economy. The results presented in the next section indicate that sufficient investment is induced to maintain the capital intensity in the economy even where no funds are transferred.

---

<sup>96</sup> Rate of return differentials may exist even if international capital is perfectly mobile.

<sup>97</sup> It is necessary to let the economy-wide average rate of return be determined endogeneously within the model. The higher rate of investment assumed causes a lower rate of return. There are grounds for arguing that the additional investment does not in fact reduce the economy-wide rate of return (canvassed in Chapter 2), but these are not readily incorporated within the ORANI framework.

Where funds are transferred, this is assumed to boost investment on a one-for-one basis and thus increase capital intensity. Coupled with a suitable macroeconomic closure, the significance of immigrant fund transfers can be investigated.

(c) Macroeconomic closure

This version of ORANI is unable to determine a full set of macroeconomic aggregates endogeneously. Usually, either aggregate real household consumption<sup>98</sup> or the trade balance is set exogeneously. In the present study, the trade balance is generally exogeneous while real consumption is allowed to adjust to maintain external balance. Fund transfers by immigrants can then be simulated by allowing domestic absorption to expand to induce a deterioration in the trade balance equal to the amount transferred.

A similar approach was adopted to investigate the effects of the mineral boom in Australia in the 1960s.<sup>99</sup> Revenue from the export of newly discovered minerals was treated as a windfall of foreign exchange which allowed the economy to sustain a larger balance of trade deficit than would otherwise have been the case. The analogy with immigrant fund transfers is close. Indeed, the 'windfall' approach is probably even more appropriate to immigrant fund transfers, since the discovery and extraction of

---

<sup>98</sup> Or the propensity to consume out of some variable determined within the model, for example, GDP.

<sup>99</sup> P.B. Dixon, B.R. Parmenter and J. Sutton (1978), 'Some Causes of Structural Maladjustment in the Australian Economy', *Economic Papers* 57, 10-26.

minerals is not costless and requires the input of various resources.<sup>100</sup>

This approach assumes that fund transfers have a real effect on the economy of the receiving country, the lynchpin of the habitat view of capital formation. Actually, the argument here is somewhat broader because it recognises that the funds transferred by immigrants can be used for either consumption or investment. Both of these components of the additional absorption will affect the structure of the economy in the long run.

The proportion of the funds available for additional consumption in the economy depends on the investment plans of the immigrants. It is not unreasonable to suppose that the greater proportion of the funds will be used for investment purposes rather than simply diverted to current consumption. If this investment results in net increases in the domestic capital stock (the habitat view), then the structure of the economy will change in the long run. This possibility is not captured by the orthodox neoclassical approach, which predicts instead that the immigrant investment will have no real effect on the economy, but simply reduce the level of foreign debt. Within the general framework that fund transfers allow an economy to sustain a trade balance

---

<sup>100</sup> The administration of the immigration programme also involves costs, although the degree of cost recovery is increasing and the component under which the largest fund transfers are made, the Business Migration Programme, is now largely administered by the private sector. See Chapter 7.

deficit, the consequences of the habitat view of capital formation are assessed.

Government consumption is assumed to be linked to population growth, so that spending per head of population is maintained. It is possible in addition to impose changes in the pattern of expenditure via shift variables. This facility is used to simulate the impact of immigration on government spending in the major areas of health, education and social security.

The determination of aggregate real investment depends on the view of capital accumulation which is adopted. Where the orthodox view is adopted, the growth rate of investment in each industry is equal to the growth rate of industry capital stocks.<sup>101</sup> Aggregate real investment, the sum of investment by industry, is then determined within the model. In contrast, the growth in aggregate real investment is specified exogeneously where the habitat view is taken, and set to generate the increase in capital intensity derived from the model of capital accumulation in Chapter 3.

The general view adopted here is that the strength of CGE models such as ORANI is structural detail rather than information about macroeconomic outcomes. Accordingly, the emphasis with respect to macroeconomic closure is simply to postulate a plausible macroeconomic environment within which structural adjustments occur.

---

<sup>101</sup> M. Horridge (1985), 'Long-Run Closure of ORANI: First Implementation', Impact Project, Preliminary Working Paper No. OP-50.

(d) Price levels

At least one monetary variable must be included in the exogenous category. If all domestic currency prices, the exchange rate, wage rates and price indices are endogenous, then there is nothing to determine the absolute price level in the model. Typically, either the exchange rate or the consumer price index is selected as numeraire. In the simulations conducted here, the consumer price index is set exogeneously.

(e) Import prices

Foreign currency import prices are set exogeneously, on the basis that world prices are independent of Australian demand (the 'small country' assumption with respect to imports). There is no obvious tradeable commodity for which this assumption is likely to be inaccurate.

(f) Export volumes

For most commodities, export volumes are set exogeneously. Most of these are non-export commodities, while some are non-traditional exports for which ORANI is not well equipped to determine the response of volumes to relative price changes endogeneously. For the major export commodities (minerals and agricultural products), ORANI determines the level of exports.

(g) Tariff rates

The level of protection afforded to various industries is set exogeneously, and assumed to remain constant.

(h) Agricultural land

The amount of agricultural land is assumed to be constant, thereby constituting a fixed factor of production.

(k) Technological change and household preferences

ORANI does not contain any explanation of technological change or household preferences. It is therefore necessary to set these variables exogeneously. The effects of a postulated changes in these variables on the structure of the economy can be investigated. For example, the consequences of an assumed link between immigration and technological progress can be explored. The existence of a link, however, can neither be demonstrated nor refuted by ORANI.

(l) Household formation

This is a demographic variable which requires modelling outside ORANI. It is simply assumed to be proportional to population growth.

(m) Economic scenarios

Two scenarios are considered in the present investigation. In both cases, immigration is assumed to increase the level of aggregate employment in the economy. The real wage rate adjusts to maintain the fraction of the labour force which is unemployed, so that aggregate employment equals the additions to the labour force. The scenarios differ, however, in their treatment of immigrant fund transfers.

*Scenario I:* Immigrant fund transfers are assumed to have no real effect on the economy. This may happen for several reasons. Fund transfers may not actually occur, or the funds may be repatriated upon arrival. This has been alleged, for example, with respect to the Business Migration Programme.<sup>102</sup> Clearly the funds will have no significant effect on the economy if they are never transferred or remain in Australia for only a brief period.

Alternatively, this scenario may be interpreted as a necessary consequence of perfect international capital mobility. If the funds transferred are used for investment purposes by immigrants, then according to the orthodox view there is no net increase in the rate of capital formation, as this is determined by the number of investment opportunities available in the economy. Any opportunity which offers a rate of return greater than the prevailing world interest rate will be undertaken. Certainly, the number of investment opportunities will be increased as a result

---

<sup>102</sup> See Chapter 7.

of the arrival of the immigrants themselves, but not, in this scenario, as a result of the transfer of funds. The only consequence of the transfer of funds is a reduction in the level of foreign debt, which is not treated explicitly in the model.

*Scenario II:* This scenario is based on the assumption that fund transfers allow the economy to sustain a greater balance of trade deficit than would otherwise be the case. The expansion of domestic absorption (household and government consumption and investment) is accommodated by a deficit equal to the amount of funds transferred. The habitat assumption is made that the fund transfers are fully reflected in an increase in the level of domestic investment. The growth in investment is assumed to be sufficient to generate the economy-wide increase in capital intensity projected by the growth model in Chapter 3.

To accomplish this, the assumption that the level of investment is governed by the number of investment opportunities above the prevailing world interest rate is relaxed. The purpose is to capture the possibility that most funds transferred by immigrants are intended for investment purposes, rather than for immediate consumption. If, because of certain features of international capital markets or attributes of the immigrants themselves, the funds do increase the rate of capital formation in the economy, then this is likely to have some significant macroeconomic and structural implications. Quantifying these implications is the aim of the purpose of simulations based on scenario II.

This completes the summary of the economic environments in which the immigration simulations will be conducted.

#### 5.4.3 *Effect of immigration on selected exogeneous variables*

Many of the exogeneous variables listed in Table 5.2 are held constant, since there is no *a priori* reason to expect them to be affected by immigration. Certain variables will, however, clearly be affected by immigration. This is captured in shocks applied to these variables, the sizes of which are derived from information outside the model.

The consequences of an immigration programme with a net annual intake of 280,000 persons will be assessed relative to a control of zero net immigration.<sup>103</sup> This programme size is convenient because population and labour force projections from 1987 to 2030 for it and the control are contained in the CIE study referred to in the previous sub-section.<sup>104</sup>

##### (a) Population projections

Immigration has a direct impact on the size and composition (age and sex) of the population. The projections quoted here were derived using a purely demographic accounting framework, so that the possibility of economic developments influencing demographic trends was precluded. The key factors determining

---

<sup>103</sup> This corresponds to an annual intake of about 10,000 persons to cover permanent and long-term departures. A control case is necessary for the comparative statics approach used in ORANI.

<sup>104</sup> Centre for International Economics (1988), note 74.

the projection for the horizon year 2030 are the size and composition of the Australian population in the base year, changes in fertility and mortality rates over the projection period, and the age and sex composition of the immigration intake.

Several assumptions relating to the projections should be noted.

- (i) The age and sex composition of the immigration intake in each year of the projection is identical to the composition of the intake in the year immediately preceding the projection.

In that intake, immigrants were on average five years younger than the resident population. The age structure of the projections depends on whether or not this continues to be the case. This will be influenced by the relative size of the intake under various eligibility categories.

- (ii) Age-specific mortality rates will improve by one per cent per year.
- (iii) The total fertility rate will fall by 1.4 per cent for the first five years and remain at that level for the rest of the projection period.

The fertility rate is assumed to be unaffected by the level of immigration, in the absence of any respectable evidence to the contrary.

- (iv) The supply of immigrants is sufficient to satisfy the annual demand implied by the projections.

This is highly plausible in view of the existing desire to migrate to Australia. In recent years, over one million 'expressions of interest' have been registered annually in overseas posts of DILGEA.<sup>105</sup> In 1989-90, 302,000 applications to migrate were lodged, from which 118,000 visas were issued.<sup>106</sup> All indications are that the pressure for admission is likely to intensify.<sup>107</sup> The admission process is a selection from a large pool of potential immigrants. The size and composition of the immigration programme is therefore best regarded as determined solely by government policy.

One implication of this assumption is that the ethnic composition of the immigration intake is likely to become more heavily weighted towards non-European sources, as fertility rates in many European countries are below replacement levels. Moreover, any expansion of the immigration programme is likely to skew the composition more than proportionally towards non-European sources. For reasons of proximity, Asian countries have become increasingly important sources. This trend seems likely to continue.

---

<sup>105</sup> Fitzgerald Report (1988), note 74, vol. 1, at 1.

<sup>106</sup> Bureau of Immigration Research (1990), *Immigration Update*, Australian Government Publishing Service, Canberra, at 27.

<sup>107</sup> Coopers and Lybrand W.D. Scott (1988), 'Immigration Selection Mechanisms', in Fitzgerald Report, note 74.

The population projections are shown in Table 5.3. With zero net immigration the population is projected to increase by 17 per cent over the 43 year period, corresponding to an annual growth rate of 0.36 per cent.<sup>108</sup> With a net annual immigration gain of 280,000 persons, the population is projected grow at an annual rate of 1.79 per cent and reach 35 million by 2030. Relative to the control of zero net immigration, the population grows at an annual rate of 1.43 per cent.

If the intake retains the characteristics of the 1986-87 intake throughout the projection period, immigration is projected to have significant consequences for the age structure of the population in 2030. Relative to the control, the ratio of persons above working age to those of working age (age dependency ratio) will be significantly lower, while the ratio of children to those of working age (youth dependency ratio) will be slightly higher. This has important implications for participation rate in the labour force and the pattern of government spending. It should be noted, however, that a constant immigration programme with a lower age structure than the resident population only delays the ageing process, but does not prevent it. In order to postpone ageing indefinitely the immigration programme would need to continue to expand.

---

<sup>108</sup> Expressing the population projections in terms of annual growth rates assumes smooth exponential growth. Actually, a constant immigration intake will contribute proportionately less to the population over time. For example, an intake of 280,000 persons as a percentage of the population in the base year is 1.7 per cent, while in 2030 it would be 0.5 per cent.

**POPULATION PROJECTIONS: 1987-2030**


---

|                                             |          |                |
|---------------------------------------------|----------|----------------|
| <b>Annual level of net immigration</b>      | <b>0</b> | <b>280,000</b> |
| Initial population (June 1987)              | 16.26    | 16.26          |
| Population in 2030 (million)                | 18.95    | 34.94          |
| Annual growth rate (%)                      | 0.36     | 1.79           |
| Age dependency ratio <sup>a</sup> in 2030   | 44.5     | 32.1           |
| Youth dependency ratio <sup>b</sup> in 2030 | 27.1     | 28.7           |

---

Source: Centre for International Economics (1988), note 75, Table 4.2, at 34.

(a) Number of persons above working age (65 for males, 60 for females) as a fraction of the labour force.

(b) Number of children (0-14) as a fraction of the labour force.

Table 5.3

(b) Labour force projections

The size of the labour force for a given population depends on participation rates by age and sex category.<sup>109</sup> These may be combined with the population projections to yield the labour force projections shown in Table 5.4. In the control (zero net immigration), the labour force is projected to grow to 8.4 million, representing an annual growth rate of 0.24 per cent, less than the projected growth rate in the population. The size of the labour force relative to the population falls from 47 per cent in 1986 to 44 per cent in 2030. With a net annual intake of 180,000 the labour force is projected to grow at 1.8 per cent to reach 16.6 million. Since this matches the growth rate of the population, the size of the labour force relative to the population remains constant. Relative to the control, the labour force grows 1.56 per cent more quickly as a result of immigration.

Labour force projections provide a measure of the supply of labour available in an economy. The extent to which the larger labour force resulting from immigration is employed depends on the additional demand for labour it generates. If the rate of unemployment is unaffected by immigration, then the increase in the labour force is matched by an increase in aggregate employment. This is assumed to be the case on the basis of the evidence presented in Chapter 1. The labour force projections can therefore be used as the shocks to aggregate employment caused by immigration.

---

<sup>109</sup> CIE (1988), note 74, Table 4.3.

**LABOUR FORCE PROJECTIONS: 1987-2030**

---

|                                           |          |                |
|-------------------------------------------|----------|----------------|
| <b>Anual level of net<br/>immigration</b> | <b>0</b> | <b>280,000</b> |
| Labour force (million)                    | 8.39     | 16.56          |
| Annual growth rate (%)                    | 0.24     | 1.80           |
| Labour force/population                   | 0.44     | 0.47           |

---

Table 5.4

(c) Household formation

By altering the size and composition of the population, immigration influences the rate of household formation. This in turn influences the level and structure of consumer demand. There is currently no operational model of household formation for Australia.<sup>110</sup> It is therefore simply assumed that the rate of household growth is equal to the rate of population growth. On this basis, the annual rate of household formation is 1.43 per cent higher as a result of immigration.

(d) Government expenditure

The impact of immigration on the age structure of the population may have significant implications for the pattern of government spending. Over half of the total expenditure by governments at all levels in Australia is on education, health and social security, much of which is age-dependent. By slowing down the ageing of the population, immigration may shift spending towards education and away from health and social security relative to the control scenario of zero net immigration.

The resulting changes in government spending assumed here are appropriately scaled figures used in the CEDA study. Those

---

<sup>110</sup> One model in the Impact Project suite was designed to project demographic variables taking into account both economic and social factors. The intention was to interface the model with ORANI thus capturing important economic feedbacks. See D. Sams and P. Williams (1983), 'The Impact Population Projection Facility: A Non-Technical Overview', Impact Project, Working Paper No. B-22. This model provided the population, labour force and household projections on which the CEDA study was based. Unfortunately, it is no longer operational.

figures were obtained by estimating the number of recipients of government benefits in each area of expenditure and the level of benefit based on the anticipated capacity of the economy to support it.<sup>111</sup> The number of recipients in each category of government expenditure is, however, quite likely to vary because of changes in the eligibility criteria that bear little or no relation to demographic or economic developments. For this reason, the CIE study did not include the effects of immigration on the pattern of government expenditure. They are included here as it seems that the broad demographic consequences of immigration are likely to have some effect on the composition of government expenditure in the long run, even if this is obscured in the short to medium run by the exigencies of electoral politics.

(e) Household expenditure

As discussed in Chapter 2, the pattern of household expenditure is altered by immigration. Newly established households have particular requirements and spend a higher proportion of their income on housing costs (including rent and interest payments on mortgages), household furnishing and equipment, and transport (including car purchase). As immigrant households become more established, their expenditure tends to converge towards the economy-wide average.

---

<sup>111</sup> A. Tulpulé (1984), 'Effects of Alternative Migration Strategies on Government Expenditure', Committee for Economic Development of Australia, Information Paper No. IP12.

Although ORANI contains only one type of household, it is possible to represent the shift in the composition of consumption as average household preference changes. Information from the Household Expenditure Survey (HES)<sup>112</sup> may be used in conjunction with projections of household formation to derive the spending pattern of an average household for the immigration and the control scenarios. This was the methodology followed in the CEDA study. The total expenditure per immigrant household can then be scaled to equal the total expenditure per household, allowing the effects of changes in the composition of consumption to be isolated from the effects of changes in the level of consumption.<sup>113</sup> The percentage difference in spending by HES commodity group provides the change in household preferences due to immigration.

The CEDA study was based on a 1974-75 HES survey. A more recent study of the short term consequences of immigration derived percentage changes in the pattern of household expenditure using the 1988-89 HES survey.<sup>114</sup> As the investigation involved a short time period, all households formed by immigrants were assumed to display the pattern of consumption of newly arrived households in the HES data.<sup>115</sup> By 2030, however, many of the immigrant households will be well established, except those formed in the years immediately

---

<sup>112</sup> *Household Expenditure Survey, 1988-89*, ABS Catalogue No. 6528.0.

<sup>113</sup> For the details of the methodology, see Norman and Meikle (1985), note 71, at 537-541. The shocks to the household preference variables represent the changes in expenditure on each commodity group for a constant level of total expenditure.

<sup>114</sup> CIE (1990), note 90.

<sup>115</sup> The contribution of immigration to household formation was assumed to reflect the fraction of principal applicants in the total intake.

preceding 2030. For an investigation of the long term consequences of immigration it is therefore more appropriate to use the HES information relating to all immigrant households. This will be weighted to represent both newly arrived and well established immigrant households.

The required information is contained in Table 1.1. The figures for immigrant household spending are adjusted so that the average expenditure of immigrant households is the same as the economy-wide average. This shows whether the expenditure on a particular commodity group as a proportion of total expenditure is higher or lower in immigrant households. Assuming that the rate household formation caused by immigration is proportional to its contribution to population growth (1.43 per cent per annum), the effect of additional immigrant households on the pattern of consumption expenditure can then be estimated. The change in the composition of household spending caused by an annual immigration intake of 280,000 persons is shown in Table 5.5. This can be translated into shocks for the corresponding ORANI commodities.

It should be noted that the pattern of household expenditure that emerges from the HES survey depends on the ethnic composition of the immigration intake. To the extent that the ethnic mix of the intake changes over the projection period, the estimates of the shifts in household expenditure must be qualified.

## CHANGES IN THE PATTERN OF HOUSEHOLD EXPENDITURE

---

| Broad expenditure group | Change in annual growth<br>rate (%) |
|-------------------------|-------------------------------------|
| Current housing costs   | +0.04                               |
| Fuel and power          | -0.08                               |
| Food and beverages      | +0.04                               |
| Alcohol                 | -0.23                               |
| Tobacco                 | -0.08                               |
| Clothing and footwear   | +0.01                               |
| Furniture and equipment | 0.00                                |
| Household services      | -0.02                               |
| Medical and health      | -0.08                               |
| Transport               | -0.02                               |
| Recreation              | -0.01                               |
| Personal care           | -0.07                               |
| Miscellaneous           | +0.03                               |

---

Table 5.5

(f) Fund transfers

The funds transferred by immigrants to Australia are viewed as allowing the economy to run a larger deficit on the balance of trade. The amount transferred by each immigrant is assumed to remain at the 1988-89 level in real terms over the projection period. Because the trade balance can change sign, the percentage change formulation is avoided in ORANI and the absolute change in the trade balance is used instead. This has the units of millions of 1980-81 dollars at the 1980-81 exchange rate.<sup>116</sup> The average amount transferred in 1988-89 was approximately \$13,400 per immigrant (in 1980-81 dollars).

Because of real GDP growth, the level of funds transferred as a fraction of GDP will diminish over the projection period. Using the real GDP growth rate obtained in the base run where no funds are transferred (1.6 per cent), the amount transferred can be deflated each year. The total amount transferred over the period can then be expressed as an annual growth rate as with the other variables. Expressed as a fraction of GDP, the trade balance deficit is allowed to grow at an annual rate of 0.80 per cent as a result of immigrant fund transfers.

(g) Aggregate real investment

In Scenario II, this is set exogeneously to simulate the habitat view of capital formation that immigrants add directly to the net

---

<sup>116</sup> 1980-81 is the database year.

capital stock in the economy through investment projects financed by their transferred savings. The model of capital accumulation described in Chapter 3 is used to estimate the capital intensification which occurs. The relevant data are shown in Table 5.6.

Assuming that all immigrant funds add to the net capital stock, the model estimates an annual increase in the level of capital intensity in the economy of approximately one per cent. Adjusted to include dwellings, this becomes approximately 0.65 per cent.<sup>117</sup> This may be added to the labour force growth rate of 1.56 per cent to give the overall growth rate of capital in the economy of 2.24 per cent.<sup>118</sup> The annual growth in real investment required to achieve this growth in the capital stock is approximately 2.5 per cent.

#### (h) Set of shocks

The shocks which are applied to the selected exogeneous variables to simulate the impact of immigration are summarised in Table 5.7. These represent differences with respect to the control of zero net immigration as a result of immigration. Although ORANI contains no time dimension, the use of time-dependent population and labour force projections to generate the exogeneous scenarios effectively imposes a time frame on the model. Accordingly, it is possible to express the variables as annual growth rates. The

---

<sup>117</sup> See Table 4.1.

<sup>118</sup> Recall that foreign borrowing is assumed to maintain the capital intensity; fund transfers then increase it.

**DATA FOR PROJECTION OF CAPITAL FORMATION<sup>a</sup>**

---

|                                                    |               |
|----------------------------------------------------|---------------|
| Net capital stock (excluding dwellings)            | \$607 billion |
| Gross domestic product                             | \$306 billion |
| Population                                         | 16.3 million  |
| Labour force                                       | 8.4 million   |
| Labour force growth rate (due to natural increase) | 0.39%         |
| Labour force growth rate (due to immigration)      | 1.56%         |
| Net saving rate                                    | 0.05          |

---

Sources: See Chapter 3.

(a) 1988-89 prices where applicable

Table 5.6

rationale for this is to minimise any approximation errors due to the Johansen solution procedure.

#### 5.4.4 *Results*

Results for two scenarios are presented here. The direct effect of immigration was simulated using the shocks shown in Table 5.7. For both scenarios, the changes to aggregate employment, household formation, the pattern of household consumption and government spending in Table 5.7 were used. For scenario I, the balance of trade was held constant, whereas for scenario II, it was set for a deficit of 0.8 per cent of GDP. In addition, for scenario II, aggregate real investment was set exogeneously.

##### (a) Macroeconomic consequences of immigration

The results for a selection of macroeconomic variables are shown in Table 5.8. All results are expressed in annual growth rates relative to the control of zero net immigration. A number of variables listed in the table are exogeneously imposed; they appear in italics.

ORANI results may be interpreted as a simultaneous equilibrium which incorporates adjustments in response to the shocks imposed on the initial equilibrium. As noted earlier, ORANI is agnostic about the dynamics involved in this adjustment. Nevertheless, it is convenient to trace through the consequences from an arbitrary starting point. The sequential nature of the following discussion is thus purely for expository purposes.

## IMMIGRATION SHOCKS

---

| Exogeneous variable                      | Annual growth rate (%) |
|------------------------------------------|------------------------|
| Aggregate employment                     | 1.56                   |
| Household formation                      | 1.43                   |
| Government spending                      | 1.43                   |
| <i>Health</i>                            | -0.40                  |
| <i>Education</i>                         | +0.52                  |
| <i>Social security</i>                   | -0.69                  |
| Household preferences                    | HES data               |
| Balance of trade (% of GDP) <sup>a</sup> | -0.8                   |
| Aggregate real investment <sup>a</sup>   | 2.50                   |

---

(a) Scenario II only

Table 5.7

**RESULTS: MACROECONOMIC VARIABLES**


---

| <b>Variable</b>                         | <b>Annual growth rate (%)</b> |                    |
|-----------------------------------------|-------------------------------|--------------------|
|                                         | <b>Scenario I</b>             | <b>Scenario II</b> |
| Real GDP                                | 1.55                          | 1.62               |
| Real household consumption              | 1.48                          | 2.78               |
| Real government consumption             | 1.43                          | 1.43               |
| Real investment                         | 1.61                          | 2.50               |
| Export receipts                         | 1.13                          | -2.26              |
| Import payments                         | 1.05                          | 2.69               |
| Change in balance of trade <sup>a</sup> | 0.00                          | -0.80              |
| Nominal exchange rate <sup>b</sup>      | 0.22                          | -0.39              |
| Real exchange rate <sup>c</sup>         | 0.26                          | -0.43              |
| Population                              | 1.43                          | 1.43               |
| Aggregate employment                    | 1.56                          | 1.56               |
| Household formation                     | 1.43                          | 1.43               |
| Capital stock                           | 1.48                          | 2.30               |
| Real wage rate <sup>d</sup>             | -0.12                         | 0.15               |
| Consumer price index                    | 0.00                          | 0.00               |
| Imports price index                     | 0.22                          | -0.39              |
| Exports price index                     | 0.09                          | -0.17              |
| GDP deflator                            | -0.04                         | 0.04               |
| Capital goods price index               | 0.01                          | -0.05              |
| Terms of trade                          | -0.13                         | 0.22               |

---

(a) As a percentage of GDP

(b) \$A/\$US

(c) GDP deflated

(d) CPI deflated

Table 5.8

*Scenario I*

The driving force behind the expansion of the economy caused by immigration is the assumed growth of 1.56 per cent in aggregate employment.<sup>119</sup> This tends to raise the marginal product of capital and thus the demand for capital, which grows by 1.61 per cent. It turns out that the ratio of capital to labour in the economy rises slightly.<sup>120</sup>

Because of the presence of agricultural land as a fixed factor of production, however, the increase in real GDP (1.55 per cent) is not quite sufficient to match the growth in aggregate employment. The economy displays diminishing returns to the additional labour and capital generated by immigration because of the fixed supply of agricultural land. Productivity (GDP per worker) declines by 0.01 per cent.

In this scenario, because the balance of trade is unchanged, aggregate expenditure (domestic absorption) must equal aggregate income (GDP). Within that constraint, the components of domestic absorption are determined. Real investment grows at the same rate as the capital stock, slightly faster than GDP. To ensure that domestic absorption grows at the same rate as GDP, real consumption grows slightly more slowly than GDP. Government spending per capita is assumed to remain constant,

---

<sup>119</sup> The alternative assumption of fixed real wages produces a similar macroeconomic outcome (with slightly lower aggregate employment). The results are not reported here. See also Poot et al (1988), note 75, at 116-117.

<sup>120</sup> The aggregate capital stock index is rental-weighted.

although the composition is biased towards education and away from health and social security.

Despite the growth in the ratio of capital to labour in the economy, the real wage rate falls by 0.12 per cent. This reduction is necessary in order to employ the additional members of the labour force due to immigration. The lower rate is partly due to the lower productivity of the labour force caused by the fixed supply of land. As more labour and capital are combined with the same amount of land, there is a downward pressure on the productivity of both factors. As the economy-wide and industry rates of return are fixed, and the cost of capital given by the capital goods price index remains constant,<sup>121</sup> the effect is confined to the wage rate.

A second source of diminishing returns is associated with the expansion of export volumes. The world prices of some of Australia's major export commodities, especially wool, are marginally depressed by an expansion in Australian export volumes. Although the price index for exports in domestic currency increases slightly, this represents a reduction in foreign currency prices once the increase in the nominal exchange rate is taken into account. The price index for imports in domestic currency prices increases by an amount exactly equal to the appreciation in the nominal exchange rate, reflecting the

---

<sup>121</sup> The rate of return on capital is defined as the ratio of the rental rate to the cost of capital. Since the rate of return is fixed and the cost of capital does not change, the rental rate stays the same. This assumes a constant rate of depreciation, so that depreciation does not appear in the percentage change equation.

assumption that foreign currency import prices are unaffected by the level of Australian demand. While the small open economy assumption holds with respect to imports, it fails in particular cases for exports. The price of imports rises faster than the price of exports, representing in a terms of trade decline.

The need to maintain the balance of trade in the face of the terms of trade decline is the reason for the real devaluation which occurs. Australian goods become cheaper relative to foreign goods, representing an increase in international competitiveness. The real devaluation (that is, the increase in the real exchange rate) is the increase in the nominal exchange rate deflated by the GDP price index. The terms of trade decline reduces the GDP deflator relative to the consumer price index (CPI) because the weight of imports is smaller in the GDP deflator than in the CPI, and the weight of exports is greater.<sup>122</sup> Since the CPI is held constant, the GDP deflator drops slightly, making the real devaluation greater than the increase in the nominal exchange rate.

One consequence of the increase in competitiveness flowing from the real devaluation is a reduction in imports relative to GDP. Import payments increase, but not as quickly as GDP. The reason for this is again associated with relative price movements. Imports become more expensive in domestic currency, offering a cost advantage to domestic import-competing producers. Domestic producers and consumers facing a choice between

---

<sup>122</sup> B.R. Parmenter and P.D. Adams (1989), 'Economic Prospects: 1988-89 to 1994-95', *Australian Economic Review* (Q3), 5-15, at 10.

domestic and imported commodities to satisfy their requirements take advantage of the relatively cheaper Australian-made commodities. This causes a reduction in the ratio of import payments to GDP.

Despite the improved competitiveness of exports on world markets, their ratio to GDP also falls, although by less than the import ratio. This represents a general shift away from producing for export towards producing for domestic consumption. The impact of immigration on the export sector in scenario I is, however, far from uniform, and the adverse effects tend to be concentrated on agricultural commodities, where the twin constraints of the fixed supply of agricultural land and the downward sloping demand curves<sup>123</sup> conspire to reduce productivity. For minerals and a number of manufactured goods and services, growth in exports outstrips growth in GDP. The overall reduction in the export ratio reflects the large share of agricultural commodities in total exports. Further comment should await the detailed discussion of particular industries.

The general macroeconomic picture which emerges is that of a virtually neutral outcome in which real GDP growth almost matches the growth in aggregate employment. The slight degree of diminishing returns displayed are a consequence of the constraints of a fixed supply of agricultural land and low elasticities of demand for some of Australia's principal exports. The macroeconomic consequences of immigration reported for

---

<sup>123</sup> The price per unit export decreases as the volume of exports expands.

scenario I are, on the whole, fairly unspectacular. It should be noted that this conclusion applies where immigration is an exclusively population phenomenon. Then the principal direct effect of immigration is simply an expansion of the population and hence labour force.<sup>124</sup> The economy is subject to slightly increasing unit costs of production as it expands.

If one were to admit the possibility of scale economies reaped as a result of immigration-induced expansion of the economy, then the conclusions would be altered for the better. The difficulty is to quantify the scale economies which would be achieved. In the CEDA study, this was done by means of a classification of the industries into high, medium and low economy of scale industries. While the broad classification seems reasonable, and generally concords with one adopted for the New Zealand study,<sup>125</sup> the quantification of the scale economies (via the technological change variables) was acknowledged to be purely arbitrary. In the absence of respectable estimates for potential economies of scale in Australian industries, no attempt is therefore made here to incorporate them.

These observations are equally applicable to the link between technological progress and immigration. The arguments supporting the proposition that immigration increases the rate of technological progress were reviewed at some length in the introductory chapter. Again, the difficulty is quantifying the

---

<sup>124</sup> The assumptions about government spending and the structure of household expenditure have only minor effects on the macroeconomic outcomes.

<sup>125</sup> Poot et al (1988), note 75, at 88-90.

connection in a non-arbitrary fashion. Of course, it is possible to use the model in a speculative way to ask what would be the consequences if increased technological progress or scale economies were assumed. It is debatable, however, whether the results so obtained would represent anything more substantial than the assumptions themselves. To the extent that the assumptions are arbitrary, so would the results be arbitrary. For this reason, the rate of technological progress is assumed to be unaffected by immigration. Should empirical evidence be found which demonstrates a connection, this could readily be incorporated into the model. The impact of a 0.5 per cent increase in the rate of neutral technological progress, for example, would add approximately 0.5 per cent to the GDP result.

Scenario I focuses exclusively on the consequences of an expansion of the labour force due to immigration. In the next scenario, the funds transferred by immigrants are included.

### *Scenario II*

Many of the trade-related results for scenario II are opposite in sign to the scenario I results due to the balance of trade deficit which is sustained. Fund transfers are treated as a windfall of foreign exchange providing an additional source of national income.<sup>126</sup> Provided that the elasticity of demand for non-traded

---

<sup>126</sup> As mentioned earlier, the impact of such a windfall has been analysed in the context of a mineral boom. R.G. Gregory (1976), 'Some Implications of the Growth of the Mineral Sector', *Australian Journal of Agricultural Economics* 20(2), 71-91; R.H. Snape (1977), 'Effects of Mineral Development on the Economy', *Australian Journal of Agricultural Economics* 21(3), 147-156; B. Smith (1987), 'The Role of Resource Development in Australia's

goods is greater than zero, some part of this additional income is diverted towards consumption of non-traded goods.<sup>127</sup> This results in a reduction in the price of traded goods relative to non-traded goods. In principle this may manifest itself as an increase in domestic inflation (which would cause the price of non-traded goods to rise) or a decrease in the real exchange rate (which would cause the price of traded goods to fall). Since in this scenario domestic inflation is constrained by holding consumer prices constant, the relative price shift is effected via a decrease in the real exchange rate.

A higher trade deficit therefore entails a decrease in the real exchange rate (a real appreciation). This makes Australian commodities more expensive relative to foreign commodities, so that Australian exports are less competitive on world markets. While domestic currency export prices fall, foreign currency prices actually rise. This is caused by a reduction in export volumes which acts to stimulate world prices. The marginally higher export prices are not, however, sufficient to prevent a substantial fall in export receipts.

As a result of the real appreciation, foreign imports are more competitive in Australian markets relative to domestic commodities. The price index for imports in domestic currency

---

Economic Growth', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 167.

<sup>127</sup> According to Gregory (1976), note 126, at 77: 'If relative prices do not change mineral exports will result in the accumulation of foreign reserves in London and New York banks and the wealth of the community, in terms of the goods and services it consumes, will not increase.' This remark is equally applicable to immigrant fund transfers.

prices falls by an amount equal to the decrease in the nominal exchange rate (again reflecting the assumption that world prices for imports in foreign currency remain constant). The ratio of imports to GDP increases, implying a shift away from domestically produced import-competing goods. The increase of export prices relative to import prices represents a terms of trade improvement.

Compared with scenario I, the export and import-competing sectors of the economy are worse affected. These are the sectors with a direct link to international trade. Whereas in scenario I the real devaluation which occurs is beneficial to these sectors, fund transfers induce a real appreciation which reduces their competitiveness. The overall impact of financial immigration, however, depends also on the expansionary effects of the additional activity which occurs elsewhere in the economy.

The results indicate that the overall level of activity is greater than in scenario I. The capital stock grows more in scenario II, resulting in a higher ratio of capital to labour. In contrast to scenario I this is reflected in a higher real wage rate<sup>128</sup> because the diminishing returns associated with the fixed factor land are reduced by a more pronounced shift away from agriculture. In addition, the effects associated with the expansion of export volumes in scenario I are now reversed as volumes contract and unit prices for exports improve. In this scenario, the resource-

---

<sup>128</sup> The higher real wage rate encourages greater demand for capital formation, as it exceeds the rental rate on capital (which is equal to the cost of capital given by the capital goods price index since rates of return are held constant).

based character of the Australian economy effectively becomes less prominent.

As a result of the larger capital stock, GDP grows faster (1.62 per cent) than in scenario I, producing a small productivity increase (0.06 per cent). Fund transfers thus allow the economy to overcome the productivity constraints of a fixed factor, by allowing domestic absorption to exceed GDP. The most important benefit is an increase in household consumption, which is projected to grow at an annual rate of 2.78 per cent.

(b) Welfare consequences of immigration<sup>129</sup>

A selection of welfare indicators is shown in Table 5.9. As noted in the above discussion, GDP per worker declines fractionally (0.01 per cent) as a result of immigration in scenario I. While this is a negligible difference, it is important in the sense that living standards by this criterion are not significantly damaged by immigration. The main reason for this is that capital dilution does not occur. Furthermore, because of the higher participation rate of immigrants in the labour force, GDP per head of population increases by 0.12 per cent. By 2030, real GDP per head is projected to be 5.3 per cent higher compared with the zero net immigration scenario. This gain is essentially due to demographic forces rather than any direct economic benefit associated with

---

<sup>129</sup> The welfare effects of immigration on original residents is considered separately.

**RESULTS: WELFARE INDICATORS**


---

| Variable                  | Annual growth rate (%) |             |
|---------------------------|------------------------|-------------|
|                           | Scenario I             | Scenario II |
| GDP per capita            | 0.12                   | 0.19        |
| GDP per worker            | -0.01                  | 0.06        |
| Consumption per household | 0.05                   | 1.35        |
| Consumption per worker    | -0.08                  | 1.22        |
| Real wage rate            | -0.12                  | 0.15        |

---

Table 5.9

immigration.<sup>130</sup> The increase in real GDP per head of population is less than the increase in the number of workers per head of population.<sup>131</sup>

An alternative measure of welfare, consumption per worker, falls by -0.08 per cent (3.5 per cent by 2030). The population counterpart, consumption per head, increases by 0.05 per cent due to the higher participation rate (2.2 per cent by 2030). Because of the assumption that the rate of household formation is directly proportional to population growth, average household consumption is given by consumption per head. The final welfare indicator shown in Table 5.9 is real wage per worker, which is depressed by 0.12 per cent due to immigration. The long run effect of immigration is to reduce real wages by 5.3 per cent compared with zero net immigration.

These results for scenario I are similar in direction and magnitude to the results obtained in both the CEDA and the CIE studies.<sup>132</sup> The novel contribution of the present work is to investigate the significance of immigrant fund transfers. The projections in Table 5.9 indicate that real welfare gains may result from financial immigration. For scenario II, real GDP per worker is projected to grow at 0.06 per cent, resulting in a 2.6 per cent increase by 2030. Real GDP per head grows at 0.19 per cent (8.5 per cent by 2030),

---

<sup>130</sup> Recall that the favourable impact of immigration on the age structure is a temporary (albeit longlasting) phenomenon. In order to postpone the ageing process indefinitely, it would be necessary to increase the size of the annual intake in step with population growth.

<sup>131</sup> The increase in the number of workers per head of population is the labour force growth less the population growth.

<sup>132</sup> Norman and Meikle (1985), note 71, vol. 2, at 518; Centre for International Economics (1988), note 74, at 60-62.

again due to the favourable demographic impact of immigration. If the basis upon which these projections rest is accepted, then it is apparent that substantial welfare gains potentially flow from financial immigration, at least for the population as a whole.

Moreover, average household consumption is projected to increase at an annual rate of 1.35 per cent. The welfare implications of this are enormous. A key question, however, is the extent to which original residents benefit from the higher average household consumption. Are immigrant households with funds at their disposal simply boosting the average level of consumption throughout the economy? Indubitably, this must be a large part of the story, although there may be indirect benefits to original residents associated with the additional consumption. The welfare of original residents is addressed in a subsequent section. To foreshadow the approach followed there, it will be argued that the impact of immigration on the real wage rate is central to the welfare of original residents. As can be seen from Table 5.9, this is negative for scenario I, but positive for scenario II.

(c) Structural consequences of immigration: industrial activity

The discussion of the macroeconomic consequences of immigration necessarily covered the broad forces responsible for structural change. The purpose of the following discussion is to examine the structural impact of immigration more closely.

Tables 5.10 and 5.11 show the industry growth rates for scenarios I and II relative to the control of zero net immigration. Industries

are classified according to their involvement in international trade.<sup>133</sup> The classifications used are exporting (E), export-related (ER), import-competing (IC) and non-trading (NT). Exporting industries are those in which exports comprise a significant part of the total output, and include the major agricultural and mineral exporters. Export-related industries are those which do not produce directly for export but sell their output primarily to export industries. An example of this includes the northern beef industry which sells most of its produce to the meat processing industry. The transport industries are also classified as export-related. Industries are characterised as import-competing where they sell in markets in which imports and domestic commodities are close substitutes and the level of import penetration is high. The final non-trading group is a residual category which includes all industries with little or no exposure to international trade.

### *Scenario I*

Table 5.10 shows industry growth rates ranked in descending order. The general conclusion to emerge is that, while no industry suffers an absolute decline in activity, there are certainly winners and losers in terms of relative growth rates. The export industries are found at both ends of the table. The mining sector is projected to experience rapid growth as a consequence of the expanded labour force. Mineral exporters benefit from the improved international competitiveness flowing from the real devaluation and lower wages, which confer a cost advantage on world

---

<sup>133</sup> This classification adopted here follows DPSV, at 300-304.

**RESULTS: INDUSTRY GROWTH RATES (SCENARIO I)**


---

| Industry                 | Trade category | Annual growth rate (%) |
|--------------------------|----------------|------------------------|
| Oil                      | NT             | 5.56                   |
| Coal                     | E              | 4.02                   |
| Services to mining       | ER             | 3.96                   |
| Iron                     | E              | 2.23                   |
| Other food products      | E              | 2.06                   |
| Construction machinery   | IC             | 2.01                   |
| Defence                  | NT             | 2.01                   |
| Man-made fibres, yarns   | IC             | 1.99                   |
| Other basic metals       | E              | 1.98                   |
| Other metallic minerals  | E              | 1.97                   |
| Northern beef            | ER             | 1.90                   |
| Cotton, silk, flax       | IC             | 1.82                   |
| Motor vehicles and parts | IC             | 1.81                   |
| Other farming exports    | ER             | 1.78                   |
| Rail transport           | ER             | 1.77                   |
| Rubber products          | IC             | 1.73                   |
| Footwear                 | IC             | 1.72                   |
| Locomotives              | ER             | 1.70                   |
| Other chemical products  | IC             | 1.65                   |
| Electrical machinery     | IC             | 1.65                   |
| Electronic equipment     | IC             | 1.64                   |
| Forestry                 | NT             | 1.64                   |
| Clay products            | IC             | 1.63                   |
| Textile finishing        | IC             | 1.63                   |
| Residential building     | NT             | 1.62                   |
| Other metal products     | IC             | 1.61                   |
| Ready mixed concrete     | NT             | 1.59                   |
| Concrete products        | NT             | 1.59                   |
| Structural metal         | IC             | 1.59                   |
| Textile floor overlays   | IC             | 1.59                   |
| Joinery, wood products   | IC             | 1.59                   |
| Other alcoholic drinks   | IC             | 1.59                   |
| Plywood etc.             | IC             | 1.58                   |
| Non-metallic minerals    | IC             | 1.58                   |
| Cement                   | NT             | 1.58                   |
| Other construction       | NT             | 1.58                   |
| Other machinery          | IC             | 1.58                   |
| Other repairs            | NT             | 1.57                   |
| Ownership of dwellings   | NT             | 1.57                   |
| Industrial chemicals     | IC             | 1.57                   |
| Paints, varnishes        | NT             | 1.57                   |
| Furniture                | IC             | 1.57                   |
| Wool yarns               | IC             | 1.57                   |

|                         |       |      |
|-------------------------|-------|------|
| Other business services | NT    | 1.56 |
| Finance, life insurance | NT    | 1.56 |
| Electricity             | NT    | 1.55 |
| Restaurants, hotels     | NT    | 1.54 |
| Personal services       | NT    | 1.54 |
| Signs, writing equipt   | IC    | 1.54 |
| Road transport          | ER    | 1.54 |
| Banking                 | NT    | 1.54 |
| Sheet metal products    | IC    | 1.53 |
| Mechanical repairs      | NT    | 1.52 |
| Plastic products        | IC    | 1.52 |
| Water, sewerage         | NT    | 1.52 |
| Insurance services      | NT    | 1.52 |
| Social security         | NT    | 1.52 |
| Education               | NT    | 1.52 |
| Other textile products  | IC    | 1.52 |
| Knitting mills          | IC    | 1.52 |
| Margarine etc.          | IC    | 1.51 |
| Clothing                | IC    | 1.51 |
| Communication           | NT    | 1.51 |
| Entertainment           | NT    | 1.51 |
| Newspapers, books       | IC    | 1.50 |
| Investment services     | NT    | 1.50 |
| Gas                     | NT    | 1.49 |
| Household appliances    | IC    | 1.49 |
| Glass                   | IC    | 1.48 |
| Retail trade            | NT    | 1.48 |
| Commercial printing     | IC    | 1.48 |
| Soft drinks, cordials   | NT    | 1.47 |
| Bread, cakes            | NT    | 1.47 |
| Pulp, paper             | IC    | 1.47 |
| Wholesale trade         | NT    | 1.46 |
| Confectionery           | IC    | 1.46 |
| Tobacco products        | IC    | 1.45 |
| Basic iron and steel    | E     | 1.45 |
| Other paper products    | IC    | 1.45 |
| Other minerals          | IC    | 1.45 |
| Leather products        | IC    | 1.44 |
| Fibreboard              | IC    | 1.44 |
| Sawmill products        | IC    | 1.43 |
| Cosmetics etc.          | IC    | 1.40 |
| Other manufacturing     | IC    | 1.39 |
| Other farming           | IC    | 1.38 |
| Soap and detergents     | IC    | 1.38 |
| Beer and malt           | NT    | 1.35 |
| Pharmaceuticals         | IC    | 1.35 |
| Oil and coal products   | IC    | 1.34 |
| Fruit and vegetables    | NT    | 1.34 |
| Ships and boats         | ER/IC | 1.31 |
| Poultry                 | ER    | 1.28 |
| Chemical fertilisers    | ER/IC | 1.27 |
| Milk, cattle and pigs   | ER    | 1.27 |
| Fishing                 | E     | 1.27 |
| Milk products           | NT    | 1.23 |
| Services to agriculture | ER    | 1.21 |
| Air transport           | IC    | 1.20 |
| Flour, cereal products  | NT    | 1.20 |
| Health                  | NT    | 1.18 |

|                        |       |      |
|------------------------|-------|------|
| Public administration  | NT    | 1.17 |
| Meat products          | E     | 1.15 |
| Agricultural machinery | IC/ER | 1.11 |
| Aircraft               | IC    | 1.09 |
| Scientific equipment   | IC    | 1.09 |
| Prepared fibres        | E     | 0.95 |
| Water transport        | ER/IC | 0.87 |
| Business expenses      | NT    | 0.75 |
| High rainfall zone     | E     | 0.70 |
| Wheat/sheep zone       | E     | 0.63 |
| Pastoral zone          | E     | 0.57 |

---

Key:    E     exporting  
          ER    export-related  
          IC    import-competing  
          NT    non-trading

Table 5.10

markets. Furthermore, world prices are basically unaffected by the expansion in export volumes due to the high demand elasticities for minerals.

As a result of the growth of the mining sector, industries which supply the sector with goods or services are also projected to prosper. A major use of transport services is facilitating the flow of exports from producers to ports of exit. Rail transport, which relies heavily on the export industries for custom (in particular, mining), grows well above the economy-wide average. This in turn generates favourable growth conditions for the locomotive industry. Construction machinery, which is used intensively in the mining sector, also benefits.<sup>134</sup> In addition, the energy industries (oil and coal) grow rapidly due to the energy intensive nature of mineral processing.

In contrast to the mining industries, the agricultural sector on the whole suffers a relative decline as a result of immigration.<sup>135</sup> This occurs despite the same favourable cost conditions arising from the real devaluation and the lower real wages. The difference is the constraint on expansion imposed by the fixed supply of agricultural land and the lower unit price for higher export volumes. The benefit conferred by the real devaluation is outweighed by the cost associated with expansion.

---

<sup>134</sup> The construction machinery industry also benefits from favourable import replacement effects flowing from the real devaluation. This gain is analysed below in the context of import-competing industries.

<sup>135</sup> The northern beef and sugar (other farming exports) industries are exceptions to trend decline projected for the agricultural sector. This indicates that on balance the benefits of increased competitiveness outweigh the constraints on expansion of a fixed supply of land and diminishing unit export prices.

The three wool-producing regions (pastoral, wheat/sheep and high rainfall zones) suffer the greatest relative decline due to the particularly adverse effects of expanding export volumes. The prepared fibres industry, which exports processed wool, is similarly affected. The high share of exports in total output of many agricultural commodities, especially wool and wheat means that the expansion of domestic consumption has little impact on these industries. This is compounded by the low price and income elasticities for basic food items, which means that the expansion in household demand for basic commodities does not match the overall increase in household consumption. So agricultural industries which supply basic food industries are unable to recoup domestically the losses incurred on the export side. The poultry industry, although able to transform its product mix to expand direct sales to household consumption, faces the same problem of low household income elasticities for its products. In any event, the fixed supply of agricultural land acts as a constraint irrespective of the fraction of the product mix allocated to exports or domestic consumption.

Other industries that sell current or capital goods primarily to the agricultural sector are likewise adversely affected. These include services to agriculture, chemical fertilisers and agricultural machinery. In addition, water transport and one of its principal supplying industries, ships and boats, suffer relative declines. The impact on road transport is approximately neutral, suggesting that the negative effects of the decline in the agricultural sector are

counterbalanced by the positive effects of the growth of the mining sector.<sup>136</sup>

The effect of immigration on import-competing industries depends in part on the advantage conferred on domestic producers over foreign competitors by the real devaluation. For each industry (and thus commodity<sup>137</sup>) the size of the advantage in turn depends on the ease of substitution between domestic and foreign commodities and the level of import penetration. Taken together these two factors represent the extent of competition in markets for particular goods and services.

A domestic producer generally gains more from a real devaluation where a high degree of competition exists in the market for its product, since a high premium is attached to cost advantages. The import-competing industries that fare best as a result of immigration are those which face a substantial import competition. These include the following industries: motor vehicles, footwear, electronic equipment, electrical machinery, and textiles (especially man-made fibres and yarns, cotton, silk and flax).<sup>138</sup>

---

<sup>136</sup> Another reason why the road transport industry holds its ground is that one of its main suppliers, the motor vehicles industry, is a major import-competing industry and benefits from the real devaluation. The road transport industry substitutes towards domestic vehicles and therefore enjoys a cost saving which stimulates growth.

<sup>137</sup> Recall that except for the multiproduct agricultural industries, all industries in ORANI produce a single product (of the same name).

<sup>138</sup> It is interesting to note that these are among the most highly protected industries. The rationale for protection in the first place was the high level of competition faced by these industries.

As well as import replacement effects, the relative growth rate of an import-competing industry depends on changes in the size of the total market it supplies. The import replacement and market size effects may run in opposite directions. For example, although the agricultural machinery industry is in a reasonably strong position to replace imports, the slow growth of the agricultural industries it supplies outweighs this benefit. In contrast, the import replacement and market size effects may reinforce each other. For example, import-competing industries which supply intermediate inputs benefit where their customers both substitute towards domestic suppliers (because of improvements in the competitiveness of the suppliers) and increase their overall input requirements (because of improvements in their own competitiveness).

Several cases are evident from the results. The high growth rates projected for industries early in the sequence of textile processing (man-made fibres and cotton, silk and flax) indicate the advantage of supplying expanding industries (for example, textile finishing); as noted earlier, this reinforces a strong import replacement effect. Perhaps a better example of the market size effect on its own is the rubber products industry, which is projected to grow well above the economy-wide average despite only a modest import replacement effect. The reason for this is the large share of the rubber products sold to the motor vehicles industry, which grows rapidly. On the back of this expansion, the rubber products industry performs well, despite no great competitive advantages when considered in isolation.

The high growth projected for the import-competing construction machinery industry involves a similar explanation, as discussed above. This time, however, it is the expansion of the export industries of the mining sector which provides the impetus for growth.

The remaining industries produce non-traded goods and commodities and embrace a substantial portion of the private sector and the entire public sector. The pattern of performance is not directly related to international trade linkages. Non-trading industries face little or no import competition and thus have little opportunity to expand production and sales via import replacement. The reduction in real wages, however, lowers the total cost of inputs which may be passed on to purchasers in the form of reduced prices.<sup>139</sup> The effect of lower prices on industrial output depends on the demand responses of the purchasing industries and households. Industries selling basic foodstuffs to households grow more slowly than the economy-wide average, due to the low price and income elasticities of demand for these items. Construction and construction-related industries experience above average growth, because of the demand for capital inputs by the mining sector, in particular, and certain capital-intensive import-competing industries such as the motor vehicle industry. The activity of the public sector (modelled as industries within the ORANI framework) is basically a function of the level of government spending. The health industry grows well

---

<sup>139</sup> Alternatively, prices may be maintained and profitability enhanced. In the ORANI theory, pure profits are excluded.

below the economy-wide average, while social security and education grow at about the average rate.

On the whole, the impact of immigration on the relative sizes of the trading and non-trading sectors in the economy is broadly neutral. For exports the benefit of the real devaluation for the mining sector is outweighed by the costs associated with expansion for the agricultural sector, so that total exports grow more slowly than GDP. Import-competing industries, however, benefit from the real devaluation, and the ratio of imports to GDP also falls. The net result is to preserve the size of the trading sector, within which the mining and manufacturing sectors increase their importance relative to the agricultural sector.

### *Scenario II*

Table 5.11 shows industries ranked according to projected growth rates for scenario II. The striking feature to emerge is the correlation of the ranking with trade classification. The top end is dominated by non-trading industries, the middle ground by import-competing industries, and the bottom end by exporting and export-related industries.

Moreover, unlike scenario I, certain industries are projected to suffer absolute declines as a result of financial immigration. These are predominantly export industries, which now face the adverse effects of a decrease in the real exchange rate induced by the balance of trade deficit. The mining industries plunge from being the highest growth sector in scenario I to become the worst

**RESULTS: INDUSTRY GROWTH RATES (SCENARIO II)**


---

| <b>Industry</b>         | <b>Trade Category</b> | <b>Annual growth rate (%)</b> |
|-------------------------|-----------------------|-------------------------------|
| Ownership of dwellings  | NT                    | 3.64                          |
| Personal services       | NT                    | 2.97                          |
| Furniture               | IC                    | 2.91                          |
| Household appliances    | IC                    | 2.83                          |
| Restaurants, hotels     | NT                    | 2.76                          |
| Textile floor overlays  | IC                    | 2.64                          |
| Other alcoholic drinks  | NT                    | 2.61                          |
| Water, sewerage         | NT                    | 2.57                          |
| Entertainment           | NT                    | 2.46                          |
| Insurance services      | NT                    | 2.42                          |
| Plywood etc.            | IC                    | 2.42                          |
| Other construction      | NT                    | 2.41                          |
| Ready mixed concrete    | NT                    | 2.39                          |
| Concrete products       | NT                    | 2.38                          |
| Residential building    | NT                    | 2.36                          |
| Joinery, wood products  | IC                    | 2.35                          |
| Retail trade            | NT                    | 2.34                          |
| Banking                 | NT                    | 2.33                          |
| Paints, varnishes       | NT                    | 2.30                          |
| Cement                  | NT                    | 2.29                          |
| Mechanical repairs      | NT                    | 2.28                          |
| Non-metallic minerals   | IC                    | 2.22                          |
| Structural metal        | IC                    | 2.22                          |
| Communication           | NT                    | 2.22                          |
| Clay products           | IC                    | 2.15                          |
| Other repairs           | NT                    | 2.15                          |
| Electronic equipment    | IC                    | 2.13                          |
| Gas                     | NT                    | 2.10                          |
| Beer and malt           | NT                    | 2.09                          |
| Defence                 | NT                    | 2.06                          |
| Finance, life insurance | NT                    | 2.06                          |
| Air transport           | IC                    | 1.99                          |
| Social security         | NT                    | 1.99                          |
| Health                  | NT                    | 1.98                          |
| Investment services     | NT                    | 1.96                          |
| Soft drinks, cordials   | NT                    | 1.93                          |
| Glass                   | IC                    | 1.93                          |
| Sheet metal products    | IC                    | 1.92                          |
| Textile finishing       | IC                    | 1.90                          |
| Wool, yarns             | IC                    | 1.90                          |
| Other metal products    | IC                    | 1.88                          |
| Other business services | NT                    | 1.86                          |
| Other minerals          | IC                    | 1.86                          |

|                          |       |       |
|--------------------------|-------|-------|
| Cosmetics etc.           | IC    | 1.85  |
| Motor vehicles and parts | IC    | 1.83  |
| Aircraft                 | IC    | 1.83  |
| Electrical machinery     | IC    | 1.81  |
| Pharmaceuticals          | IC    | 1.80  |
| Other paper products     | IC    | 1.79  |
| Education                | NT    | 1.79  |
| Confectionery            | IC    | 1.78  |
| Tobacco products         | IC    | 1.78  |
| Signs, writing equipt    | IC    | 1.76  |
| Newspapers, books        | IC    | 1.75  |
| Commercial printing      | IC    | 1.75  |
| Soap and detergents      | IC    | 1.74  |
| Fruit and vegetables     | NT    | 1.73  |
| Electricity              | NT    | 1.70  |
| Sawmill products         | IC    | 1.68  |
| Clothing                 | IC    | 1.67  |
| Other machinery          | IC    | 1.67  |
| Knitting mills           | IC    | 1.65  |
| Other textile products   | IC    | 1.61  |
| Basic iron and steel     | E     | 1.60  |
| Scientific equipment     | IC    | 1.57  |
| Bread, cakes             | NT    | 1.56  |
| Oil and coal products    | IC    | 1.54  |
| Plastic products         | IC    | 1.54  |
| Other manufacturing      | IC    | 1.53  |
| Forestry                 | NT    | 1.50  |
| Wholesale trade          | NT    | 1.45  |
| Margarine etc.           | IC    | 1.45  |
| Ships and boats          | ER/IC | 1.43  |
| Rubber products          | IC    | 1.40  |
| Pulp, paper              | IC    | 1.34  |
| Fibreboard               | IC    | 1.29  |
| Footwear                 | IC    | 1.29  |
| Public administration    | NT    | 1.28  |
| Milk products            | NT    | 1.27  |
| Locomotives              | ER    | 1.25  |
| Road transport           | ER    | 1.24  |
| Leather products         | IC    | 1.22  |
| Cotton, silk, flax       | IC    | 1.22  |
| Other farming exports    | ER    | 1.21  |
| Industrial chemicals     | IC    | 1.16  |
| Flour, cereal products   | NT    | 1.07  |
| Man-made fibres          | IC    | 1.02  |
| Other chemical products  | IC    | 1.00  |
| Milk, cattle and pigs    | ER    | 0.98  |
| Business expenses        | NT    | 0.78  |
| Poultry                  | ER    | 0.50  |
| Construction machinery   | IC    | 0.44  |
| Services to agriculture  | ER    | 0.43  |
| Rail transport           | ER    | 0.17  |
| Fishing                  | E     | 0.15  |
| Chemical fertilisers     | ER/IC | 0.03  |
| High rainfall zone       | E     | -0.05 |
| Water transport          | ER/IC | -0.22 |
| Agricultural machinery   | IC/ER | -0.24 |
| Meat products            | E     | -0.24 |
| Prepared fibres          | E     | -0.39 |

|                         |    |       |
|-------------------------|----|-------|
| Northern beef           | ER | -0.39 |
| Wheat/sheep zone        | E  | -0.51 |
| Pastoral zone           | E  | -0.52 |
| Other farming           | IC | -0.81 |
| Other basic metals      | E  | -1.15 |
| Other food products     | E  | -1.62 |
| Other metallic minerals | E  | -1.75 |
| Iron                    | E  | -3.06 |
| Services to mining      | ER | -3.32 |
| Coal                    | E  | -5.18 |
| Oil                     | NT | -5.74 |

---

Key:    E     exporting  
         ER    export-related  
         IC    import-competing  
         NT    non-trading

Table 5.11

affected sector in scenario II. The agricultural industries also experience absolute declines. The cost of labour rises causing an increase in the foreign currency prices of exports. Because of the high price elasticities of demand for exports, this causes a pronounced contraction in export volumes.<sup>140</sup> The slight increase in prices received is quite insufficient to prevent the drop in volumes causing export receipts to decline.

As in scenario I, industries relying on the mining and agricultural sectors as their main customers reflect their fortunes closely.<sup>141</sup> The transport industries suffer relative (road transport) or absolute declines (rail and water transport). The oil and coal and coal industries also suffer, reflecting the lower energy requirements of a declining mining sector.

Import-competing industries also suffer as a result of the decrease in the real exchange rate. The principal import-competing industries (including textiles, motor vehicles and footwear) now struggle for precisely the same reason they performed well in scenario I: the high degree of competition they face. The relative ease of substitution between domestic and foreign sources and the high level of import penetration mean that foreign competitors are able to make substantial inroads as a result of the loss of competitiveness of domestic producers. In contrast, the import-competing industries which fare reasonably well are those which do not face great competition from foreign

---

<sup>140</sup> The contraction in export volumes is not so pronounced for wool, as the price elasticity of demand is lower.

<sup>141</sup> Including chemical fertilisers, services to agriculture and mining, agricultural and construction machinery.

producers or those which supply high growth industries. As noted in the discussion of scenario I, the level of activity is a combination of the import replacement and market size effects. For scenario II, however, the import replacement effect is negative. The expansion of domestic markets should provide some compensation for adverse import substitution. Whether on balance a particular industry experiences relative decline or growth depends on which of these two competing effects prevails.

The principal beneficiaries of financial immigration are the producers of non-traded goods and services. The shift towards the production and consumption of non-tradeables occurs because of an increase in the price of non-tradeables relative to tradeables. This is borne out by the domestic currency price indices in Table 5.8. Both the export and the import indices are negative, so that for the CPI to be constant the price index for tradeables must be positive. Unlike an increase in the price of tradeables, which causes substitution towards foreign sources, an increase in the price of non-tradeables is readily passed on to purchasers (there being no other source of the desired good or service). Whether a price increase for a particular commodity leads to a loss in sales depends on the magnitude of the price and income elasticities of demand.

The construction industry and its various satellite industries<sup>142</sup> perform well as a result of financial immigration. The underlying reason is that the construction industry produces capital goods

---

<sup>142</sup> Including cement, ready mixed concrete, concrete products, clay products, glass, structural metal goods and non-metallic minerals.

which are in demand due to the high level of investment. The impact of financial immigration on the construction industry generally, and the housing industry in particular, is substantial. The housing industry in ORANI is modelled in two parts: a residential construction industry (residential building) and a housing investment industry (ownership of dwellings). The residential construction industry sells its output (in the form of capital goods) exclusively to the housing investment industry, where activity is confined exclusively to capital creation (investment) rather than current production.<sup>143</sup> The appearance of the industry 'ownership of dwellings' at the top of the list in Table 5.11 is a function of the high demand for housing as a result of financial immigration.

It is interesting to note that the projected growth of the housing investment industry clearly exceeds population growth, so that the stock of housing capital per capita increases. The allocation of resources to unproductive capital is one of the bases of the objection to immigration on the grounds of capital widening. The industry growth rates in Table 5.11 reveal the dubious basis on which the classification of capital as unproductive rests. As a result of the growth in housing investment, the residential building industry expands faster than the economy-wide average. This in turn leads to rapid growth in its supplying industries, some of which are non-trading and others import-competing. As a result of the inter-industry linkages in the construction industry, the boost to housing investment, coupled with the

---

<sup>143</sup> Accordingly, there is no demand for primary factors in the ownership of dwellings industry.

favourable effects of the decrease in the real exchange rate, stimulates growth in the entire sector. In these circumstances, it is misleading to dismiss the increase in housing investment which flows from financial immigration as an unproductive use of resources. Similar arguments can be advanced for the industries associated with the establishment of new households, including those which produce furniture, household appliances, carpets and paint.

The expansion of the non-trading sector of the economy is also evident in the strong performance by services. Banking and other financial services,<sup>144</sup> entertainment, retail trade, personal services and communication are all projected to grow rapidly.

Industries with a large share of direct sales to households benefit from the high growth of household consumption. The industries producing basic food items for sale to households which grew slowly in scenario I now expand at above average rates, despite the generally low expenditure elasticities for these products.

The overall impact of financial immigration is the expansion of the non-trading sector of the economy at the expense of the trading sector. This contrasts with scenario I, where the impact of immigration was broadly favourable to the trading sector, except for the agricultural industries which faced additional constraints. The long term ramifications of this pressure on the trading sector are analysed in a subsequent chapter.

---

<sup>144</sup> Including non-bank finance, insurance, investment services, and business services.

(d) Structural consequences of immigration: employment

The industrial pattern of employment growth as a result of immigration closely reflects the pattern of industrial growth rates. In scenario I, employment growth is above average in the mining and manufacturing sectors, but below average in the agricultural sector. In scenario II, employment in the non-trading sector grows faster than in the trading (exporting and import-competing) sectors.

Employment growth by occupation is shown for both scenarios in Table 5.12. The pattern may be explained in the light of the broad structural trends described in the previous section. The occupations that gain the least in scenario I are rural workers and skilled blue collar (other). The growth of the rural work force is clearly limited by the low growth of the agricultural sector. A considerable fraction of the skilled blue collar (other) category is employed in the meat products industry, which is also projected to decline. The white collar occupations, which are fairly dispersed throughout industry, grow at a rate close to the average. The growth of the skilled blue collar (metal and electrical) category reflects the relatively strong performance of the import-competing manufacturing sector, in particular the motor vehicle industry. The slight increase in skilled blue collar building workers is attributable to a slight growth in the construction industry, while the modest increase in semi-skilled and unskilled blue collar workers is the product of several competing factors. The low growth of employment in the agricultural and food

## EMPLOYMENT BY OCCUPATION

---

| Occupation                 | Annual growth rate (%) |             |
|----------------------------|------------------------|-------------|
|                            | Scenario I             | Scenario II |
| <i>White collar</i>        |                        |             |
| Professional               | 1.57                   | 1.50        |
| Para-professional          | 1.50                   | 1.73        |
| Skilled                    | 1.55                   | 1.82        |
| Semi- and unskilled        | 1.51                   | 1.78        |
| <i>Blue collar</i>         |                        |             |
| Skilled (metal/electrical) | 1.62                   | 1.57        |
| Skilled (building)         | 1.58                   | 2.10        |
| Skilled (other)            | 1.45                   | 1.54        |
| Semi- and unskilled        | 1.60                   | 1.40        |
| Rural workers              | 1.49                   | 0.09        |
| <i>Aggregate</i>           | 1.56                   | 1.56        |

---

Table 5.12

processing sectors<sup>145</sup> is more than compensated for by the above average expansion in the transport, fabricated metals and construction sectors.

The range of occupational growth rates for scenario II, in contrast to scenario I, is wide. The number of rural workers is projected to grow only marginally relative to the control of zero net immigration. This relates to the comparatively worse performance of the agricultural sector in scenario II. The most rapidly expanding occupation is the skilled blue collar building worker category, as a result of the strong growth in the construction industry. The growth of skilled blue collar metal and electrical workers, although around the average for the aggregate employment, is lower than in scenario I. The reason for this is the relatively poorer performance of the import-competing sector which employs a significant proportion of this category. For semi-skilled and unskilled blue collar workers, the balance this time is tipped towards relative decline. The number of white collar workers is projected to expand at well above the rate of aggregate employment growth. This reflects the growth of the non-trading sector, especially services and the public sector, which are major employers of this type of labour.

This analysis is predicated on the view of the labour market as segmented by industry and occupation. Although the real wage rate is assumed to adjust to ensure a constant rate of (un)employment in the economy as a whole, relative wages are

---

<sup>145</sup> Except for other farming exports, which exports processed sugar.

preserved between occupations and industries. The onus falls on labour mobility to ensure that occupational and industrial employment levels are compatible with wage relativities. If this characterisation of the labour market is accepted, then one implication is that it may be necessary to ensure adequate labour mobility by regulating the skill composition of the immigration intake to match the structural shifts in employment which immigration induces.

The existence of skill-related criteria to determine the eligibility of prospective immigrants is necessary for this exercise. This is emphasised in Australian immigration policy. The usefulness of particular skills to the Australian labour market is assessed primarily according to current labour shortages. In 1989-90, the fraction of intake under the skilled migration category was 35 per cent. The main components of the skilled migration category are Tripartite Negotiated Agreements (TNA),<sup>146</sup> the Employer Nomination Scheme (ENS), the Business Migration Programme (BMP) and Independent applicants. TNAs cover skilled people nominated by an employer within an industry-wide agreement between the government, employers and trade unions providing for overseas recruitment of workers in an agreed set of occupations for which the demand cannot be met from Australian sources. Under the ENS, employers may nominate skilled people for specific positions if they can show that they are unable to fill the position from Australian sources by recruitment or training.

---

<sup>146</sup> These were introduced pursuant to a recommendation of the Fitzgerald Report (1988), note 74, at 90. The underlying strategy is reminiscent of the Accord, a triangular consensus of the government, business and trade unions established to reach agreement on major economic issues.

The BMP, which is discussed at length in Chapter 7, recruits people with the capacity and intention to establish a business in Australia. The Independent category comprises unsponsored applicants who possess skills, education and ready employability.

All of these sub-categories of skilled migration, with the exception of the BMP, are designed to fill short to medium term labour shortages. The ENS in particular responds to immediate and unforeseen labour needs. It offers the advantage that the demand for immigrant labour is determined at the point of employment, thereby ensuring a close correspondence between skills demanded and those supplied. The TNAs are negotiated on the basis of current and anticipated shortages, while the Independent category, by awarding points for employability, in practice incorporates similar considerations.

Immigration, as well as satisfying short term demand for labour,<sup>147</sup> sets in motion forces which alter the long term structure of the labour market. To the extent that the existing labour force lacks the flexibility to adapt to the changing pattern of demand, immigration policy should be formulated in the long run to accommodate structural developments which the continuation of the programme entails. Furthermore, it is useful in this connection to appreciate that financial and non-financial immigration are likely to have quite different effects on the composition of the labour force in the long run.

---

<sup>147</sup> Some of which immigration itself creates.

#### 5.4.5 *The effect of immigration on the welfare of original residents*<sup>148</sup>

The importance of inquiring into the effect of immigration on the welfare of original residents was emphasised in the previous chapter.<sup>149</sup> There are two features of interest: the average income of the original residents and the distribution of that income. ORANI is not well equipped to address distributional issues, as it contains only one class of household. Ideally, some information about the impact of immigration on different income groups within the original resident population is needed. It is nevertheless possible to draw some tentative conclusions from the ORANI results concerning the beneficiaries of the redistribution of income caused by immigration, in terms of workers, and owners of capital and agricultural land.

In Chapter 4, agricultural land was not included as a factor of production. In a realistic model of the Australian economy such as ORANI, it is included because of the importance of the agricultural sector. The total income from factor payments is then given by:<sup>150</sup>

$$Y = WL + RK + AN \quad (5.4)$$

---

<sup>148</sup> See also B.R. Parmenter and M.W. Peter (1990), 'A Reinterpretation of the CIE Projections of the Long-Run Economic Effects of Immigration', Institute of Applied Economic and Social Research, University of Melbourne, Working Paper No. 3/1990.

<sup>149</sup> See Section 4.2.

<sup>150</sup> Lower case symbols are reserved to represent percentage changes in variables. This contrasts with earlier chapters where the lower case was used to denote per capita (or per unit in the case of rental rates) variables.

where  $W$  is the wage rate;  $L$  is the labour force;  $R$  is the rental rate on capital;  $K$  is the capital stock;  $A$  is the rental on agricultural land; and  $N$  is the quantity of agricultural land.

The income of original residents is:

$$Y_{or} = WL_{or} + RK_{or} + AN_{or} \quad (5.5)$$

This may be recast in percentage change form to give:

$$y_{or} = \phi_L(w + l_{or}) + \phi_K(r + k_{or}) + \phi_N(a + n_{or}) \quad (5.6)$$

where the  $\phi$ 's are the shares of the factor payments in total income.<sup>151</sup>

In order to use equation (5.6) to determine the change in income of the original residents, it is necessary to evaluate the changes in their factor endowments as a result of immigration. The size of the original resident labour force is unaffected by immigration; it is assumed to remain constant relative to the control of zero net immigration.<sup>152</sup> Similarly, the amount of agricultural land remains constant.

---

<sup>151</sup> Note that the equation:

$$A = BC$$

in percentage change terms is:

$$a = \frac{BC}{A}(b + c)$$

Equation (5.6) is a simple extension of this.

<sup>152</sup> This does not imply that the labour force of the original residents is static, but that immigration has no impact on its growth, so that it increases at the same rate with or without immigration. This assumption underpins the labour force projections discussed earlier. It is equivalent to the proposition that immigration has no effect on the participation rate of original residents in the labour force.

The final issue to resolve is the impact of immigration on the stock of capital owned by the original residents. It is assumed that the capital ownership by original residents remains unchanged as a result of immigration.<sup>153</sup> This rests on the basis that prior to immigration the original residents were saving and investing an amount sufficient to maintain the capital intensity in the economy, and that they continue to do so after immigration. Although the aggregate capital stock is projected to increase as a result of immigration, the original residents will not be able to finance this expansion unless their level of savings increases. Assuming this does not happen, the additional capital stock which results from immigration is financed by immigrant fund transfers or foreign investment.

Equation (5.6) then reduces to:

$$y_{or} = \phi_L w + \phi_K r + \phi_N a \quad (5.6)$$

Using this equation the effect of immigration on the income of original residents can be calculated. The results are shown for both scenarios in Table 5.13.

In scenario I, the rental rate on agricultural land is projected to rise considerably as the fixed supply is exploited more intensively. In contrast, the wage rate falls, reflecting the drop in productivity throughout the economy. With the real rate of

---

<sup>153</sup> This is the assumption made in Parmenter and Peter (1990), note 148.

**INCOME OF ORIGINAL RESIDENTS**

---

| <b>Variable</b>     | <b>Scenario I</b> | <b>Scenario II</b> |
|---------------------|-------------------|--------------------|
| Wage rate           | -0.12             | 0.15               |
| Rental on capital   | -0.01             | -0.02              |
| Rental on land      | 0.96              | -0.16              |
| Returns to labour   | -0.07             | 0.09               |
| Returns to capital  | 0.00              | -0.01              |
| Returns to land     | 0.02              | 0.00               |
| Real GDP per capita | -0.05             | 0.08               |

---

Table 5.13

return on capital held constant, the income of original residents is determined by which of these two effects prevails. The growth rate of returns to each factor is weighted by the share of income from that factor in total income.<sup>154</sup> The negative real wage effect dominates and as a result the total income from factor payments accruing to original residents falls annually by 0.05 per cent. This is equivalent to a decrease of 2.2 per cent relative to the control scenario by 2030.

The situation is reversed in scenario II, where the decline in the agricultural sector means that land is actually used less intensively. Consequently, the rental rate on land falls. The wage rate is projected to grow at an annual rate of 0.15 per cent, with the result that returns to labour grow at 0.09 per cent. Despite slight decreases in returns to their capital and land, the improvement in real wages produces an increase in total income for original residents. By 2030, the cumulative effect of the 0.08 per cent annual gain would be that original residents receive an income 3.5 per cent higher than it would otherwise have been.

Two points should be noted. The first is that the results in Table 5.13 reveal some information about the impact of immigration on the distribution of income accruing to original residents. While it would be an exaggeration to describe immigration as hostile to labour in scenario I, it does redistribute income away from workers to owners of agricultural land. Financial immigration has the opposite effect, and favours labour to some extent.

---

<sup>154</sup> In the ORANI database the shares are 0.665 (labour), 0.317 (capital) and 0.018 (land). See Parmenter and Peter (1990), note 148, at 22.

The second point is these results, while not entirely negligible, are hardly decisive arguments in favour or against immigration. It is clear that the traditional argument advanced by trade unions against immigration on the grounds of real wage pressure<sup>155</sup> is vitiated if the demand for capital is satisfied by funds transferred by immigrants or foreign borrowing. The overall impact on the income of original residents is fairly negligible; slightly positive in one scenario and slightly negative in the other. Certainly neither result would act as a decisive economic argument for or against immigration.

## 5.5 Conclusion

A CGE model such as ORANI inevitably has limitations associated with its underlying theory, empirical specification, database and comparative static methodology. These were emphasised in the earlier sections of this chapter, and should be borne in mind when assessing the importance of the results presented here. Nevertheless, ORANI is well suited to an investigation of the effect of a policy such as immigration which impacts in a complex way on the Australian economy. In particular, it offers an unusually detailed insight into the structural impact of immigration.

Two scenarios were analysed in considerable detail. The first treated immigration essentially as a population phenomenon, with the principal impact confined to the expansion of the labour force,

---

<sup>155</sup> This is related to the concern about unemployment; see Section 1.2.1.

while the second incorporated the high level of funds now transferred by immigrants. Whereas a simple labour force expansion benefits the trading sector of the economy, fund transfers reverse the effect, so that the non-trading sector is favoured.

It may be that in the long run the structural adjustment required to accommodate immigration is significant. Both scenarios entail a reduction in the exposure of the economy to international competition, although the effect is more pronounced where fund transfers are taken into account. While the possibility is not captured within the ORANI framework, a structural shift towards a closed economy could entail a reduction in economic efficiency. This hypothesis is explored in the final chapter.

## Chapter 6

### The regional impact of immigration

*The industrial geography of Australia is marked by a pronounced core-periphery pattern of production. Within this broad spatial pattern, the states specialise in different activities. Immigration is therefore likely to have a differential impact on the states, depending on their industrial composition. To investigate this possibility, the results obtained in Chapter 5 are disaggregated to the state level using a balanced input-output regional model available as an add-on facility to ORANI.*

## 6.1 Industrial geography of Australia

The purpose of this chapter is to investigate the regional consequences of immigration. To this end the results presented in the previous chapter are disaggregated to the state level. Such an exercise is of considerable interest due to the federal structure which characterises the Australian political and economic system.

In a recent account, Powell identifies the principal forces which have shaped the spatial pattern of production in Australia:

[T]he modern industrial geography of Australia continues to reflect the existence of a strong federal structure, the unequal attraction of New South Wales and Victoria and the general dominance of the port-capitals, and the blank spaces over most of the map except for the great mining oases.<sup>1</sup>

To this should be added the sheer size of the country and most of the states. For several decades after federation in 1901 this, combined with the interests of the states in obtaining a share of manufacturing employment and thereby maintaining some degree of regional economic autonomy and political influence, led to substantial duplication of industrial effort. The relative reduction in transport costs and the post-war influx of foreign capital, however, promoted national integration. The resulting pattern of production bears the hallmarks of a pronounced dichotomy between core and periphery.<sup>2</sup>

---

<sup>1</sup> J.M. Powell (1988), *An Historical Geography of Modern Australia*, Cambridge University Press, Cambridge, at 251.

<sup>2</sup> Within each state, the core-periphery dichotomy is also evident in the dominance of the capital cities.

The core states, New South Wales and Victoria, now account for approximately 75 per cent of national economic activity. Their economies are fairly diversified, in contrast to those of the periphery states. South Australia, for example, is heavily dependent on a narrow range of manufactured products including cars and white goods.<sup>3</sup> The other periphery states, Queensland, Western Australia and Tasmania are reliant on their natural resource bases, and are relatively more export-oriented than the core states.

Various state industrial specialisations have evolved, including food processing and timber in Queensland; basic metal products, machinery, chemical, petroleum and coal products in New South Wales; clothing and footwear in Victoria; fabricated metals in Western Australia; pulp, paper and textiles in Tasmania; and, as mentioned above, motor vehicles and white goods in South Australia.<sup>4</sup>

Given the variation in the structure of state economies, immigration is likely to affect each differently. It is an instructive exercise to consider which states may benefit as a result of immigration and which may suffer.<sup>5</sup> In the following section, regional models suitable for this sort of inquiry are discussed, and in the third section, a regional version of ORANI is described.

---

<sup>3</sup> P.D. Wilde (1981), 'From Insulation Towards Integration: the Australian Industrial System in the Throes of Change', *Pacific Viewpoint* 22, 1-24.

<sup>4</sup> Powell (1988), note 1, at 251.

<sup>5</sup> Not least because the states are important in lobbying the federal government for policies beneficial to them.

Finally, the results obtained in the previous chapter are disaggregated to the state level.

## 6.2 Regional modelling

Numerous operational methods have been developed for regional analysis, including economic base, input-output, comparative cost-industrial complex, linear programming, econometric and transportation models. It is beyond the scope of the present work to attempt a comprehensive survey of these methods.

Some progress has been made towards the integration of these techniques to produce multiregional models which draw on their complementary strengths.<sup>6</sup> For example, the theoretical structure of an integrated multiregional model for policy analysis has recently been proposed for the Australian economy.<sup>7</sup> While each component of the integrated model is capable of implementation, and the steps necessary to link the component sub-models are specified, the model is not at this stage operational.

Of the methods for regional analysis listed above, the one which bears the closest family resemblance to ORANI is the input-output approach.<sup>8</sup> The development of regional input-output modelling

---

<sup>6</sup> W. Isard and L. Anselin (1982), 'Integration of Multiregional Models for Policy Analysis', *Environment and Planning A* 41, 359-376.

<sup>7</sup> C. Smith (1989), *Integrated Multiregion Models for Policy Analysis: An Australian Perspective*, North-Holland, Amsterdam.

<sup>8</sup> It will be recalled that ORANI is implemented on an input-output database.

has spawned a substantial literature.<sup>9</sup> The approach is based on the inputs and outputs of each sector in an economy and the linkages between sectors. In principle, the structure of the interrelationships can be captured in a tabular format, although in practice data deficiencies may prevent a full representation.

Before turning to the various multiregional versions, it is convenient to outline the input-output approach for a single region. Consider region R with n industries.<sup>10</sup> The output produced by a given sector can be used as either an input to other sectors (intermediate demand) or consumed (final demand). The input-output balance for the regional economy can then be expressed as a series of linear equations:<sup>11</sup>

$$X_i^R = \sum_{j=1}^n X_{ij}^R + Y_i^R \quad (i=1, \dots, n) \quad (6.1)$$

where:

$X_i^R$  is the total output of industry i;

$X_{ij}^R$  is the amount of output of industry i used by industry j;

and  $Y_i^R$  is the amount consumed as final demand.<sup>12</sup>

This equation may be represented as a system of accounts (an input-output table).

---

<sup>9</sup> See R.C. Jensen (1990), 'Construction and Use of Regional Input-Output Models: Progress and Prospects', *International Regional Science Review* 13(1-2), 9-25.

<sup>10</sup> At this point, the discussion draws on Smith (1989), note 7, at 9-13.

<sup>11</sup> This is simply an accounting relation.

<sup>12</sup> Note that for ease of exposition all industries are assumed to produce a single product and all products are assumed to be produced by only one industry.

The transition from this set of accounting identities to an operational model requires several restrictive assumptions. The principal assumption is that inputs are required in fixed proportions. This may be written in terms of technological coefficients:

$$a_{ij}^R = X_{ij}^R / X_i^R \quad (6.2)$$

where the coefficients are assumed to be invariant to time and changes in the level of output.

Equation (6.2) may then be written as:

$$X_i^R = \sum_{j=1}^n a_{ij}^R X_j^R + Y_i^R \quad (6.3)$$

Using matrix notation, this becomes:

$$(I - A^R)X^R = Y^R \quad (6.4)$$

where:

$X^R$  is a  $(n \times 1)$  vector of outputs;

$Y^R$  is a  $(n \times 1)$  vector of final demands; and

$A^R$  is a  $(n \times n)$  matrix of technological coefficients.

If the levels of final demand and the set of technological coefficients are known, then equation (6.4) may be solved for the levels of production:

$$X^R = (I - A^R)^{-1} Y^R \quad (6.5)$$

This is the standard form of the single region input-output model. It may be extended to yield income multipliers by incorporating a household sector within the structural  $A^J$  matrix.<sup>13</sup>

The theoretical limitations of the input-output model for regional analysis are well summarised by Smith.<sup>14</sup> They include the assumption that production relations are linear, so that inputs are a fixed proportion of the level of output of the purchasing industry. This entails constant returns to scale and zero elasticity of substitution among inputs.<sup>15</sup> Where a household sector is incorporated in the model, consumption relations are similarly linear, so that each consumption good is allocated a fixed proportion of household income.<sup>16</sup> There is thus no scope for a response to relative price changes, in terms of the input or output mix. Input-output models further assume that no capacity constraints exist. As a result the supply of required inputs (commodity and factor) is infinitely elastic. This may be contrasted with a general equilibrium approach which is characterised by the existence of such constraints.

---

<sup>13</sup> Households are viewed as selling labour as 'output' and using the income received (mostly wages) to purchase 'inputs' of consumption goods. The model can also be extended to yield employment by industry multipliers using a set of industry output to employment coefficients.

<sup>14</sup> Smith (1989), note 7, at 12-13.

<sup>15</sup> In contrast, the ORANI production technology allows a measure of flexibility in combinations of intermediate inputs and primary factors in response to relative price changes. The assumption of constant returns to scale is, however, the same.

<sup>16</sup> This may be contrasted with ORANI where the allocation of household income depends on the income and price elasticities of demand for the good.

Locational factors such as transport and energy costs are ignored in input-output models.<sup>17</sup> In addition, production by different industries is additive, precluding the possibility of economies or diseconomies of scale which might arise as a consequence of technological, production and marketing linkages among industries which are spatially juxtaposed.<sup>18</sup>

A further difficulty with the input-output model described above is that it is confined to a single region. A representation of a multiregional system therefore requires an extension of this model. A multiregional input-output (MRIO) model was first proposed by Isard.<sup>19</sup> For a system comprising  $m$  regions with the same  $n$  industries in each region, the general form of the MRIO model may be represented as:

$$X_i^R = \sum_{S=1}^m \sum_{j=1}^n X_{ij}^{RS} + Y_i^R \quad (i=1,\dots,n) \quad (R,S=1,\dots,m)$$

(6.6)

where:

$X_{ij}^{RS}$  is the amount of output of industry  $i$  in region  $R$  used by industry  $j$  in region  $S$ ; and

---

<sup>17</sup> Smith (1989), note 7, argues that comparative cost considerations are particularly important for the mineral extraction and processing industries in Australia, both of which are highly cost sensitive (to transport costs in the case of extraction and energy costs in the case of processing).

<sup>18</sup> Such linkages are the rationale for the industrial complex approach.

<sup>19</sup> W. Isard (1951), 'Interregional and Regional Input-Output Analysis: A Model of a Space Economy', *Review of Economics and Statistics* 33, 318-328.

$Y_i^R$  is the amount consumed as final demand (irrespective of the region of origin of demands).<sup>20</sup>

As in the single region case, in order to render this accounting identity operational, it is necessary to assume that the input-output structure is captured by fixed technological-trade coefficients.<sup>21</sup> A typical coefficient specifies the amount of input from industry  $i$  in region  $R$  which is required per unit of output of industry  $j$  in region  $S$ :

$$b_{ij}^{RS} = X_{ij}^{RS} / X_j^S \quad (6.7)$$

In order to derive estimates of these coefficients, commodity flow data by both region and industry of origin and destination is necessary. Such information is rarely available.<sup>22</sup> It is therefore usually necessary to make certain simplifying assumptions to reduce the amount of data required.

The starting point is to recognise that the coefficients conflate assumptions relating to both production technology and interregional trade, which can be separated into technological and trade components:<sup>23</sup>

---

<sup>20</sup> Note that for ease of exposition all industries are assumed to produce a single product and all products are assumed to be produced by only one industry.

<sup>21</sup> Again, they are assumed to be invariant over time and to changes in the level of output of industry  $j$  in region  $L$ .

<sup>22</sup> As a result, the general form of the interregional model has been implemented in very few cases. For a review of past applications, see Smith (1989), note 7, at 21-22.

<sup>23</sup> H. Hartwick (1971), 'Notes on the Isard and Chenery-Moses Interregional Input-Output Models', *Journal of Regional Science* 11(1), 73-86.

$$b_{ij}^{RS} = c_{ij}^{RS} a_{ij}^S = \frac{X_{ij}^{RS}}{X_{ij}^S} \frac{X_{ij}^S}{X_j^S} \quad (i,j=1,\dots,n) \quad (R,S=1,\dots,m) \quad (6.8)$$

where:

$c_{ij}^{RS}$  is a trade coefficient; and

$a_{ij}^S$  is a regionally specific technological coefficient.

Each trade coefficient represents the fraction of total purchases of commodity  $i$  by industry  $j$  in region  $S$  which is produced in region  $R$ . The technological coefficients are identical to those described for the single region model.

In a similar fashion to the single region model, the model can be solved for the levels of production by industry in each region. This may be represented in matrix notation as:

$$X = (I-B)^{-1}Y \quad (6.9)$$

where:

$X$  is a  $(Un \times 1)$  vector of outputs by region;

$Y$  is a  $(Un \times 1)$  vector of final demands by region; and

$B$  is a  $(Un \times Un)$  matrix of technological-trade coefficients.

Decomposing the matrix of technological-trade coefficients gives:

$$X = (I-CA)^{-1}Y \quad (6.10)$$

where:

C is a (Un x Un) matrix of trade coefficients; and

A is a (Un x Un) matrix of technological coefficients.

In the absence of data relating to regional technology, the economy-wide technological coefficients are generally assumed to apply at a regional level.<sup>24</sup> In the construction of MRIO models most energy has been devoted to the specification of interregional trade flows in the absence of sufficient primary data.<sup>25</sup> Several techniques have been developed to transform the general MRIO model into an operational form, by introducing further simplifying assumptions about the pattern of interregional trade.<sup>26</sup>

Even if the necessary data to implement the general MRIO model were available, a number of theoretical limitations exist. These relate to the assumption that intraregional technological coefficients and interregional trade coefficients are constant. The remarks made earlier about the deficiencies of fixed technological coefficients in the single region model are equally pertinent here. The implications of fixed trade coefficients are similarly questionable. As Smith notes, stable trading patterns imply constancy of regional production and interregional transport costs, and the absence of supply constraints (in the form of production or transport constraints).<sup>27</sup>

---

<sup>24</sup> DPSV, at 255.

<sup>25</sup> Whereas in the past, great resources were devoted to the *ab initio* construction of input-output tables on the basis of surveys, the field of regional input-output modelling is now dominated by non-survey tables. For a critique of this development, see Jensen (1990), note 9.

<sup>26</sup> It is beyond the scope of the present work to elaborate further on the MRIO models which have been developed. For a review see Smith (1989), note 7, at 23-37.

<sup>27</sup> Smith (1989), note 7, at 22. The existence of supply constraints can be imposed in the form of ad hoc restrictions.

This completes a very brief survey of regional input-output modelling. While cursory, it serves the purpose of placing in context the method for the regional disaggregation of ORANI results, to which we now turn.

### 6.3 Regional disaggregation of ORANI results

#### 6.3.1 *Theoretical structure*

The method used to disaggregate ORANI results to state level is derived from the balanced regional input-output (BRIO) model proposed by Leontief<sup>28</sup> and implemented by Isard.<sup>29</sup> While falling short of a fully fledged MRIO model, a BRIO model is superior to a set of single region models. The essence of the BRIO is the classification of industries as local or national. Local industries are assumed to sell their outputs only within the region; for reasons of transport costs, economies of scale, perishability, and so forth, interregional trade is negligible. National industries, in contrast, sell their output to purchasers (households and industries) in other regions. The input-output balance then occurs at an economy-wide level for commodities produced by national industries, and at a regional level for commodities produced by local industries. The general framework of BRIO models is shown in Figure 6.1.

---

<sup>28</sup> W.W. Leontief (1953), 'Interregional Theory', in W.W. Leontief et al (eds), *Studies in the Structure of the American Economy*, Oxford University Press, New York.

<sup>29</sup> W. Isard (1953), 'Some Empirical Results and Problems of Regional Input-Output Analysis', in Leontief et al, note 28.

The classification of industries as national or local allows the national matrix of input-output coefficients to be partitioned in the following way:<sup>30</sup>

$$A = \left[ \begin{array}{c|c} A_{LL} & A_{LN} \\ \hline A_{NL} & A_{NN} \end{array} \right] \quad (6.11)$$

where:

L and N denote local and national, respectively; and  $A_{LN}$ , for example, is a sub-matrix of coefficients showing the output of regionally balanced (local) commodities required per unit of production of nationally balanced commodities.

The economy-wide output of national industries is given by:

$$X_N = (I-A)_N^{-1} Y \quad (6.12)$$

where  $(I-A)_N$  is the sub-matrix of  $(I-A)$  which covers the direct and indirect requirements for commodities produced by national industries.

A central assumption of BRIO models is that the location of national industries is assumed to be independent of the location of

---

<sup>30</sup> See Smith (1989), note 7, at 13-18, for a more detailed treatment.

**SCHEMATIC REPRESENTATION OF A BALANCED  
REGIONAL INPUT-OUTPUT MODEL**

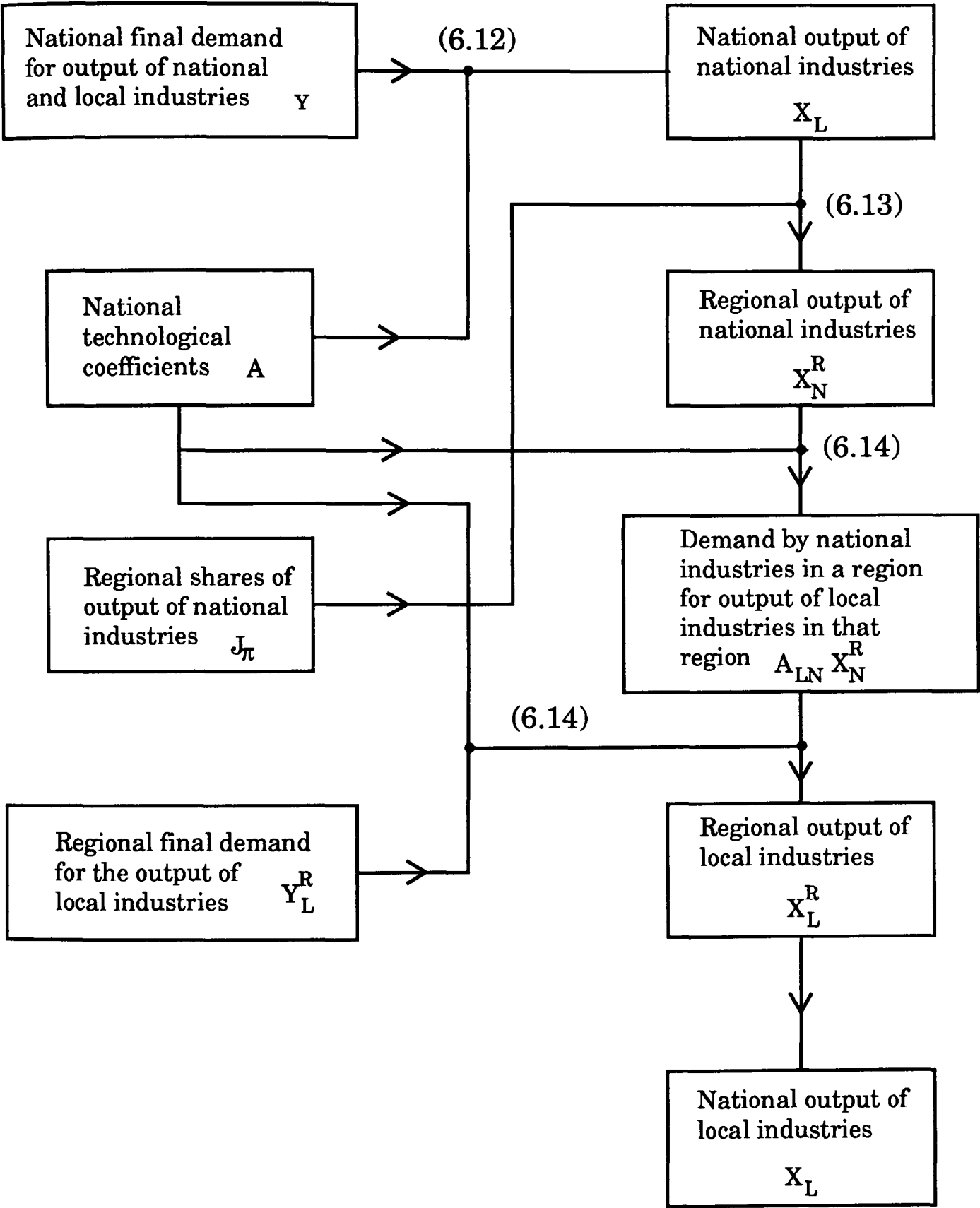


Figure 6.1

demand for the commodities they produce. It is assumed that for each national industry the share of output among regions remains constant regardless of the level of output. The outputs by region of national industries are then given by:

$$X_N^R = R_\pi X_N \quad (6.13)$$

where  $R_\pi$  is a matrix of regional shares in the economy-wide production of national commodities.

The outputs of local industries in each region depend in part on the inputs of local commodities required to support the production of national industries in that region. These inputs must be supplied exclusively by local industries in the region since these commodities do not flow between regions. Also, local production must satisfy national final demand for local commodities consumed in the region. Finally, the demand by other local industries for local commodities as inputs must be included. It can be shown that the required level of production of local industries is given by:<sup>31</sup>

$$X_L^R = (I - A_{LL})^{-1} (A_{LN} X_N^R + Y_L^R) \quad (6.14)$$

where  $Y_L^R$  is the final demand for local commodities consumed in region R.

---

<sup>31</sup> Smith (1989), note 7, at 17.

In this way, BRIO models generate the regional output of national and local industries. It will be apparent from the preceding discussion that three separate steps are involved in standard applications of BRIO models.<sup>32</sup> First, a conventional economy-wide input-output model is used to calculate economy-wide levels of output. Secondly, the outputs of national industries are allocated to the regions on the basis of their pre-determined shares in the economy-wide production of national commodities. Finally, regional outputs of local commodities are obtained by solving the set of single region input-output models.

BRIO models suffer from a number of limitations in addition to those generally associated with input-output models.<sup>33</sup> The classification of industries as national or local has been criticised as arbitrary.<sup>34</sup> The assumption that the location of production is independent of the location of demand is clearly an oversimplification that fails to take into account, for example, transport and energy costs. Also, the assumption of uniform regional technology may not be justified in particular instances. A further general limitation of BRIO models is that they do not incorporate interregional linkages and therefore do not capture feedback effects. Consequently, BRIO models are limited to the regional impact of economy-wide changes and are not suitable for investigating the national implications of regional changes.<sup>35</sup>

---

<sup>32</sup> See, for example, W.W. Leontief, A. Morgan, K. Polenske, D. Simpson and E. Tower (1965), 'The Economic Consequences - Industrial and Regional - of an Arms Cut', *Review of Economics and Statistics* 48, 217-241.

<sup>33</sup> Recall the remarks made in the previous section.

<sup>34</sup> Smith (1989), note 7, at 17.

<sup>35</sup> Isard (1953), note 29.

Nevertheless, the sequential nature of this procedure suggests its attractiveness as an adjunct to ORANI. The ORANI regional equation system (ORES) has been developed which substitutes ORANI for a national input-output model in the BRIO structure. This allows the economy-wide results projected by ORANI to be subsequently disaggregated to the state level. A full description of the ORES facility is contained in the original documentation of ORANI.<sup>36</sup>

As well as the obvious convenience of this approach as a post-solution disaggregation, it is economical in its demands for data. As a species of BRIO model, it avoids the need for interregional commodity flow data by classifying industries as local or national. It also avoids the need for information about regional technology by assuming that technology is independent of location.

A list of the industries which are regarded as local is shown in Table 6.1. The category mostly includes service industries (private and public sector). The remaining industries appearing in Tables 5.10 and 5.11 in Chapter 5 are considered to be national. For national industries, the pattern of production is assumed to be unconnected with the pattern of demand. The regional activity levels of national industries are assumed to reflect base-period shares of the regional industry in aggregate output. In percentage change terms, a given increase in aggregate output is assumed to cause the same increase in regional production.

---

<sup>36</sup> P.B. Dixon, B.R. Parmenter, J. Sutton and D.P. Vincent (1982), *ORANI: A Multisectoral Model of the Australian Economy*, North-Holland, Amsterdam (hereafter DPSV), at 253-283.

**LOCAL INDUSTRIES IN REGIONAL ORANI**

---

|                       |                         |
|-----------------------|-------------------------|
| Agricultural services | Banking                 |
| Bread, cakes          | Finance, life insurance |
| Ready mixed concrete  | Investment services     |
| Water, sewerage       | Insurance services      |
| Residential building  | Other business services |
| Other construction    | Ownership of dwellings  |
| Wholesale trade       | Health                  |
| Retail trade          | Education               |
| Mechanical repairs    | Social security         |
| Other repairs         | Entertainment           |
| Communication         | Restaurants, hotels     |

---

Table 6.1

For local industries, output is assumed to be sold in the region of production. This is imposed by requiring that the aggregate output of a local commodity in a region is equal to the demand for it in the region. Several further assumptions are required to solve the commodity balance equations, relating to the components of regional demand for local commodities.<sup>37</sup> It is assumed that:

- (i) Regional investment is allocated to the regions in the same proportion as current production;<sup>38</sup>
- (ii) Household consumption at a regional level is proportional to regional labour income;
- (iii) The level of international exports from regions is proportional to the economy-wide level; and
- (iv) The regional allocation of government expenditure is proportional to the economy-wide level.

By making these assumptions, the regional output of local commodities can be expressed in terms of economy-wide variables generated by ORANI. Combined with the assumption of fixed regional shares in national industries, this means that all industry outputs can be generated at the regional level in a manner consistent with ORANI economy-wide results.<sup>39</sup>

---

<sup>37</sup> See DPSV for a more detailed discussion.

<sup>38</sup> For national industries, regional investment is simply proportional to the economy-wide level of current production. For local industries, the ratio of investment to output at a regional level equals the economy-wide ratio.

<sup>39</sup> The consistency of the regional disaggregation with the ORANI economy-wide results is demonstrated formally in DPSV, at 277-283.

The ORES facility is subject to the limitations associated with BRIO models discussed above.<sup>40</sup> There are, however, sound geographical reasons why the classification of industries as national or local is more suited in the context of the Australian spatial economy than to most others.<sup>41</sup> Table 6.2 shows the current population of the major urban settlements. The population in general is highly urbanised, with each state dominated by a capital city which is a considerable distance from the nearest border. The extent of interregional trade in the output of industries listed in Table 6.1 is thus likely to be very low.

A weaker feature of ORES is the assumption of constant regional shares in the outputs of national industries. One compromise which has been explored is the incorporation of regional industries in the economy-wide model.<sup>42</sup> The purpose is to represent more adequately features of particular industries of

---

<sup>40</sup> An attempt was made to construct a genuinely interregional model using the gravity approach to generate interregional trade flows (as originally proposed by W.W. Leontief and A. Strout (1963), 'Multiregional Input-Output Analysis', in T. Barna (ed.), *Structural Interdependence and Economic Development*, Macmillan, New York, 119-150). See L.H. Liew (1984), 'A Johansen Model for Regional Analysis', *Regional Science and Urban Economics* 14(1), 129-146. The advantages associated with this effort were largely mitigated by primary data deficiencies which necessitated the use of synthetic methods to generate most of the regional data.

<sup>41</sup> DPSV, at 256; B.R. Parmenter and G.A. Meagher (1985), 'Policy Analysis Using a Computable General Equilibrium Model: A Review of Experience at the Impact Project', *Australian Economic Review* (Q1), 3-15.

<sup>42</sup> B.R. Parmenter, K.R. Parmenter and R. Jagielski (1985), 'Bottoms-Up, Tops-Down and Hybrid Methods for Regionalising Computable General Equilibrium Models: Some Comparisons', Impact Project, Working Paper No. OP-52.

**MAJOR AUSTRALIAN POPULATION CENTRES<sup>a</sup>**


---

| <b>City</b>                    | <b>Population</b> |
|--------------------------------|-------------------|
| Sydney (NSW)                   | 3,633,600         |
| Melbourne (Vic)                | 3,043,500         |
| Brisbane (Qld)                 | 1,273,500         |
| Adelaide (SA)                  | 1,037,700         |
| Perth (WA)                     | 1,161,200         |
| Hobart (Tas)                   | 181,200           |
| Darwin (Northern Territory)    | 72,900            |
| Canberra (Aust. Capital Terr.) | 303,200           |
| Newcastle (NSW)                | 425,600           |
| Wollongong (NSW)               | 236,700           |
| Gold Coast (Qld/NSW)           | 254,900           |

---

(a) All capital cities (of states and territories) and other cities with a population over 200,000 are shown.

interest.<sup>43</sup> While this approach indubitably offers advantages, the information is not available to model regional industries across the board. Where the inquiry is directed to the differential impact across states, as opposed to the impact on a particular state (in which state government agencies, for example, are more interested), the tops-down version of ORES is more suitable.

The ORES facility has been employed quite widely in a variety of applications to investigate the impact of changes in policies or economic developments with a national impact.<sup>44</sup> To date, it has not been used to analyse the differential impact of federal immigration policy on the states. ORES is, however, well suited to the investigation of the regional impact of a national policy such as the immigration programme. In addition, there are good grounds, for anticipating that the impact of immigration will vary across states. First, according to the results presented in the previous chapter, immigration is projected to affect the structure of the economy in the long run. This structural pressure favours

---

<sup>43</sup> For example, one application modelled the Tasmanian fruit-growing industry (usually part of the 'other farming exports') as a separate regional industry within the general ORANI framework; see P.J. Higgs, B.R. Parmenter and R.J. Rimmer (1983), 'Modelling the Effects of Economy-Wide Shocks on a State Economy in a Federal System', Impact Project, Preliminary Working Paper No. OP-37. Because the Tasmanian fruit-growing industry is more export-oriented than the fruit-growing industry throughout the rest of Australia, modelling the Tasmanian industry separately improves the accuracy of trade-related projections.

<sup>44</sup> See, for example, J.R. Madden, D.W. Challen and A.J. Hagger (1982), 'The Effects on the Tasmanian Economy of the Mining Boom', Centre for Regional Economic Analysis, University of Tasmania, Paper No. RS-02; P.B. Dixon (1987), 'Medium-Run Forecasts for the State Economies Using the ORANI Model', Institute of Applied Economic and Social Research, University of Melbourne, Working Paper No. 5/1987. A list of applications is given in A.A. Powell and T. Lawson (1990), 'A Decade of Applied General Equilibrium Modelling for Policy Work', in L. Bergman, D. Jorgenson and E. Zalai (eds), *General Equilibrium Modelling and Economic Policy Analysis*, Blackwell, Oxford, 241-290, at 254-255.

certain sectors over others. Secondly, the regional pattern of production is far from uniform. Together these two factors suggest the possibility of a significant regional variation in the effects of immigration on the Australian economy. There is therefore a strong incentive to disaggregate the ORANI results to the state level.

#### 6.4.2 *Results*

The projections for both scenarios were disaggregated to the state level using the tops-down version of ORES. Results for gross state product (GSP) and levels of employment by state are shown in Table 6.3. As in Chapter 6, the results are presented in terms of annual growth rates relative to the control scenario of zero net immigration.

The regional differences apparent in Table 6.3 are influenced by two basic factors. The first is the industrial composition of each state. For national industries, the growth in regional output is the same as the growth in national output (by the constant shares assumption). The projected industry growth rates are contained in Tables 5.10 and 5.11. The importance of each industry in the state economies is given by the base-period shares of national output. The direct contribution of national industries to state economies is determined by both their distribution and growth rates.

The second basic factor underlying the regional variations observable in Table 6.3 is the stimulus to regional growth caused

## REGIONAL RESULTS

---

| State            | Annual growth rate (%) |            |             |            |
|------------------|------------------------|------------|-------------|------------|
|                  | Scenario I             |            | Scenario II |            |
|                  | GSP                    | Employment | GSP         | Employment |
| NSW <sup>a</sup> | 1.49                   | 1.53       | 1.83        | 1.71       |
| Victoria         | 1.57                   | 1.54       | 1.88        | 1.87       |
| Queensland       | 1.66                   | 1.70       | 1.09        | 1.07       |
| SA <sup>b</sup>  | 1.49                   | 1.53       | 1.74        | 1.65       |
| WA               | 1.60                   | 1.64       | 0.86        | 0.95       |
| Tasmania         | 1.48                   | 1.52       | 1.59        | 1.53       |
| Australia        | 1.55                   | 1.56       | 1.62        | 1.56       |

---

(a) Including Australian Capital Territory

(b) Including Northern Territory

Table 6.3

by the growth of national industries located there. If, on balance, the national industries of a state grow faster than the national average, then this boosts the local industries through demand for their output (predominantly services) as intermediate inputs. In addition, household final demand for the output of local industries is likely to increase as household income (primarily from wages) grows at above the national average. These regional multiplier effects accentuate the regional differences which arise due to variations in the industrial composition of the states.

In scenario I, Victoria, Queensland and Western Australia are projected to grow at above the Australian average. The reason for the superior performance of these states rests with the real devaluation which occurs. This is broadly favourable to the export and import-competing sectors of the economy, although the agricultural sector suffers a relative decline due to the fixed supply of land and low elasticities of demand for important exports. The competitive advantage conferred on the mining sector benefits Western Australia and Queensland, and more than offsets the relative decline in agricultural industries. Queensland also benefits from strong growth in the 'other food products' industry, which exports processed sugar as its principal activity. Victoria benefits from the real devaluation caused by the expansion of the labour force in scenario I, due to a high concentration of import-competing industries, which improve their cost position with respect to foreign competitors.

In contrast, New South Wales, South Australia, and Tasmania are projected to grow more slowly than the national average. In the

case of Tasmania, this is attributable to a low level of import-competing activity and the importance of agricultural exports. Its performance is better than it would otherwise have been by the strong showing of its textile industries. For New South Wales and South Australia, the proportion of activity in the non-traded sector is higher than average, and since this sector grows at slightly below the national average in scenario I, the gross products of these states grow more slowly.

The regional pattern of employment growth essentially mirrors the pattern of growth in GSP. Those states with a higher than average GSP growth show faster employment growth, and vice versa. The exception is Victoria, where an above average GSP growth rate is accompanied by a below average employment growth rate, indicating a move towards higher capital intensity in the state economy. It is interesting to note that in terms of productivity (GSP per worker), the only state to benefit from immigration in scenario I is Victoria.

In scenario II, the windfall of foreign currency flowing from immigrant fund transfers reduces the international competitiveness of Australia's trading sector. The projections vary much more widely in this scenario. The states which bear the brunt of the decrease in the real exchange rate are those for which exporting is a relatively more important activity, Queensland and Western Australia. They are projected to grow well below the national average. The states which are projected to gain are New South Wales, Victoria and South Australia. The strong growth of Victoria is somewhat surprising at first sight

given its concentration of import-competing industries. The explanation is that the losses associated with reduced competitiveness in that sector are outweighed by gains due to market size and the growth of non-trading industries. The results for South Australia can be explained in similar terms, and by noting that one of the industries on which it most relies, motor vehicles, grows quite strongly. New South Wales GSP is projected to increase faster than the economy-wide average on the strength of growth of non-trading industries, particularly construction and construction-related industries.

The regional pattern of employment growth again follows the direction of GSP growth. Closer inspection reveals that productivity in Victoria, the state where GSP is projected to grow most rapidly, only increases marginally, well below the national increase. In contrast, New South Wales and South Australia show significant productivity improvements. The weaker Victorian performance indicates that the growth occurs in industries which are relatively more labour-intensive. Western Australia shows a marked decline in productivity, for the same reason.

#### **6.4 Conclusion**

Using a balanced regional input-output model, immigration is projected to have a differential impact across states, with their performance dependent on whether immigration is accompanied by fund transfers. Queensland and Western Australia, the states most reliant on exports, benefit from the effects of an expanded labour force, but suffer due to the fund transfers. On balance,

they are projected to decline in relative importance as a result of financial immigration. Of all the states, only Victoria benefits from immigration irrespective of whether funds are transferred or not.

The conclusions to emerge from the regional analysis in this chapter are presented only tentatively. As well as the general limitations associated with ORES, which have been thoroughly ventilated in the earlier sections, there is an additional difficulty associated with the destinations selected by immigrants. The results reported here implicitly assume that immigrants settle in regions according to the underlying demand for their labour. This implies either perfect foresight in the choice of destination or perfect mobility of the labour force generally. Such an assumption may be unrealistic, and is more likely to be so as the variations in regional growth rates in employment become more pronounced.

Nevertheless, the disaggregation of ORANI results to a state level does offer a further insight into the long run consequences of immigration. The industrial structures of the states show considerable diversity, and, as a result, immigration is projected to have a differential impact on them. This represents an additional consideration to be included in the formulation of immigration policy.

## Chapter 7

### The Business Migration Programme

*Business migration is the archetypal coincidence of human and capital migration. The government has attempted to use the Business Migration Programme (BMP) to galvanise support for the immigration programme as a whole. In the event, however, the BMP has been dogged by allegations of abuse, and the government has been forced to fight a rearguard action to defend it. This has generally taken the form of a glib recital of funds transferred and jobs created. Virtually no serious attention, however, has been devoted to whether or not net capital formation and job creation occur as a result of the programme. A simple application of the small open economy assumption would suggest not. In an application of the entrepreneurial bundle' argument advanced in Chapter 2, it is suggested that the BMP, assuming compliance with the eligibility requirements, is likely to yield substantial economic benefits.*

## 7.1 History of the programme

Immigration is now subjected to increasingly intense economic scrutiny. With a newfound emphasis on composition rather than absolute size of the intake,<sup>1</sup> it was inevitable that the government should choose as its flagship the Business Migration Programme (BMP).

Established in November 1981, the goal of the BMP is to attract to Australia business persons who intend to set up enterprises which will benefit the nation. Its origins may be traced to the Entrepreneurial category which was introduced by the Department of Immigration, Local Government and Ethnic Affairs (DILGEA) into the immigration programme in November 1976.<sup>2</sup> The purpose was to render eligible a growing number of applicants who were unable to qualify under other categories but who possessed business skills and capital perceived to be beneficial to the national economy. Under this scheme, prospective immigrants required detailed business proposals showing both the capacity and intention to set up a commercial enterprise which would introduce new designs, techniques or technology, expand exports, or promote employment opportunities in Australia. Applicants were expected to have previous

---

<sup>1</sup> This is the thrust of the latest government report on immigration, Committee to Advise of Australia's Immigration Policies (1988), *Immigration: A Commitment to Australia* (2 vols), Australian Government Publishing Service, Canberra (hereafter the Fitzgerald report).

<sup>2</sup> Correspondence with J. Wood, Director, Business Migration Programme Section, Department of Immigration, Local Government and Ethnic Affairs, 22 August 1990. The department responsible for immigration has changed names a number of times. It will generally be referred to here by the acronym DILGEA.

experience in the proposed enterprise and to have sufficient personal, unencumbered and legally transferable funds at their disposal to implement their business plans. No figure was specified, but departmental practice quickly established \$200,000 as the acceptable minimum. The intake under the Entrepreneurial category was fairly negligible, comprising 78 principals in 1979-80 and 106 in 1980-81.

To raise the profile of business migration, DILGEA launched the BMP, which at the outset consisted of two sub-categories. The first was a Business Proposal sub-category which closely mirrored the Entrepreneurial category. The second was a Self Employed sub-category which admitted professionals and tradesmen with their own firms, but which was subsequently withdrawn in January 1983.<sup>3</sup> Although the precise wording has been refined, the basic objectives of the BMP have remained constant throughout its duration. The most recent statement by DILGEA cites the following objectives: job creation, technology transfer, export stimulation and import substitution.<sup>4</sup> Each of these has an obvious forbear in the stated aims of the Entrepreneurial category, except import substitution, which was introduced in 1988 amid growing concern about the current account deficit.

As with the Entrepreneurial category, the eligibility criteria for the BMP are, broadly, the capacity and intention to set up a

---

<sup>3</sup> The BMP was divided into two sub-categories again in 1985 (Investment and Technology/Joint Venture/Entrepreneur) but reverted to one category in 1988, as it exists at present.

<sup>4</sup> DILGEA, Business Migration Programme Procedures Advice Manual (PAM) (2nd ed.), March 1990, §2.1.

commercial enterprise in Australia. The details have evolved in several respects since the inception of the programme, and the current requirements are now contained in Regulations pursuant to the Migration Act 1958 (Commonwealth). The elements of capacity are sufficient skill and equity. Skill is demonstrated by a 'successful business record',<sup>5</sup> and equity by the availability of personally owned and unencumbered capital to transfer to Australia in order to establish a business. The original capital requirement of \$200,000 was increased to \$250,000 in 1984 and increased again in 1985 to \$500,000, composed of cash or other assets.<sup>6</sup> In addition, a sum of \$150,000 was required to cover settlement costs. This prevailed until October 1989, when the capital requirement was reduced to \$350,000 for business migrants under the age of 40, maintained at \$500,000 for those between 40 and 58, and increased to \$850,000 for those over 58.<sup>7</sup> The resulting bias in favour of younger business migrants reflected an overall aim of immigration policy to reduce the average age of the Australian population, as well as the view that younger business migrants are likely to establish a business more quickly.<sup>8</sup> Applicants must also have a minimum of \$150,000 to cover settlement costs in Sydney or Melbourne or \$100,000 for settlement elsewhere.

---

<sup>5</sup> Reg. 47(2)(a)

<sup>6</sup> Other assets may be tangible (for example, plant and stock) or intangible (for example, intellectual property): PAM §5.2.7. There is a cash minimum of \$150,000 as part of the business capital for the proposed venture: PAM §5.2.13.

<sup>7</sup> Reg. 47(2)(c) and (d).

<sup>8</sup> *Weekend Australian* (hereafter *WA*), 30 September-1 October 1989; J Hammond, 'Capital Rules Eased to Lure Young Migrants', *Australian Financial Review* (hereafter *AFR*), 29 September 1989.

As well as the capacity to establish a commercial enterprise in Australia which satisfies the stated objectives of the BMP, prospective business migrants must hold an intention to do so. Evidence of this intention was previously assessed by reference to a detailed business proposal, but this requirement has been progressively relaxed. The business proposal was replaced in 1985 by a statement of intent, which was later made optional. The stated rationale for this was twofold: first, it is unreasonable to bind business persons to a particular course of action well in advance of their arrival in Australia and, secondly, plausible business proposals to which the applicant has no commitment can be easily prepared by consultants, thereby defeating the purpose of the requirement.

Instead, a successful business record has been viewed by DILGEA as the most reliable basis for a decision, although this really evinces the applicant's capacity rather than intention. As it currently stands, an applicant must demonstrate that he or she has 'realistic plans to establish, or take part in, a business in Australia' that will meet the objectives of the programme.<sup>9</sup> In practice, this means that applicants must have a successful business background and provide a summary which indicates their business intentions in Australia, demonstrates how these meet programme objectives, and confirms that their business intentions and investment comply with legal requirements under Australian law.<sup>10</sup> Provided the business background is adequate, the capital requirements are satisfied, and the applicant has a

---

<sup>9</sup> Reg. 47(2)(c).

<sup>10</sup> PAM §5.1.1 and 2.

sound knowledge of the Australian economy, the summary outlined above should prove sufficient.<sup>11</sup> If not, a more detailed statement of intent may need to be submitted.<sup>12</sup> Finally, there must be an intention to reside permanently in Australia.<sup>13</sup>

Two administrative features of the BMP reflect the importance attached to it by the government. The first is that the programme is now partly administered by the private sector. On 5 November 1987, the Minister for Immigration announced at the inaugural Business Migration Conference that applicants would have the option of being processed by accredited agents or agencies.<sup>14</sup> Despite widespread criticism, canvassed in section 5.3, the Accredited Agent Scheme came into operation on 1 January 1988. By 31 July 1990, there were approximately 240 accredited agents.<sup>15</sup>

In part, the new system merely formalised an existing practice whereby certain accounting and law firms, as well as specialist migration agents, prepared applications for submission to DILGEA. It also, however, extended this practice considerably. Whereas previously the eligibility of prospective business migrants was assessed exclusively by departmental officers at the local Australian mission, this may now be performed by an agent, by submitting full documentation on the case together with a statement that the eligibility criteria have been satisfied. While

---

<sup>11</sup> PAM §5.1.3.

<sup>12</sup> PAM §5.1.4.

<sup>13</sup> Reg. 47(2)(e).

<sup>14</sup> Media release MPS 73/87, 5 November 1987.

<sup>15</sup> List provided by DILGEA.

the final decision and visa issue rests with the local mission, this has effectively become an imprimatur.<sup>16</sup>

The second administrative feature of interest is that the BMP is the only component of the immigration programme which is actively promoted overseas. In August 1986, the government announced an allocation of \$420,000 for promotional activities, and since that time expenditure has more than quadrupled to \$1.88 million in 1989-90.<sup>17</sup> Major forms of promotion include overseas seminars for business persons, exhibits at trade fairs, advertising in international publications,<sup>18</sup> and production and distribution of videos and information packages. Projected expenditure for 1990-91 is \$2.2 million.

## 7.2 Performance

This section contains a compilation of the available data on the BMP. Three basic sets of data are presented: the number of settler arrivals, the initial funds transferred and the place of intended residence. The original sources of this information are the overseas missions which process applications under the BMP. As a result, the relative importance of source countries can be assessed. The BMP can be decomposed to evaluate the numerical and financial contribution of each source country, as well as the

---

<sup>16</sup> P Baker (1988), 'Business Migration', *Law Institute Journal* 62(9), 833-835.

<sup>17</sup> Correspondence with J. Wood, note 2.

<sup>18</sup> Including, for example, in-flight magazines, *Christian Science Monitor*, *Far Eastern Economic Review*.

region in Australia in which business migrants from that country are likely to settle.

It should be noted at the outset, however, that the significance of this data in analysing the performance of the BMP has been questioned. The principal difficulty is that the information refers to situations which are readily reversible. Business migrants are free to leave Australia (either formally, by emigrating, or informally, by living elsewhere) or to remit their funds abroad,<sup>19</sup> or both.<sup>20</sup> The data may therefore reflect a potentiality which has never eventuated. Although this is a hallmark of all immigration data collected prior to, or at the time of, settlement, the BMP has been singled out for particularly trenchant criticism.

There is an additional related point. At the heart of the BMP is the intention to establish a business in Australia. The uncertainty of the nexus between capacity and intention has been a persistent source of criticism of the BMP. This is discussed in Section 5.3. The skill and equity requirements merely provide the means to a commercial end. It is quite possible for a business migrants to settle permanently in Australia and to retain their funds in the country but still not set up a business. There are numerous alternatives including investment in the financial markets or real estate, or, simply, retirement. Yet these are explicitly inconsistent with the aims of the BMP: 'Investment in portfolios, rental property, bonds, interest-bearing deposits, trusts and similar

---

<sup>19</sup> There have been recent measures introduced which allow the monitoring of bank accounts to prevent this possibility.

<sup>20</sup> Less important from a national perspective, but still significant for regional analysis, business migrants may relocate within Australia.

facilities is not of acceptable long-term use under the BMP.<sup>21</sup> The essential point is that the data presented in this section, even if accurate, need not necessarily relate to the performance of the BMP relative to its stated objectives.

Of course, there is a link. A person who resides in the country and retains capital locally is more likely to start up a business than one who does not. There is, however, no guarantee that this will occur. What is required is substantial theoretical and empirical research to assess the actual performance of the BMP. An empirical study commissioned by the government is discussed in the Section 7.4. The purpose of the research described in this chapter is to attempt a theoretical assessment of the BMP. Inevitably, this will be an assessment of the potential impact of the programme, so that any conclusions may need to be modified in the light of empirical evidence in order to assess the actual impact.

Leaving the various caveats aside, it is useful to summarise the available information about the BMP. The first set of data relates to the number of business migrants issued with visas to reside in Australia. Between 1982 and 1990 a total of 9,113 cases were processed under the BMP. The caseload represents the number of principals whose applications were accepted. Including immediate family members, who are entitled to accompany the principal, 36,558 persons were admitted during the period. Figure 7.1 shows the evolution of the programme since its

---

<sup>21</sup> PAM §5.2.12.

NUMBER OF BUSINESS MIGRANTS: 1982-90

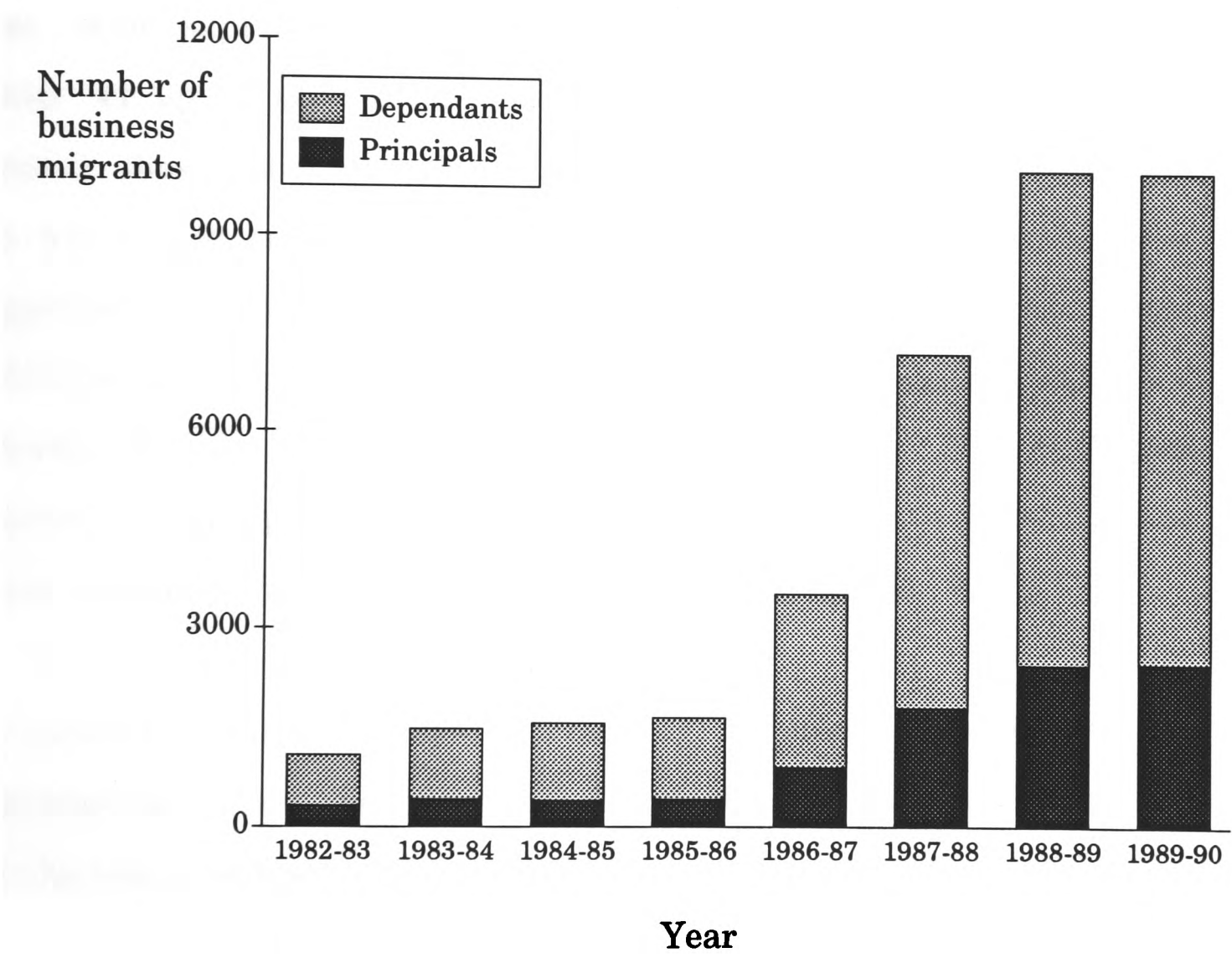


Figure 7.1

inception. The first four years were characterised by a relatively modest and stable intake. Recently, however, the programme has expanded dramatically. In the past two years, the number of business migrants processed was 4,930 (20,040 including families), representing 54 per cent of the total intake since the BMP commenced.

Several factors have contributed to this rapid acceleration. One is the increased resources allocated by DILGEA to promotion. This has been supplemented by the activities of business migration units set up in each of the states and territories. The competition among these units to attract business migrants has been likened to war in the press.<sup>22</sup> In addition, these public sector bodies have aggressively competed with private sector accredited agents, often offering discounted rates for processing BMP applications, and thereby further drawing attention to the scheme. The combined promotion energies of the federal and state government bodies have certainly raised the international profile of the BMP.

A second important factor accounting for the expansion of the programme is the recruitment role played by the private sector. A lucrative industry has developed to service demand and scout for business, involving large accounting and legal firms and small specialist migration consultants. The various players in the industry have formed their own lobby group - the Australian Migration Consultants Association (AMCA) - which was a driving

---

<sup>22</sup> M. Kingston, 'War between the States for business migrants', *Sydney Morning Herald* (hereafter *SMH*), 24 August 1988.

force behind the administrative reforms of the BMP which produced the Accredited Agent Scheme.

Through professional networks and advertising, the private sector has cast the net in the search for prospective business migrants far more widely than government bodies could have managed. It has also been more cost-effective as many of the contacts already existed. This recruitment role was recognised by the Minister when he explained the new administrative arrangements : 'The way the new system would work is that the accredited agent would seek out and advise potential business migrants'.<sup>23</sup>

The two factors so far discussed reflect a strategy of recruitment. For such a strategy to work, there must be a pool of potential migrants. Sources of supply are best analysed by reference to the source country data. Table 7.1 shows the number of settler arrivals by country of last residence. The most striking feature is the high proportion from Asian countries:<sup>24</sup> 73 per cent of cases processed between 1982 and 1990. Furthermore, the proportion has greatly increased throughout the life of the BMP, from 17 per cent in 1982-83 to 85 per cent in 1989-90.<sup>25</sup> To put this recent figure into perspective, the Asian component of the immigration

---

<sup>23</sup> Transcript of address to the Business Migration Conference, 5 November 1988, at 4.

<sup>24</sup> Asia is defined to include Afghanistan, Bangladesh, Burma, Cambodia, China, Hong Kong, India, Indonesia, Japan, Korea, Laos, Malaysia, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, and Vietnam.

<sup>25</sup> The corresponding figures for persons are: 21 per cent and 83 per cent, respectively.

**BMP SOURCE COUNTRIES: 1982-90**


---

| <b>Country of last<br/>residence</b> | <b>Settler arrivals</b> | <b>% Total</b> |
|--------------------------------------|-------------------------|----------------|
| Hong Kong                            | 11,076                  | 30.3           |
| Taiwan                               | 5,549                   | 15.2           |
| UK                                   | 2,592                   | 7.1            |
| Malaysia                             | 2,539                   | 6.9            |
| Indonesia                            | 1,882                   | 5.2            |
| South Korea                          | 1,584                   | 4.3            |
| Singapore                            | 1,574                   | 4.3            |
| Germany (West)                       | 863                     | 2.4            |
| South Africa                         | 780                     | 2.1            |
| Japan                                | 711                     | 1.9            |
| Brunei                               | 655                     | 1.8            |
| Philippines                          | 516                     | 1.4            |
| China                                | 510                     | 1.4            |
| USA                                  | 456                     | 1.2            |
| Fiji                                 | 434                     | 1.2            |
| Other                                | 4,812                   | 14.8           |
| <i>Total</i>                         | <i>36,533</i>           | <i>100.0</i>   |

---

Table 7.1

programme as a whole in 1988-89 was 42 per cent.<sup>26</sup> Figures 7.2 and 7.3 show the current state of the increasing trend towards Asian source countries. In the first year of the programme (1982-83), only Malaysia and Hong Kong were significant source countries, accounting for about 18 per cent of the total BMP intake. In contrast, in 1989-90 seven out of the top eight source countries were Asian. Together, they accounted for 82 per cent of the cases processed in that year.

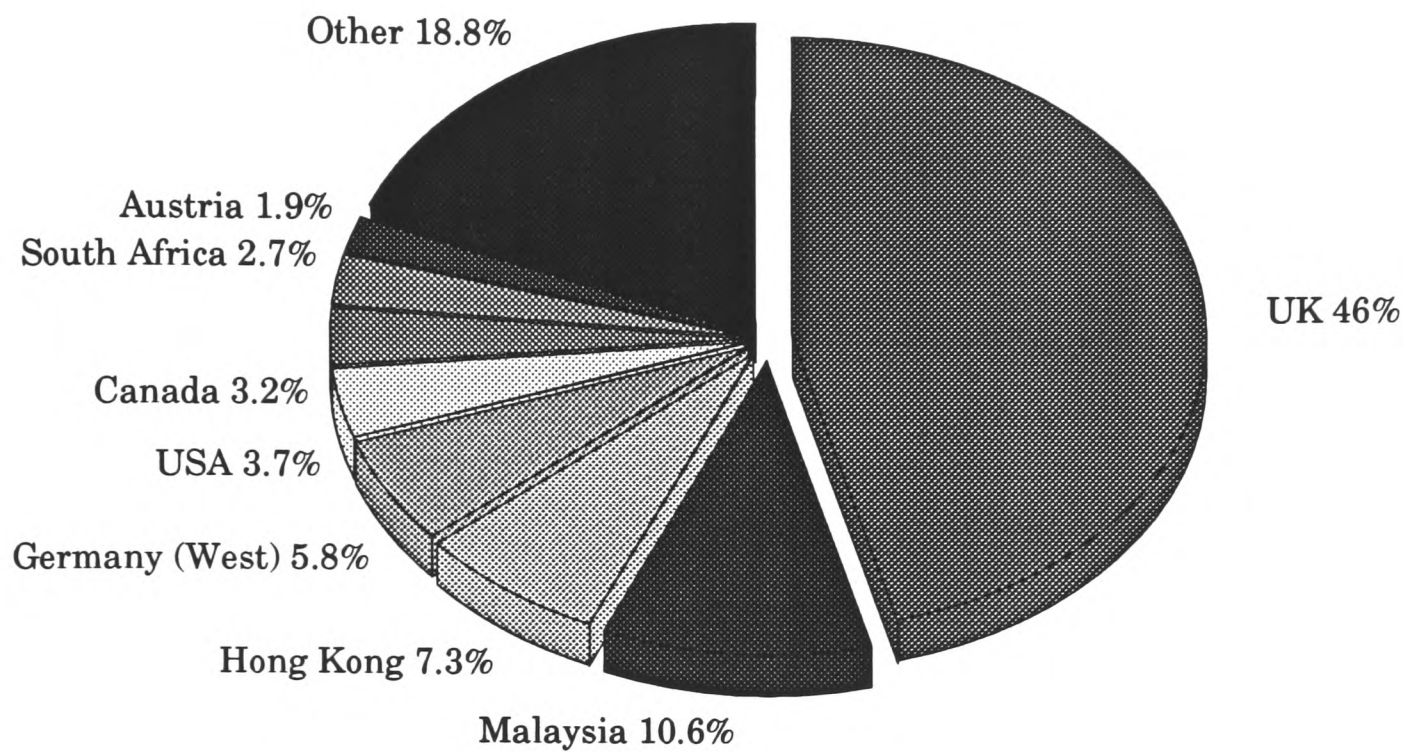
It is clear that the expansion of the BMP has been an overwhelmingly Asian phenomenon. In large part, it has been due to rising tensions in certain countries, such as Hong Kong, Taiwan, Malaysia and Brunei. Hong Kong is the classic case in point. Uncertainty about the political future of the colony after 1997 has caused substantial emigration, with the United States, Canada, Australia and New Zealand the main recipients. Since 1982, Australia has admitted 11,076 people from Hong Kong under the BMP, representing 30 per cent of the total intake. As with Asian source countries in general, the proportion has increased over the duration of the programme, from 6 per cent in 1982-83 to 33 per cent in 1989-90, and shows no signs of abatement.

Ethnic tensions in other countries such as Malaysia and Taiwan have also played a part. Fiji provides a neat example showing the effect of a major political upheaval. Only after the coup led

---

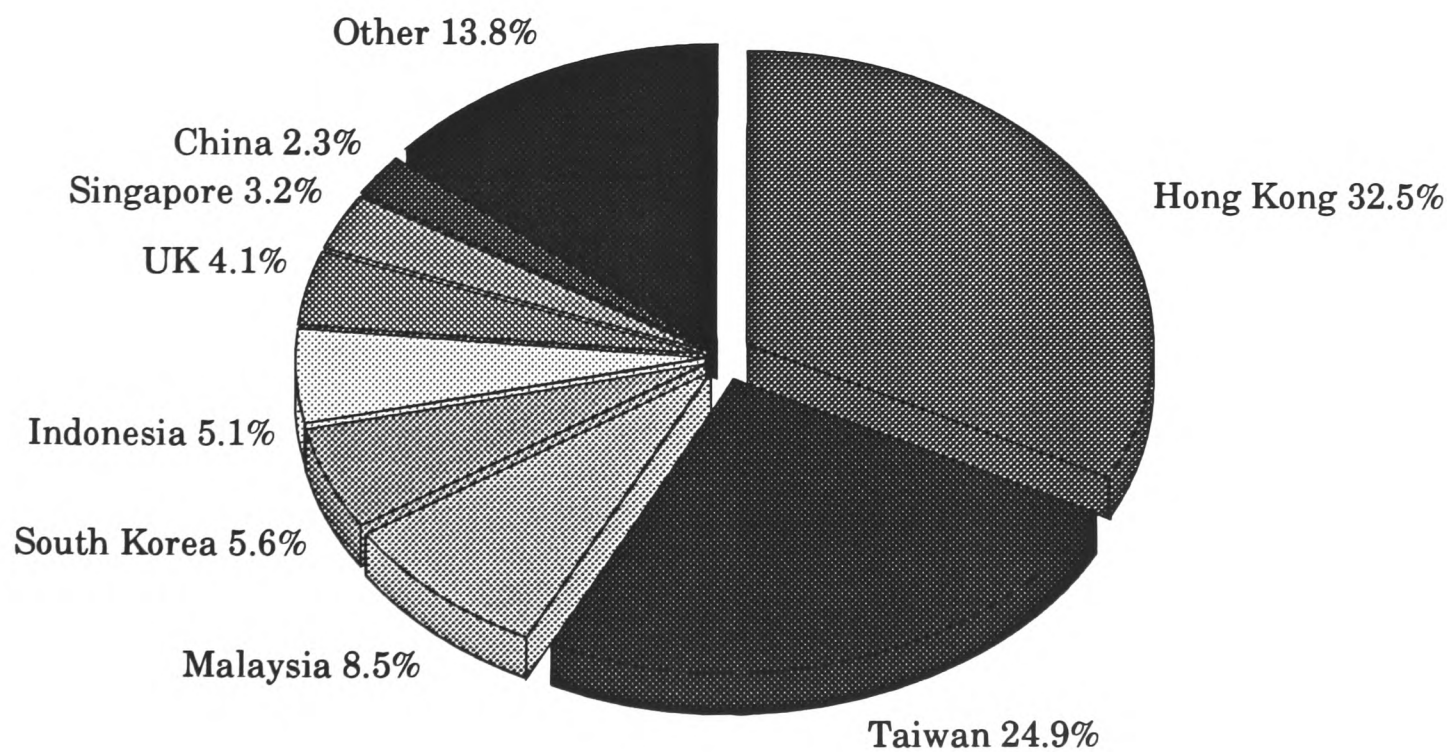
<sup>26</sup> Bureau of Immigration Research, *Immigration Update*, September 1990. To be comparable with the BMP figures, the figure quoted relates to country of last residence. For country of birth, the Asian component of the immigration programme increases slightly to 42 per cent.

**BMP SOURCE COUNTRIES: 1982-83**



**Figure 7.2**

**BMP SOURCE COUNTRIES: 1989-90**



**Figure 7.3**

by Colonel Rambuka in 1987 does Fiji figure as a source country for the BMP. While there is no evidence, it is highly likely that the intake from Fiji has been almost exclusively of Indian extraction.

The recent dramatic expansion of the BMP may therefore be seen as the product of several cooperative factors. The ready source of supply caused by rising tensions in certain Asian countries, particularly Hong Kong, has been tapped by an increasingly sophisticated strategy of promotion and recruitment.

Concomitant with the increase in settler arrivals has been a rise in the level of initial funds transferred in accordance with the capital requirements of the scheme. This is the second principal set of data on the BMP, illustrated in Figure 7.4. A total of \$3.6 billion has been transferred to Australia in the period 1983-89.<sup>27</sup> From a modest \$194 million in 1983-84 this sum grew to \$1.54 billion in 1988-89. The average level of initial funds transferred per principal peaked in 1985-86, and subsequently settled to around \$600,000. It should be reiterated that these figures relate to the initial level of funds transferred at the time the visa was issued. There is some evidence that additional funds are subsequently transferred by business migrants after settling in Australia.<sup>28</sup> There is also considerable controversy about whether the funds transferred to Australia actually remain there, which will be discussed in the next section.

---

<sup>27</sup> Full records of initial funds transferred exist for the financial years 1983-84 onwards. Data for the financial year 1989-90 are currently unavailable. The figures are in 1988-89 prices.

<sup>28</sup> See Section 7.4.

**FUNDS TRANSFERRED BY BUSINESS  
MIGRANTS: 1983-89**

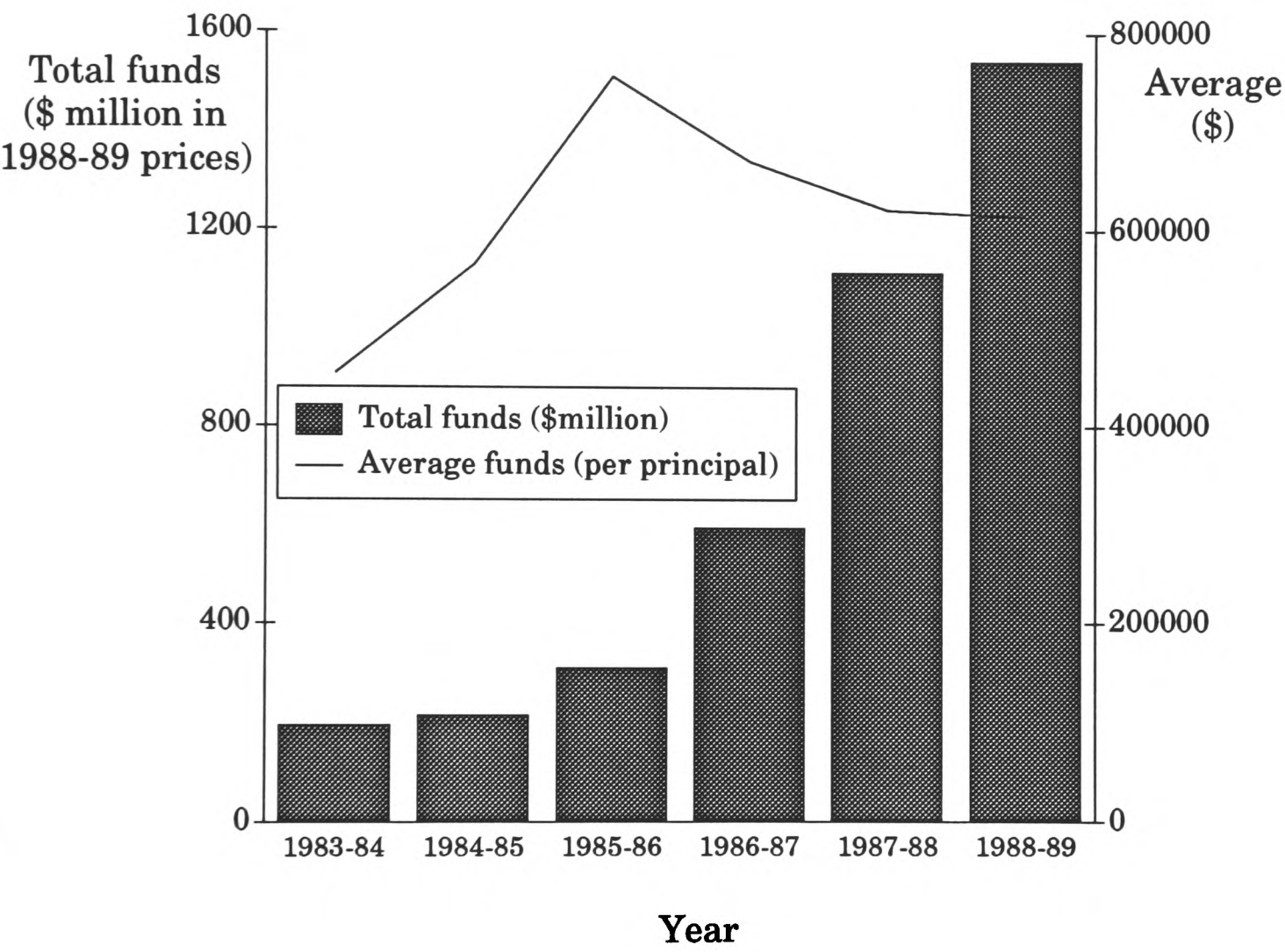


Figure 7.4

The average figure transferred per business migrant varies according to the country of last residence. Table 7.2 shows the range for the important source countries in 1988-89. Business migrants from Singapore, the United States and Japan tend to transfer well above the average level of funds, with over \$1 million recorded for these countries.

The final set of data relates to the intended place of residence<sup>29</sup> nominated by successful applicants under the BMP. Table 7.3 presents the settlement preferences on an annual basis. This information may be summarised in two ways. Figure 7.5 simply separates the total intake over the period 1982-90 by place of intended residence. It shows that New South Wales receives the largest proportion of business migrants (39 per cent), followed by Western Australia (17 per cent), Queensland (17 per cent) and Victoria (16 per cent). More revealing in terms of a regional analysis of the BMP is Figure 7.6, which adjusts the figures relative to the existing population base in each state or territory.<sup>30</sup> From this it is clear that Western Australia has been the main beneficiary of the BMP. It has managed to attract 50 per cent more business migrants per capita than the next most popular destination, New South Wales. Another interesting feature to emerge is that Victoria has failed to attract its share of business migrants, proving more popular than only Tasmania and the ACT.

---

<sup>29</sup> By state or territory.

<sup>30</sup> The most recent figures available for the population of the states and territories are:

|                 |           |                         |           |
|-----------------|-----------|-------------------------|-----------|
| NSW             | 5,827,400 | Western Australia       | 1,633,900 |
| Victoria        | 4,380,000 | Tasmania                | 456,700   |
| Queensland      | 2,906,800 | Northern Territory      | 157,300   |
| South Australia | 1,439,200 | Aust. Capital Territory | 285,000   |

Source: *Australian Demographic Statistics, 1990*, ABS Catalogue No. 3101.0.

**TOTAL AND AVERAGE FUNDS TRANSFERRED  
BY SOURCE COUNTRY: 1988-89**

---

| <b>Source country</b> | <b>Total<br/>(\$A million)</b> | <b>Average per<br/>principal (\$A)</b> |
|-----------------------|--------------------------------|----------------------------------------|
| Hong Kong             | 738                            | 606,000                                |
| Singapore             | 125                            | 1,014,000                              |
| Malaysia              | 114                            | 474,000                                |
| UK                    | 91                             | 585,000                                |
| Japan                 | 82                             | 1,096,000                              |
| Indonesia             | 66                             | 553,000                                |
| South Korea           | 64                             | 430,000                                |
| USA                   | 40                             | 1,168,000                              |
| Brunei                | 35                             | 507,000                                |

---

Table 7.2

## PLACE OF INTENDED RESIDENCE: 1982-90

|              | NSW          | VIC          | QLD          | SA         | WA           | TAS        | NT         | ACT        | N/S        | TOTAL        |
|--------------|--------------|--------------|--------------|------------|--------------|------------|------------|------------|------------|--------------|
| 1982-83      | 50           | 26           | 21           | 3          | 33           | 4          | 5          | 1          | 28         | 171          |
| (%)          | 29.2         | 15.2         | 12.3         | 1.8        | 19.3         | 2.3        | 2.9        | 0.6        | 16.3       | 100.0        |
| 1983-84      | 92           | 94           | 51           | 17         | 98           | 6          | 1          | 1          | 19         | 379          |
| (%)          | 24.3         | 24.8         | 13.5         | 4.5        | 25.9         | 1.6        | 0.3        | 0.3        | 5.0        | 100.0        |
| 1984-85      | 106          | 81           | 35           | 27         | 93           | 8          | 2          | 2          | 14         | 368          |
| (%)          | 28.8         | 22.0         | 9.5          | 7.3        | 25.3         | 2.2        | 0.5        | 0.5        | 3.8        | 100.0        |
| 1985-86      | 153          | 65           | 68           | 44         | 82           | 15         | 7          | 7          | 15         | 456          |
| (%)          | 33.6         | 14.3         | 14.9         | 9.6        | 18.0         | 3.3        | 1.5        | 1.5        | 3.3        | 100.0        |
| 1986-87      | 355          | 140          | 109          | 74         | 176          | 29         | 7          | 5          | 24         | 919          |
| (%)          | 38.6         | 15.2         | 11.9         | 8.1        | 19.2         | 3.2        | 0.8        | 0.5        | 2.6        | 100.0        |
| 1987-88      | 671          | 295          | 296          | 114        | 336          | 15         | 6          | 5          | 114        | 1,852        |
| (%)          | 36.2         | 15.9         | 15.9         | 6.1        | 18.1         | 0.8        | 0.3        | 0.3        | 6.1        | 100.0        |
| 1988-89      | 1,029        | 347          | 418          | 159        | 454          | 14         | 14         | 8          | 68         | 2,511        |
| (%)          | 40.9         | 13.8         | 16.6         | 6.3        | 18.1         | 0.6        | 0.6        | 0.3        | 2.7        | 100.0        |
| 1989-90      | 1,136        | 395          | 516          | 92         | 311          | 9          | 14         | 9          | -          | 2,482        |
| (%)          | 45.8         | 15.9         | 20.8         | 3.7        | 12.5         | 0.4        | 0.6        | 0.4        | -          | 100.0        |
| <b>TOTAL</b> | <b>3,592</b> | <b>1,443</b> | <b>1,514</b> | <b>530</b> | <b>1,583</b> | <b>100</b> | <b>56</b>  | <b>38</b>  | <b>282</b> | <b>9,138</b> |
| <b>(%)</b>   | <b>39.3</b>  | <b>15.8</b>  | <b>16.6</b>  | <b>5.8</b> | <b>17.3</b>  | <b>1.1</b> | <b>0.6</b> | <b>0.4</b> | <b>3.1</b> | <b>100.0</b> |

|     |                              |
|-----|------------------------------|
| NSW | New South Wales              |
| VIC | Victoria                     |
| QLD | Queensland                   |
| SA  | South Australia              |
| WA  | Western Australia            |
| TAS | Tasmania                     |
| NT  | Northern Territory           |
| ACT | Australian Capital Territory |
| N/S | Not stated                   |

Table 7.3

**PLACE OF INTENDED RESIDENCE:  
SHARES OF BMP**

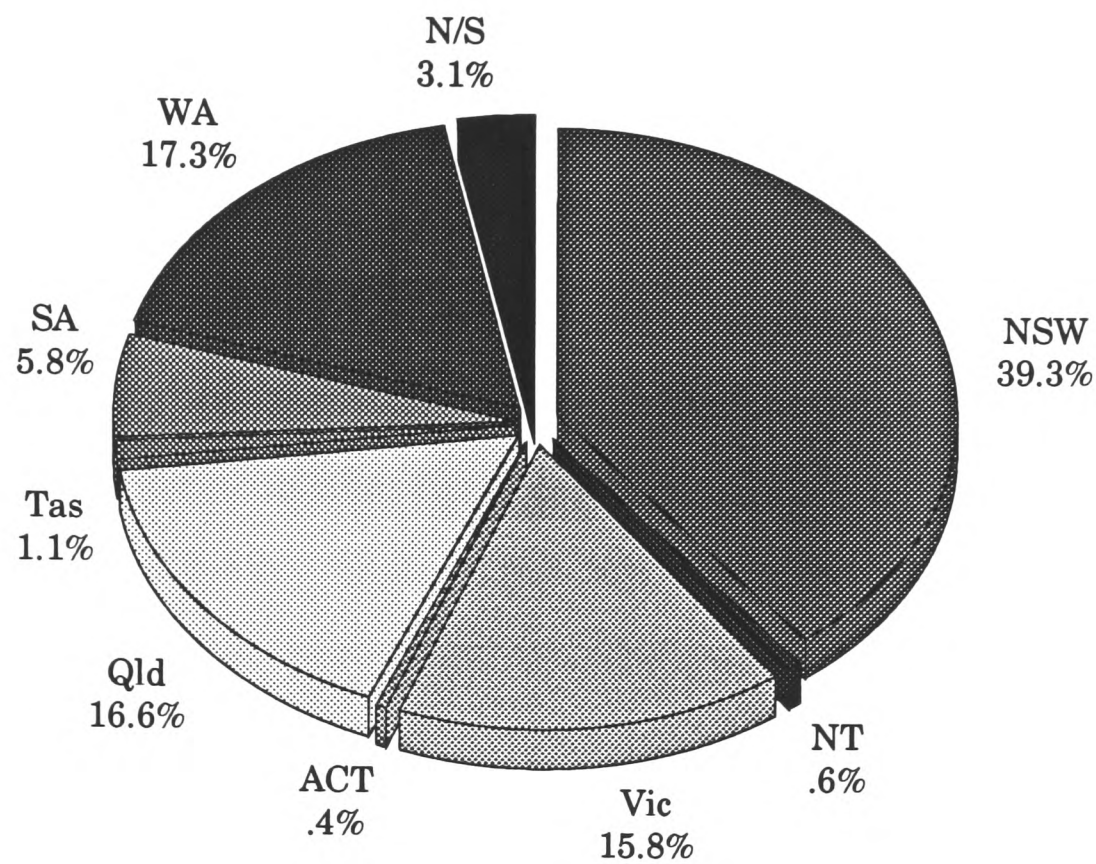
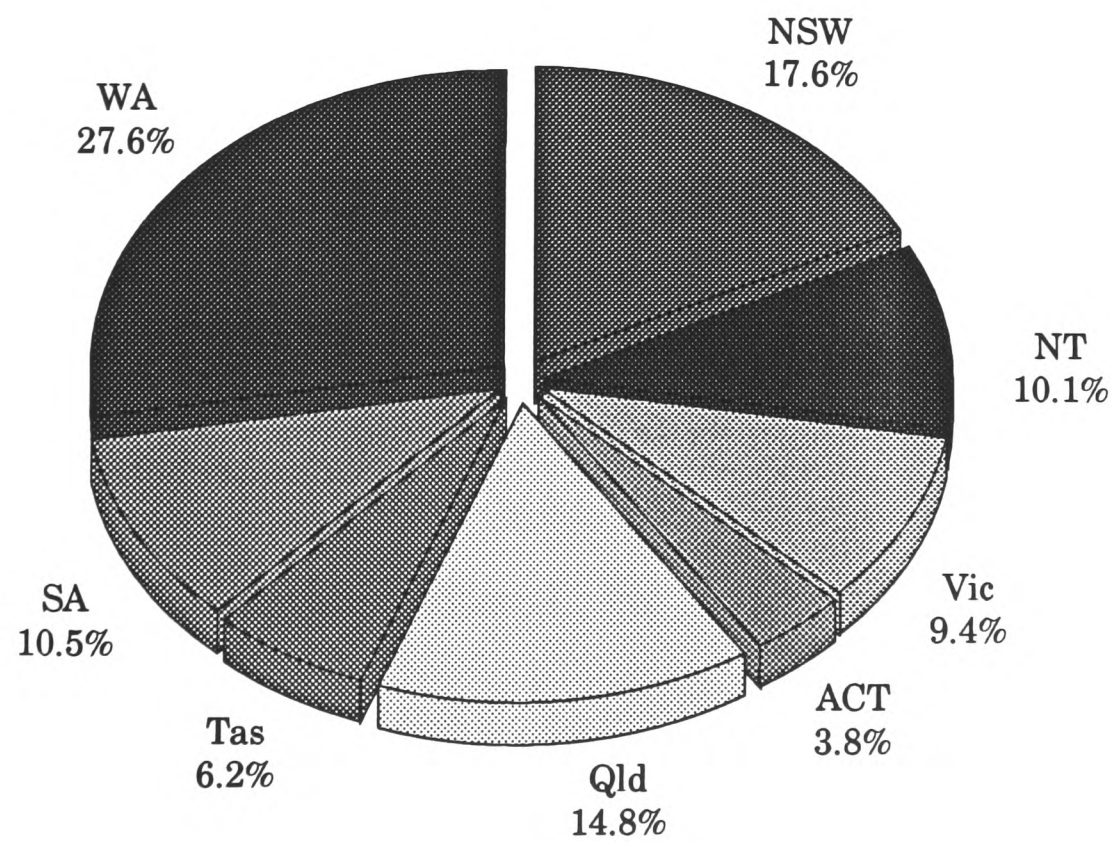


Figure 7.5

**PLACE OF INTENDED RESIDENCE: SHARES  
OF BMP RELATIVE TO POPULATION BASE**



Several trends relating to the shares of the BMP captured by various states can be discerned in Table 7.3. First, the drawing power of Western Australia has waned over the period 1982-90, peaking at 26 per cent of the total intake in 1983-84, settling down to 18 per cent between 1985 and 1989, but dropping to 13 per cent in 1989-90. Secondly, the proportion of business migrants intending to settle in New South Wales has risen from less than 30 per cent in the first three years of the programme to 46 per cent in 1988-89. Queensland has similarly enjoyed a rising share peaking at 17 per cent in 1988-89. In contrast, the Victorian share shows a trend decline, recording its lowest figure (14 per cent) in 1988-89, although increasing slightly in 1989-90.

### 7.3 Political environment: allegation and response

As a result of its rapid expansion, the BMP has attracted increasing attention. A survey of recent press coverage reveals widespread concern about the effectiveness of the scheme. Occasionally, government claims of economic benefits have been accepted at face value, as reflected in the following headline: '30,000 jobs created by super-rich migrants'.<sup>31</sup> More frequently, however, articles have appeared under headlines of the following sort: 'Exposed: the big-money migration rort',<sup>32</sup> 'Business migration "residency-buying"',<sup>33</sup> 'Business migrants aren't setting up shop'.<sup>34</sup> Deep scepticism surrounds the BMP so that, far from

---

<sup>31</sup> G. Roberts, *SMH*, 1 July 1988.

<sup>32</sup> M. Kingston, *SMH*, 24 August 1988. For the uninitiated, a 'rort' is an Australian colloquialism for a ruse.

<sup>33</sup> R. Reid, *AFR*, 10 October 1988.

<sup>34</sup> B. Woodley, *The Australian*, 26 November 1988.

galvanising general support for the economic benefits of immigration, it has not even been judged as a success in its own right.

One common criticism of the BMP is that the selection criteria have been relaxed to the point where only the capital requirement remains.<sup>35</sup> The federal Opposition, while supporting the BMP in principle, has voiced this concern about the current state of the programme through its spokesman on immigration: 'The Government now openly allows people to write a cheque for permanent residency'.<sup>36</sup> Some find this objectionable per se: 'The selling of passports is as much a part of a banana republic as a worthless currency'.<sup>37</sup> Others, in particular representatives of the state business migration units, have condemned the decision by the government to dispense with the requirement for a business proposal. According to the business manager of the Tasmanian Development Authority:

It's not a business migration programme, it's a money migration programme. If you've got \$650 000 you don't need a business plan or a feasibility study. You just walk in, then go back to Hong Kong or Taiwan and keep on working.<sup>38</sup>

---

<sup>35</sup> S. Bagwell, *AFR*, 19 May 1988.

<sup>36</sup> A. Cadman MP, quoted in Kingston, note 22.

<sup>37</sup> L. Maher, director of business migration, West Australian's Exim Corporation, quoted in P. Bone, 'Give me your rich entrepreneurs, says Australia', *The Age*, 9 November 1987.

<sup>38</sup> *SMH*, 24 August 1988. Underlying this remark is the belief that fulfilment of the programme's objectives is more likely where a business plan exists. This is a matter of speculation. Some evidence to point is discussed in Section 7.4.

This view reflects a widely held suspicion that many business migrants use the scheme to acquire a visa as insurance against uncertain futures in their own countries. Fuelled by the burgeoning number of cases processed in Hong Kong, this suspicion has received support from a number of sources. The NSW Minister for Business and Consumer Affairs, for example, publicised his department's inability to trace more than half the business migrants who had entered the state and concluded: 'The suspicion must be that some have come with no intention to stay.'<sup>39</sup> Similar reports have emanated from the BMP industry itself; one accredited agent estimated that at least a quarter of Hong Kong and Indonesian business migrants settled their families in Australia but returned to their country of origin to continue business.<sup>40</sup>

There is also concern that even those who do settle in Australia never actually establish businesses. The chairman of the Ethnic Community Council of Victoria expressed the view that 95 per cent of BMP approvals do not make the investment promised.<sup>41</sup> A former deputy director of immigration for NSW derided the scheme as 'cheque book migration' and pointed to the absence of 'any real evidence that they would buy anything more than a house, a yacht and a Mercedes'.<sup>42</sup>

---

<sup>39</sup> Quoted in M. Coulton, '522 business migrants missing', *SMH*, 18 November 1988, and M. Kingston, 'Business migrants go overseas', *SMH*, 19 November 1988.

<sup>40</sup> A. Osborne, partner in Overseas Business Ventures Australia, quoted in Kingston, note 22.

<sup>41</sup> Quoted in B. Woodley, 'Business migrants aren't setting up shop', *The Australian*, 26 November 1988.

<sup>42</sup> J. Pomeroy, quoted in S. Bagwell, 'Business migrants policy criticised', *AFR*, 19 May 1988.

Various abuses relating to the capital requirement have also been alleged. The simplest of these is that the funds initially transferred are repatriated overseas after arrival.<sup>43</sup> Other more elaborate schemes, based on the recycling of a single \$500,000 fund to support multiple applications, have also been reported. Under one ploy, the money is borrowed and subsequently repaid after the visa is issued.<sup>44</sup> Anecdotal evidence of this practice abounds, with one source in the BMP industry citing a Chinese agent in Chinatown (Sydney) lending prospective migrants \$500,000 for a month at 30 per cent interest to qualify for the BMP.<sup>45</sup> Another ploy involves recycling of the sum within extended families<sup>46</sup> or a wider network. Allegations of financial ruses have attracted a great deal of adverse publicity for the BMP.<sup>47</sup> They have repeatedly been referred to by the federal Opposition<sup>48</sup> and the Australian Democrats<sup>49</sup> when criticising the programme.

---

<sup>43</sup> M. Stutchbury, 'Report recommends sharper "economic" focus on migrants', *AFR*, 16 February 1988; A. Davies, 'Govt to scrutinise business migrants', *AFR*, 1 April 1988.

<sup>44</sup> C. Frodsham, manager, AUSEAN International (a Perth-based migration consultancy), quoted in T. Wright, 'Business migrant plan comes under scrutiny', *Canberra Times* (hereafter *CT*), 5 November 1987; W. Burns, 'Shake-up plan in criteria for skilled migrants', *AFR*, 21 March 1988.

<sup>45</sup> Roberts, note 31.

<sup>46</sup> A. Grutzner, 'Business migrants' financial affairs may be monitored', *CT*, 4 November 1987; T. Wright, note 44.

<sup>47</sup> Apart from the articles already cited, Kingston, note 22; Kingston, note 39.

<sup>48</sup> Hon. A. Cadman, MP, Opposition spokesman on immigration, quoted in R. Reid, note 33.

<sup>49</sup> Senator the Hon. J. Jenkins, 'End business migration rorts', media release PR 88-419, 30 September 1988.

The most sensational abuse alleged to date, however, is that members of the Chinese Triads have entered Australia under the BMP. This claim was made by the National Crimes Authority, a federal body with a brief to investigate, *inter alia*, organised crime. Subsequently, a current affairs programme purported to expose two cases of Chinese criminals admitted as business migrants.<sup>50</sup> This was seized on by the federal Opposition as evidence that the entire immigration programme had run 'out of control'.<sup>51</sup> Soon afterwards, four men were named in the Victorian parliament as participants in a business migration racket to bring Triad members to Melbourne.<sup>52</sup> Two of the men named were alleged to be officers of the Victorian Economic Development Corporation. None of these allegations of criminal infiltration has been substantiated in the courts. Nevertheless, they have received considerable publicity, including anecdotal confirmation.<sup>53</sup>

The litany of alleged abuses has provoked severe criticism of the government's administration of the BMP. A central theme has been the failure to establish adequate procedures to monitor and prevent abuses of the programme.

---

<sup>50</sup> Four Corners, ABC (public television broadcaster), 24 October 1988. This was denied by the Minister, who stated that both cases had occurred in the mid-70's; one had since been deported and the other gaoled. Source: D. Mahoney, 'Inquiry wanted on migration', *CT*, 27 October 1988.

<sup>51</sup> Hon. A. Cadman, MP, quoted in D. Mahoney, note 50.

<sup>52</sup> Hon. B. McNamara, leader of the National Party, quoted in D. Porter, 'Four men deny links with migration rackets', *The Age*, 18 November 1988.

<sup>53</sup> M. Metherell, 'Government boosts its business migration charges', *The Age*, 7 October 1988.

Because of the absence of adequate monitoring procedures, the government's decision to allow the private sector agents to process BMP applications was stridently attacked. The federal Opposition condemned the plan as a minefield of corruption.<sup>54</sup> The former deputy director of immigration for NSW, in a submission to the Committee to Advise on Australia's Immigration Policies (CAAIP), argued that:

The potential for malpractice and abuse is well-documented, and for this reason such areas as business records and qualifications of people must continue to be examined by experienced and objective officers of the Public Service whose first loyalty is to Australia.<sup>55</sup>

These sentiments were echoed elsewhere: 'It seems inevitable that abuses will increase under a system of migrant selection based on private profit.'<sup>56</sup> Ironically, one of the initial rationales for the privatisation was to eliminate unscrupulous agents operating on the fringes of the scheme.<sup>57</sup> One of the other rationales, to remove some of the frustrations of processing by government officials,<sup>58</sup> has met with a sardonic reception in some quarters. One press commentator, after quoting the president of AMCA who welcomed the removal of the need for successful business persons to be humiliated by queuing up at overseas

---

<sup>54</sup> Hon. J. Short, MP, Opposition spokesman on home affairs, quoted in *The Australian*, 5 November, 1987.

<sup>55</sup> J. Pomeroy, quoted in Bagwell, note 42.

<sup>56</sup> Kingston, note 32.

<sup>57</sup> K. Randall (1987), 'Business migrants get new agents', *Business Review Weekly* 10(45), at 44.

<sup>58</sup> Media release, note 14.

posts, remarked: 'Less successful and lower profile migrants may presumably continue to be humiliated.'<sup>59</sup>

In a report on immigration selection mechanisms commissioned by the CAAIP, a private consultancy commented on both the need for expedition of BMP applications and the expanded scope for abuse of the programme.<sup>60</sup> While favouring expedition, the report expressed the concern that, under privatisation, consultants abroad may be susceptible to undue pressure and thus may not make objective assessments on the suitability or eligibility of certain applicants.<sup>61</sup> Accordingly, it recommended that for assessment purposes contact between BMP applicants and a departmental officer be obligatory.<sup>62</sup> The government had argued when it announced the privatisation that assessment required a commercial judgment and was therefore best handled by people with business expertise.<sup>63</sup> This was rejected in the report. Instead, a preferred solution was proposed whereby the lack of expertise of departmental officers could be rectified by training personnel located at strategic high volume posts or by relying on suitably qualified officers from other departments such as trade. These recommendations did not filter through to the final report of the CAAIP (the Fitzgerald Report).

The privatisation of aspects of the BMP was criticised primarily because it occurred at a time when allegations of abuse were rife

---

<sup>59</sup> Maher, note 37.

<sup>60</sup> Coopers & Lybrand W.D. Scott, 'Immigrant Selection Mechanisms', in Fitzgerald Report (1988), note 1, vol. 2.

<sup>61</sup> Note 60, at 24.

<sup>62</sup> Note 60, at 63.

<sup>63</sup> Media release, note 13.

and concrete evidence to refute them was sparse. As discussed in the previous section, the only information about the programme, with the exception of an ad hoc survey conducted by DILGEA in 1984, was collected prior to arrival and may not reflect the current position. The principal cause of this paucity of information was that no concerted effort had been made to detect abuses, leaving the programme vulnerable to various allegations.

The Fitzgerald report referred to submissions it had received expressing doubt about business migration and its economic contribution. Noting the absence of monitoring procedures, it recommended that 'an effective monitoring and auditing system be established to cover both the investment of funds by business immigrants and the activities of accredited business immigration agents'.<sup>64</sup> The recommended inclusion of accredited agents under the monitoring umbrella followed allegations of dubious practices by certain agents.<sup>65</sup>

The government responded to this recommendation by announcing a monitoring package on 30 June, 1988.<sup>66</sup> Billed as an 'expansion of the programme's existing and evaluation effort', the stated aims were to assess:

- (i) the programme's success as measured against the government's economic objectives;

---

<sup>64</sup> Fitzgerald Report (1988), note 1, vol. 1, at 91. The recommendation as regards auditing followed a criticism by the Auditor-General.

<sup>65</sup> M. Byrnes, 'There's something smelly about the migration services business', *AFR*, 29 September 1988.

<sup>66</sup> Hon. C. Holding, MP, Minister for Immigration, Local Government and Ethnic Affairs, media release MPS 70/88, 30 June 1988.

- (ii) the performance of individual accredited agents; and
- (iii) the cost-effectiveness of global promotion of the BMP.

Details of the means to achieve these ends were only given for the first aim. A joint federal and state government study was proposed to provide data on the settlement of business migrants and the enterprises set up by them. The results of this study were released on 27 June 1990. The principal findings are discussed in the next section.

This system of monitoring is essentially retrospective.<sup>67</sup> While it provides information relating to the fulfilment of the programme's objectives, from which abuses may be inferred, it is not able to detect abuses at the time of occurrence. In the absence of effective sanctions, such a system is also unlikely to prove much of a deterrent. Accordingly, several more active measures designed to prevent abuse of the BMP were canvassed.

One proposal was made that permanent residency visas be made contingent upon the fulfilment of business plans over a given time frame.<sup>68</sup> This suggestion was advanced in the report on immigrant selection mechanisms commissioned by the CAAIP.<sup>69</sup> This would resemble the Canadian system whereby visas are issued conditionally in the absence of an established business

---

<sup>67</sup> This was admitted by a spokesman for the Minister quoted in Mahoney, note 50.

<sup>68</sup> L. S. Boon, 'Private sector role for migrant screening', *The Australian*, 3 November 1987; Stutchbury, note 43.

<sup>69</sup> Coopers & Lybrand W.D. Scott (1988), note 60.

investment or a firm commitment to business plans (for example, a binding contract); marginally qualified applicants are also granted conditional entry to give them an opportunity to prove themselves. In August 1988, the federal Opposition called for the abolition of automatic permanent residency and its replacement by a two year test period after which conditional visas could be converted to permanent visas upon proof that a business venture had been set up.<sup>70</sup> At the time, the Minister refused to countenance the proposal: 'The programme is based on selecting the right kind of business migrant, not based on coercion after they reach Australia.'<sup>71</sup>

An alternative measure designed to achieve the same result was a recommendation of the Fitzgerald report that the grant of Australian citizenship be contingent on proof of an established business.<sup>72</sup> This suggestion reflects the importance attached by the committee responsible for the preparation of the report to the role of citizenship in immigration policy.<sup>73</sup> In practical terms, the issue of passports is at stake. Currently, migrants can apply for a passport after residency for 730 days.<sup>74</sup> Under a recommendation of the Fitzgerald Report, however, passports would be restricted to

---

<sup>70</sup> Hon. A. Cadman, MP, quoted in M. Kingston, 'Test period urged for business migrants', *SMH*, 27 August 1988.

<sup>71</sup> Hon. C. Holding, MP, quoted in Kingston, note 71. In practice, the current procedure is not much different. All migrants receive visas valid for multiple journeys into Australia within the first three years of settlement. Five year renewals are granted to those who have demonstrated commitment to Australia by either accumulating two years' residence or, in the case of business migrants, those who have engaged in a business which meets BMP objectives.

<sup>72</sup> Fitzgerald Report, note 1, vol. 1, at 124 (recommendation no. 43)

<sup>73</sup> Fitzgerald Report, note 1, vol. 1, at 67-68.

<sup>74</sup> This refers to days actually spent in Australia, not simply time holding a permanent residency visa.

business migrants who had fulfilled their original commitments. The government displayed more enthusiasm for this proposal than the conditional visa scheme, but maintained that it also 'reflected elements of coercion'.<sup>75</sup>

Measures designed to prevent financial abuses of the BMP have also been put forward. One particularly onerous proposal would require business migrants to place a portion of the initial funds transferred into a government approved interest-bearing trust for five years.<sup>76</sup> Although this practice has gained some currency in Western Australia,<sup>77</sup> it has been rejected by the federal government:

There are no special mechanisms to lock funds into specific investments and such investments and such mechanisms are not seen as desirable as they could result in funds being locked into passive investment.<sup>78</sup>

A second proposal was that the financial activities of business migrants be monitored with the cooperation of banks and other financial institutions. This possibility was foreshadowed by the Minister in November 1987,<sup>79</sup> but until recently was eschewed by the government on civil liberty grounds. To the parliamentary question: 'Is there any policing of business migrants once they have arrived in Australia to ensure that both they and their money remain here?', the Minister replied:

---

<sup>75</sup> Kingston, note 71.

<sup>76</sup> C. Frodsham, quoted in T. Wright, note 44.

<sup>77</sup> Kingston, note 32.

<sup>78</sup> Hon. C. Holding, MP, Hansard, Answers to Questions, Question No. 1210, 3 November 1988, at 2454.

<sup>79</sup> Hon. M. Young, MP, quoted in Grutzner, note 46.

Business migrants have the same civil rights as other Australian residents and their activities are not 'policed' (although their activities are now monitored more than any other category of migrant). Similarly, migrants who are accepted as spouses, or nominees of employers are not policed. The government's re-entry policies are designed to maintain appropriate control on residence while allowing all migrants the opportunity to engage in necessary travel during their first three years in Australia. Business migrants in particular need this facility.<sup>80</sup>

Recently, however, the government resiled from this position and introduced several measures it had previously regarded as coercive. As of 19 December 1989, applicants are required to sign a declaration stating the accounts to which their funds have been transferred<sup>81</sup> and authorising the recipient banks or other financial institutions to disclose details of their accounts to DILGEA officers for a period of up to three years after taking up permanent residence in Australia. The declaration also states that the funds are personally owned, unencumbered and have been transferred for business and settlement purposes and will remain in Australia until a business is established. The issue of a visa is strictly conditional on the declaration being made.

The significance of the declaration is that, under section 20 of the Migration Act 1958 (Commonwealth), any false or controverted statement could lead to visa cancellation or even deportation.<sup>82</sup>

---

<sup>80</sup> Holding, note 78.

<sup>81</sup> The visa can only be issued once a Confirmation of Funds Transfer form has been received from a bank in Australia (introduced on 2 April 1990).

<sup>82</sup> J. Wood, Director, Business Migration Section, DILGEA, quoted in S. Neales, 'Govt acts on rorts in migration business', *AFR*, 28 September 1989.

One aim is to promote compliance with the requirements of the programme by highlighting to potential business migrants that abuses are now more readily detectable and that sanctions are available under the legislation.<sup>83</sup> Another is to place the government in a stronger legal position to act in the event that the requirements are breached. The new provisions, while falling short of a comprehensive monitoring scheme, at least provide a facility for investigation and a sanction where necessary.

The demonstrated reluctance of the government to implement more stringent monitoring procedures or preventive measures stems from its overriding desire to expand the BMP. It is acutely aware of competition from Canada, New Zealand and the United States for a relatively scarce commodity. In the words of the then Minister: 'Contrary to popular belief, there is no large international pool of successful business people simply lining up to migrate to Australia.'<sup>84</sup> Consequently, a strategy of maximising the intake can be discerned in most of the government's important decisions concerning the BMP. It was the principal motivation behind the decision to privatise the processing of BMP applications. Equally, it militated against an oppressive system of checks and safeguards which would compare unfavourably with competing business migration programmes in other countries.<sup>85</sup> In navigating its flagship through fairly hazardous waters, the

---

<sup>83</sup> P. Matthewson, president, AMCA, quoted in Neales, note 82.

<sup>84</sup> Hon. C. Holding, MP, quoted in Roberts, note 31.

<sup>85</sup> All the more so since the capital requirement is double that of its principal competitor, Canada. There is no capital requirement for New Zealand, except to cover settlement costs.

government has consistently acted to maximise the intake of business migrants.

This objective was threatened by the immigration debate which erupted in August 1988. Because of its high Asian component, the BMP was sensitive to the controversy generated by federal Opposition calls for a reduction in the rate of Asian immigration. The debate received extensive coverage in Asia, often in alarmist language reviving the spectre of the White Australia Policy.<sup>86</sup> The Australian press was also quick to draw the analogy, typified by the following headlines: 'Blight Australia Policy'<sup>87</sup> and 'Thanks to Howard, White Australia is back in business'.<sup>88</sup>

The president of AMCA initially estimated that the number of applications from prospective business migrants would be reduced by at least 30 per cent, and that the principal beneficiaries would be Canada and New Zealand.<sup>89</sup> Using this figure, the prime minister in a parliamentary speech predicted a loss of capital inflow of about \$350 million.<sup>90</sup> In an effort primarily directed to minimise damage to the BMP, the Minister wrote an article for the *Far Eastern Economic Review*, a Hong Kong based journal with a predominantly business readership.<sup>91</sup> He

---

<sup>86</sup> J. McIlwraith, 'Why business migrants won't come here', *Australian Business*, 9 November 1988, at 31.

<sup>87</sup> *The Bulletin*, 18 October 1988, at 18.

<sup>88</sup> WA, 11-12 November, 1988. John Howard was the leader of the federal Opposition who instigated the debate.

<sup>89</sup> J. Davie, quoted in 'Big drop in Asian business migrants', *The Australian*, 1 October 1988.

<sup>90</sup> M. Baker, 'So who in Asia hates us?', *The Herald* (Melbourne), 6 December 1988.

<sup>91</sup> Sen. R. Ray, 'Still the land of the "fair go" despite racist fringe', *Far Eastern Economic Review*, 15 December 1988, 26-27.

criticised the Opposition for cultivating a desperate populism designed to engender anti-Asian hostility in Australia and described the immigration debate as:

...a potentially embarrassing and highly diversionary development in current Australian politics, and one which undermines Australia's international standing... Because of this possible damage to Australian credibility overseas, it is important to affirm that Australia's immigration policies remains absolutely devoid of any racist content whatsoever.

In December, apparently on the basis of a survey of its members, AMCA revised its estimate of the slump in new applications to 50 per cent and the capital inflow to \$800 million.<sup>92</sup> The Opposition cited other factors including aggressive competition from Canada and New Zealand, with their lower capital requirements, appreciation of the Australian dollar and delays in processing as responsible for any decline which had occurred.<sup>93</sup> A limited role was conceded to these factors by the Minister<sup>94</sup> and BMP industry sources,<sup>95</sup> but the major reason was widely accepted to be the impact of the immigration debate. It is not surprising that perceptions (or indeed evidence) of racial discrimination should act as a disincentive, particularly in view of the history of Australian immigration policy and the fact that many business migrants choose to emigrate because of ethnic tensions in their

---

<sup>92</sup> M. Reddy, 'Asian row could cost \$800m', *The Age*, 13 December 1988.

<sup>93</sup> A. Cadman, MP, press release, 14 November 1988.

<sup>94</sup> Senator the Hon. R. Ray, MP, quoted in R. Reid, 'Number of business migrants falls by 30%', *AFR*, 2 March 1989.

<sup>95</sup> Woodley, note 34; M. Reddy, 'Migrant boom may be about to bust', *The Age*, 13 December 1988.

countries of origin and are thus likely to be sensitive to a similar prospect in possible destinations.

In the event, it is impossible to quantify the impact of the immigration debate on the number of Asian BMP cases processed. Although the actual performance (2,514) fell short of the government target (3,000), the target was really no more than an article of faith based on a loose extrapolation of the recent trend. Finally, it is interesting to note that the Asian component of the programme again increased in 1988-89, suggesting perhaps that no lasting damage occurred.

#### 7.4 Empirical evaluation

As a result of the numerous allegations concerning the BMP which have appeared in the media, the federal government has been forced to fight a rearguard action to defend the programme. A constant source of difficulty in assessing the performance of the BMP has been a lack of information relating to the activities of business migrants after their arrival in Australia.

In 1984, the Department of Immigration and Ethnic Affairs (as it was then called) conducted a survey of business migrants to determine whether the objectives of the BMP were being satisfied.<sup>96</sup> At that time, the objectives were cited as job creation, technology transfer, the establishment of a new industry or the

---

<sup>96</sup> Department of Immigration and Ethnic Affairs (1985), *Business Migration Program Survey: Study Parameters and Summary of Findings*.

improvement of an existing one, and export stimulation.<sup>97</sup> The target population included any business migrant who had been in Australia at least 12 months at the time of interview, and from this group there were 90 respondents.

The results of the survey confirmed that the BMP was operating reasonably successfully. Over 80 per cent of the respondents had established a business in Australia. These businesses comprised mostly proprietary companies, with the majority of the remainder formed as partnerships. Interestingly, nearly half of the businesses which had been set up were substantially different from those originally proposed at the time of application, lending some support to the claim that a firm business proposal is an inappropriate requirement. The level of funds actually transferred by business migrants exceeded the amount stated in the application by more than double.

The findings indicated that the broad objectives of the BMP were being satisfied by those business migrants who had settled in Australia. On average, the businesses which had been established employed 15 persons, and the respondents predicted that future employment requirements would be at least double that figure.<sup>98</sup> Over 60 per cent of respondents who had commenced businesses stated that they exported or intended to export commodities. The value of these exports was estimated to be approximately \$200

---

<sup>97</sup> Import substitution was introduced as an objective in 1988.

<sup>98</sup> It is important to distinguish between job creation and job substitution. The bare statistic of average employment per business established under the BMP must be complemented by an inquiry as to whether employment elsewhere in the industry has been correspondingly reduced. This issue is taken up in the following section.

million (1984-85 prices).<sup>99</sup> A number of respondents also stated that they held franchises to their businesses, indicating the establishment of new industries, or held patents, indicating the introduction of new technology.

The small sample size rendered the results open to doubt, but it provided the Department and the government with some useful ammunition to rebut mounting criticism of the BMP. The use of a survey, however, poses a methodological question related to the level of non-response. Is it correct to extrapolate from the responses to derive a general picture of the BMP, or should the lack of response be interpreted as evidence of non-compliance with BMP requirements?

Precisely the same difficulty dogged a recent attempt by the government to obtain a more detailed assessment of the BMP. In response to the escalating criticism of the BMP described in the previous section, the government commissioned in 1988 a study of the post-settlement experiences of business migrants. The final report was released two years later.<sup>100</sup>

The reason for the delay in the preparation of the report was the difficulty in tracing suitable respondents. The target population was BMP principal applicants who had arrived between 1 July 1984 and 31 December 1987, which comprised about 2,500

---

<sup>99</sup> The results of the more comprehensive survey conducted in 1988-89 suggest that this estimate may have been excessively optimistic.

<sup>100</sup> MSJ Keys Young Planners (1990), *Expectations and Experiences: A Survey of Business Migrants*, Australian Government Publishing Service, Canberra (hereafter BMP Survey).

persons. The assistance of state business migration units was enlisted to obtain addresses for the potential respondents;<sup>101</sup> a total of 932 addresses were held by these agencies. From this group, only 195 persons responded to the contact letter, all of whom agreed to participate in the survey. Follow-up attempts to make contact with potential respondents in New South Wales were largely fruitless.<sup>102</sup> The total number of successfully completed interviews was 160.

The report emphasised the lack of current addresses as the dominant reason for the small sample. It noted that until recently, there had been no systematic procedure for maintaining contact with business migrants.<sup>103</sup> It further emphasised that the difficulty in contacting business migrants did not necessarily indicate non-compliance with the requirements of the BMP, either through absence or failure to set up a business.<sup>104</sup> Nevertheless, the low level of response must be borne in mind when attempting to draw general conclusions about the performance of the BMP from the survey results. It is probably a fair assumption that the level of compliance with programme requirements is higher on

---

<sup>101</sup> The only other source for addresses was the information on arrival cards provided by all incoming passengers to Australia.

<sup>102</sup> Only 17 from a group of 320 for whom follow-up was attempted agreed to participate in the survey.

<sup>103</sup> Under the new monitoring system introduced on 1 July 1988, all business migrants who are granted visas after this date are asked to return two surveys to the Department, one after a year, and the second after two years. At this stage, no indication has been given by the Department as to the efficacy of this scheme.

<sup>104</sup> In this connection, it would be an interesting to know what proportion of Australian business persons in general would be prepared to answer detailed questions relating to their business activities. There is anecdotal evidence that some business migrants are anxious to maintain a low profile, despite having complied with the requirements of the BMP. See, for example, B. Davis and J. Smith (1990), 'Business Migrants Prove Their Worth', *Australian Business*, 4 July 1990, 17-20.

average within the pool of actual respondents than among business migrants generally. If extrapolated, the survey results are likely to present too favourable a picture of the operation of the BMP as a whole. The survey is therefore best regarded as a fairly detailed source of information about the economic contribution of a particular group of business migrants. Within that confined perspective, the report offers a useful insight.

The survey indicated that the average net wealth of the respondents prior to immigration was \$1,300,000, of which \$840,000 had been transferred to Australia at the time of the survey.<sup>105</sup> Some information was collected on the business situation of the respondents prior to immigration. Over half had been the sole or principal owners of businesses overseas. These businesses generated an average annual gross revenue of about \$6 million, and employed an average of about 70 persons.

At the time of the survey, 64 per cent of the respondents were in business, and a further 6 per cent had been in business, but were not at the time. Predictably, the percentage of respondents who had established a business was considerably higher among those who had been in Australia for more than 18 months than among more recent arrivals. As with the earlier survey, a large fraction (38 per cent) of those in business at the time of the survey had set up, or bought into, a business different to that which they had originally intended. The most common type of business

---

<sup>105</sup> The average sum which respondents had initially transferred was \$510,000, confirming the finding of the earlier survey that the actual funds transferred may exceed the funds initially transferred.

established was in wholesale trade (25 per cent), followed by manufacturing (17 per cent), finance and property (15 per cent), general construction (13 per cent), and retail trade (13 per cent).<sup>106</sup> Most businesses took the form of proprietary companies, followed by partnerships.<sup>107</sup>

The typical scale of the businesses was small, with each employing an average of 10 persons and generating an average annual revenue in 1988-89 of approximately \$1.1 million.<sup>108</sup> For the following financial year, respondents predicted that average employment per enterprise would increase to 15 persons, and average revenue to \$2 million.

One quarter of the businesses operating at the time of the survey had exported goods during the 1988-89 financial year. The average income earned from exports was \$3.3 million.<sup>109</sup> Significantly, the pattern of export destinations was dominated by Asian countries. Although it would require more evidence, it seems plausible that a knowledge of the relevant markets explains the observed pattern of exports. The high proportion of exports to Asian markets simply reflects the high Asian component in the BMP. The economic and geopolitical importance of these regional links is analysed in the final chapter. Over half the respondents whose business had exported goods during 1988-89 held the view that their business had either opened up new

---

<sup>106</sup> BMP Survey, note 100, at 33.

<sup>107</sup> BMP Survey, note 100, at 46.

<sup>108</sup> BMP Survey, note 100, at 49.

<sup>109</sup> BMP Survey, note 100, at 50. This figure is heavily influenced by two large exporters of primary produce (\$54 million) and training and educational services (\$10 million).

export markets for existing goods or produced new products for export.<sup>110</sup>

Although over a third of businesses operating at the time of the survey had imported goods during 1988-89, the average level of imports per business was far less than exports. The total amount of imports was \$8 million, compared with exports of \$66 million. On the face of it, the objective of export stimulation was clearly satisfied by the sample considered.

Nearly half (47 per cent) the respondents who had established a business believed that it had improved an existing industry via the introduction of a new process.<sup>111</sup> A third of this group had introduced proprietary technology into Australia. Over a quarter (27 per cent) of the respondents believed that their businesses had expanded the range of goods and services available to Australian consumers.

On the whole, the survey presents a reasonably favourable picture of the economic contribution made by the respondents. The extent to which this can be extrapolated to include the pool of potential respondents is a moot point, clouded by uncertainties as to the reason for the low level of response. DILGEA regarded the results as evidence that the programme had been a 'qualified success'.<sup>112</sup> If the low response was associated with non-

---

<sup>110</sup> BMP Survey, note 100, at 51.

<sup>111</sup> BMP Survey, note 100, at 52. Examples included the introduction of more intensive European agricultural techniques, cost tracking of fuel supplies for car fleets, and jewellery making techniques.

<sup>112</sup> DILGEA (Bureau of Immigration Research) Press Release, 27 June 1990.

compliance with the requirements of the BMP, then this extrapolation is unwarranted. In contrast, if the low response was due to a reluctance to participate in this sort of survey shared by business persons in general, then the results may be fairly representative. There is insufficient evidence to resolve this issue.

There is, however, an additional issue which goes to the heart of the debate about the effectiveness of the BMP, but which has not received any attention to date. Do the businesses established under the BMP represent net increases in the level of economic activity in Australia, or do they merely displace existing businesses? This question is addressed in the following section.

## **7.5 Potential benefits of business migration**

It is necessary at the outset to disentangle two related, but distinct, issues concerning the economic contribution of the BMP. The first concerns the level of compliance with the requirements of the programme. The second concerns the benefits which flow from the BMP, assuming that programme requirements are in fact satisfied. These will be considered in turn.

The level of compliance has been the focus of the allegations made about the BMP, which were recited in Section 7.3. The principal allegations may be summarised as:

- (i) Non-arrival or non-residence of business migrants who have been issued visas;

- (ii) Failure to set up a business (funds are kept in Australia, but invested 'passively');
- (iii) Abuses relating to the capital transfer requirements, including:
  - (a) repatriation of the funds after arrival; or
  - (b) recycling a single sum to support multiple applications;
- (iv) Admission of criminal elements.

It is obvious that if business migrants do not reside in Australia,<sup>113</sup> or transfer the bulk of their funds offshore rather than investing them locally, their contribution to the Australian economy cannot be anything but minimal. The recycling of the same funds throughout a network of applicants leads to a similar outcome. In addition, while the economic consequences of criminal activity are ambiguous, the social consequences are clearly undesirable.

The extent to which these abuses of the programme occur is the proper domain of the departmental monitoring system which has been set up. The area of greatest concern, the subsequent location of the funds transferred prior to visa issue, has now been addressed. Business migrants are now required to authorise their banks to disclose details of their accounts to DILGEA. This allows the level of compliance with the capital transfer requirements to be monitored much more closely. In the event of a breach, as noted in Section 7.3, a deportation order can be obtained under

---

<sup>113</sup> Non-residence suggests that business migrants do not establish a business in Australia.

section 20 of the Migration Act 1958. This power has recently been exercised with respect to four Taiwanese business migrants who had recycled the money pledged to establish a business in Australia.<sup>114</sup>

The level of compliance is ultimately determined by the adequacy of the selection procedures, the monitoring system and the sanctions in place in the event of a breach of programme requirements. The level of compliance is within the control of the government, at least to some extent. Better information will now be available about it as a result of the new monitoring system, which in turn may encourage a higher level of compliance.

One point should be emphasised. The failure of business migrants to fulfil their obligations, if it occurs, does not actually damage the Australian economy.<sup>115</sup> It simply deprives the economy of an anticipated benefit. Viewed in this light, the controversy surrounding the extent to which business migrants fulfil their obligations under the BMP seems somewhat unjustified.

The government's customary defence to allegations of widespread non-compliance has been to emphasise the benefits flowing from businesses established under the BMP. A central plank in this defence was the report it commissioned on the post-settlement experiences of business migrants. This, however, raises the more fundamental question posed above: assuming widespread

---

<sup>114</sup> L. Taylor, 'Business migrants "recycled money"', WA, 18-19 May 1991.

<sup>115</sup> Except for a share of the resources devoted to the promotion and administration of the BMP.

compliance with the programme requirements, are the objectives of the BMP (job creation, technology transfer, export stimulation and import substitution) satisfied?

An inquiry into the net contribution of business migration to the economy requires more than information on the activities of the businesses set up under the programme. It requires in addition a judgment as to whether these new activities supplement or displace existing activities. In order to increase the level of productive activity in the economy, business migrants must add to the productive capacity in some way. Ultimately, this turns on precisely the same issue as was addressed in Chapter 2, the extent to which the investment of their transferred savings represents a net addition to the capital stock.

According to one view, the contribution of fund transfers under the BMP is minimal:

In an environment of open international capital markets, it is hard to see how this could be of much benefit to the recipient country unless the business migrant is induced to supply his capital on terms more favourable than those at which capital is already available from overseas markets ... [E]ven prior to immigration, the potential new immigrant had the opportunity of investing in Australia if that was the most profitable use for the funds.<sup>116</sup>

---

<sup>116</sup> B. R. Parmenter (1990), 'On the Economics of Immigration', Institute of Applied Economic and Social Research, University of Melbourne, Working Paper 3/1990, at 8.

This reasoning is based on the dual assumptions of perfect international capital mobility and a small economy.<sup>117</sup> According to this view, investment opportunities are determined independently of the level of domestic saving. Only projects offering a return exceeding the world interest rate are undertaken. Where there is a gap between a (small) country's investment opportunities and the capacity to finance them from domestic savings, it is bridged by an infinitely elastic inflow of international capital.<sup>118</sup>

The only exception envisaged in the above statement is where business migrants are prepared to accept a return lower than the prevailing world interest rate. If they are not, then a necessary consequence of perfect international capital mobility is that the funds transferred by business migrants eventually flow offshore to finance investment opportunities elsewhere.

This may not happen directly. Business migrants may invest their funds in Australia, but this investment does not increase in the overall level of domestic investment. The additions to the capital stock by business migrants exert a downward pressure on rates of return. To eliminate this differential, capital flows offshore. The essence of the perfect international capital mobility assumption is that an increase in domestic saving has no effect on the level of domestic investment. Fund transfers produce no gain for the receiving country. According to this reasoning, the economic

---

<sup>117</sup> See Chapter 2 for a more detailed treatment.

<sup>118</sup> The small open economy assumption in this context means that the world interest rate is unaffected by the borrowing requirements of the country.

contribution of the BMP is nugatory. The investment made by business migrants to establish their businesses is simply accompanied by a corresponding reduction in the level of investment elsewhere.

A substantial part of Chapter 2 was devoted to refuting this conclusion about immigrant fund transfers in general. Two distinct arguments were advanced in support of an alternative 'habitat' view of capital formation. The first relies on a well established feature of modern economies (saving-investment correlations) which suggests that an increase in the level of domestic saving is more likely to feed into an increase in domestic investment simply to flow offshore. This is a general argument which applies equally to an increase in domestic saving brought about, for example, by a change in the taxation system as it does to an increase in domestic saving due to immigrant fund transfers. In contrast, the second argument focuses on the entrepreneurial attributes of the immigrants themselves. It rests on the idea that the combinations of capital and labour introduced by immigrants into the receiving economy may complement existing combinations.

This second argument acquires a particular trenchancy when applied to the BMP, which attempts to recruit immigrants on the basis of their proven entrepreneurial skills. In the recent survey

of the BMP discussed in the previous section, evidence emerged that business migrants had made the following innovations:<sup>119</sup>

- (i) opening of new export markets;
- (ii) production of new products for export;
- (iii) improvement of an existing industry;
- (iv) introduction of new products or services; and
- (v) introduction of new technology.

The export-related innovations are the clearest ways in which the activities of business migrants can add to the overall level of activity in the economy. Opening up a new export market for an existing commodity, perhaps through connections which the business migrant established prior to arrival in Australia, helps to expand domestic producers who supply the exporter, while not reducing the business of existing exporters.<sup>120</sup> Similarly, the production of new products for export does not represent a competitive threat because there are no existing domestic producers.

Where the innovation relates to a business in the import-competing or non-trading sector of the economy, the impact on existing businesses requires more careful analysis. The new business may provide goods or services which were not previously produced domestically, but for which there was a

---

<sup>119</sup> These are the categories used in the BMP Survey (1988). It is clear that they overlap considerably. Note also that the results reported by the survey reflect the opinions of the respondents.

<sup>120</sup> This assumes that the additional volume of exports does not affect the world price of the commodity.

domestic demand satisfied by imports. This may have been because the necessary expertise for domestic production did not exist prior to the arrival of a business migrant with particular skills. Alternatively, the absence of a domestic industry may have reflected cost structures which were such that it was not viable to compete with foreign producers. Through the introduction of a new production process, a business migrant may be able to compete effectively with foreign firms.

Where business migrants establish a business in the import-competing sector for the first time, the economic benefit to the domestic economy is easily demonstrated. If it is successful, the level of market penetration by foreign firms will be reduced (assuming the same level of domestic demand for the product). Employment opportunities associated with its production will shift from the foreign place of production to Australia. Moreover, domestic firms which supply the new business will expand, which in turn generates further employment growth.

Where a new business sets up in the import-competing sector in direct competition with established firms, a central question is whether the level of import replacement rises or not. If foreign firms retain their share of the domestic market, then established local firms must lose relative market share as a result of the entry of new firms in the import-competing sector. Alternatively, the new firms may erode the market share of foreign, rather than domestic, competitors. Only in the second scenario is there an apparent benefit to the Australian economy, similar to the case

where the new business is the only domestic producer of the good or service involved.

It is, however, possible to advance an argument that even in the first scenario the establishment of a new business indirectly benefits the overall economy, although it displaces existing firms which now face additional competition. This argument applies equally to the entry of new businesses to the non-trading sector of the economy. Recall that the gist of the competitive threat posed by the new businesses is some type of innovation introduced by their proprietors. Presumably, if a new business set up by business migrants succeeds in capturing a share of the domestic market, then it must offer an improved product in terms of either price or quality relative to the domestic competition.<sup>121</sup> While this may cause established firms to contract (or grow less rapidly) in the face of increased competition, the overall production of the particular good or service will be more efficient. Assuming non-zero elasticities of demand for the product, the amount demanded is likely to increase if the price is reduced (or quality improved). Overall production of the good or service is therefore likely to expand, although the share of the established firms may shrink.

Moving from a partial to a general equilibrium analysis, the increased efficiency of production confers a benefit on purchasers (other firms and consumers) of products from the new

---

<sup>121</sup> The market share of foreign competitors is assumed to remain constant for this example.

business.<sup>122</sup> The improved productivity of the new business serves to improve the overall level of productivity in the economy. According to this line of argument, the entry of new businesses, if it is accompanied by some sort of innovation, produces overall benefits for the economy as a whole, even where the new business directly competes with established firms.<sup>123</sup> From the point of view of the original residents, who own the established firms,<sup>124</sup> the issue is whether the indirect productivity benefits outweigh the costs associated with the relative decline of firms facing direct competition.<sup>125</sup>

The economic impact of a new business therefore depends on the structure of the competitive environment which it enters. Several possibilities have been explored here. Where the business produces new goods or services which do not compete with those of established firms, it represents a net addition to the productive capacity of the economy. Where the business competes with foreign firms, this also represents a net increase in the level of productive capacity. Where the business competes with both domestic and foreign firms, the net economic contribution depends on the level of import replacement which occurs. If the market share held by foreign firms remains constant, the situation is analogous to the impact of new businesses entering the non-

---

<sup>122</sup> This type of benefit is captured by a general equilibrium analysis.

<sup>123</sup> Note that this argument does not rest on the positive benefits commonly attributed to competitive markets, as opposed to those dominated by oligopolies and monopolies; it is assumed that there is already a high degree of competition in the import-competing sector. Rather, it rests on efficiency gains flowing from innovation.

<sup>124</sup> Incorporating foreign investment into the argument would make no difference to the logic.

<sup>125</sup> It is impossible to resolve this issue *a priori*. Such an inquiry is warranted (see Chapter 4), but is beyond the scope of the present work.

traded sector. It was argued above that the innovation by new businesses which allows them to acquire a share of the domestic market generates productivity improvements in the production of the good or service in question, and consequent benefits elsewhere as the improvements percolate through the economy.

Only in the case where a new business enters a market with established firms without a competitive advantage is the overall productive capacity of the economy unchanged. The only effect is an increase in the number of firms. This case corresponds to an application of the perfect international capital mobility assumption which maintains that the increase in capacity resulting from the transfer and investment of immigrant savings is offset by a reduction of capacity elsewhere.<sup>126</sup>

The preceding discussion indicates the limitations of this assumption with respect to the BMP. Ultimately, these limitations derive from the assumption of homogeneous capital which implicitly underpins perfect capital mobility. In reality, capital is heterogeneous, and is further differentiated by the labour using it. For this reason, business migrants can add to the net capital stock in the economy without exerting a downward pressure on the rate of return by adding capacity which is complementary to existing capacity. Even if it is not complementary, but rather in direct competition with existing capacity, there may be a net economic benefit due to productivity improvements resulting from

---

<sup>126</sup> Or a reduction in the rate of growth of capacity (capital formation).

innovations introduced via a new business. This will also result in a net increase in capital formation.

Job creation, one of the principal objectives of the BMP, is inextricably connected with capital formation. A larger work force requires additional capital if the level of productivity in the economy is to be maintained. If the funds transferred and invested by business migrants do not result in net additions to the capital stock, then the employment gains in the businesses they set up are likely to be matched by losses in established businesses.<sup>127</sup> While superficially it would appear that jobs are created by the new businesses, in fact it would be job substitution. There are, however, sound reasons for expecting that investment by business migrants increases the net rate of capital formation. It would appear, therefore, that the objective of job creation is likely to be satisfied if the investment is made.

## 7.6 Conclusion

The BMP occupies a unique position in Australia's immigration programme. It is the only component of the programme which is actively promoted overseas, and it is largely administered by the private sector. Although it is a seeming windfall for the Australian economy, the BMP has been the focus of numerous allegations in the media. As a result, the government has been forced repeatedly to defend the programme. Its standard defence

---

<sup>127</sup> Alternatively, productivity falls due to the lower ratio of capital to labour in the economy.

has been to emphasise the funds transferred to Australia and the number of jobs created under the scheme.

This raises the fundamental question whether fund transfers have a real effect on the economy of the receiving country. The answer proposed here is in the affirmative. Business migration is an example *par excellence* of the 'entrepreneurial bundle' argument advanced in Chapter 2.

## Chapter 8

### Immigration, economic policy and regional integration

*One interesting result to emerge from the ORANI simulations is that immigration tends to close the economy to international trade. While this was compatible with the protectionist economic policy pursued throughout most of the post-war period, it runs counter to recent policy initiatives to open the economy to international competition. Several factors, however, may mitigate the ORANI conclusion, including the entrepreneurial dimension of immigration. A summary of the principal findings of this work suggests that the economic arguments in favour of immigration are not compelling. It may be, however, that the role of immigration in promoting the integration of Australia into the Asian-Pacific region provides a sufficient rationale for the continuation of the programme. This possibility is briefly explored in the final section.*

## 8.1 Introduction

Immigration policy has been founded on lofty ambitions. In announcing the government's decision to embark on the post-war immigration programme, the first Minister for Immigration declared:

[A]ll shades of thought agree that Australia's security, economic stability and destiny as a major Pacific power depend in large measure on the success of the Commonwealth's immigration programme.<sup>1</sup>

It is interesting to consider how posterity has treated these words. The notion that immigration is vital to national security is no longer seriously entertained. To what extent has immigration influenced Australia's status as an economic and political power in the region? Addressing this question offers an insight into the likely impact of immigration in the future.

## 8.2 Immigration and economic policy

### 8.2.1 *Historical perspective*

The economic strategy implemented after World War II was based on the expansion of the domestic market and labour force through immigration, coupled with high levels of protection from international competition to guarantee that the benefits of growth

---

<sup>1</sup> A.A. Calwell (1946), quoted in P.J. Brain, R.L. Smith and G.P. Schuyers (1979), *Immigration and the Australian Economy*, Croon Helm, London, at 41.

were reaped domestically. The development of a broadly based manufacturing sector was held to be crucial to economic self-sufficiency and stability. The growth of domestic industries was determined by the growth of the labour force and the domestic market. Industry protection was perceived as necessary by government and trade unions to expand employment without a reduction in real wages. Conceived in this way, economic development based on protection and population growth possessed a self-sustaining circularity. This has been described as 'the fundamental tenet of Australian faith, development to provide jobs for an expanding population'.<sup>2</sup>

In the event, this brand of economic development has not stood Australia in particularly good stead. The per capita growth performance of the Australian economy during the post-war period has compared unfavourably with other OECD countries. Various reasons have been advanced to explain this, including the high rate of population growth, protection, labour market rigidities, low levels of investment in education and training, and the long-term decline in export prices.<sup>3</sup>

The extent to which immigration has been implicated in the poor performance is a moot point. A comprehensive analysis would need to examine the relationship between immigration and each

---

<sup>2</sup> N. Butlin, A. Barnard and J. Pincus (1982), *Government and Capitalism*, Allen and Unwin, Sydney, at 113.

<sup>3</sup> For an excellent coverage of the main explanations for Australia's fairly pedestrian performance, see the various contributions in R. Maddock and I.W. McLean (1987, eds), *The Australian Economy in the Long Run*, Cambridge University Press, Cambridge; see also F.H. Gruen (1986), 'How Bad is Australia's Economic Performance and Why?', *Economic Record* 62(177), 180-193.

of the factors alleged to be responsible for the low growth rates. There is one insight which emerges from the results obtained in Chapter 5. It relates to the failure of Australia to participate in the explosion of international trade: 'Australia has become less of a trading nation during the post-war period; this is quite the reverse of other industrial countries.'<sup>4</sup> The standard explanation for the declining share of trade in GDP concentrates on high levels of protection and the adverse terms of trade. While these factors were no doubt instrumental, the results obtained in Chapter 5 suggest an additional explanation for the reduction in the share of trade in GDP.

For constant levels of industry assistance, the results<sup>5</sup> showed that the expansion of the economy caused by unfinancial immigration reduces the share of exports and imports relative to GDP. This represents a shift away from producing for export towards producing for domestic consumption. Import-competing industries are shown to expand as a consequence of immigration. If these results are applied to the post-war period, then it appears that immigration policy operated in the same direction as protection policy, by reducing international trade and boosting protected industries.

Importantly, the simulations conducted in Chapter 5 assumed constant levels of industry assistance. The results are independent of the effects of protection policy, but run in the

---

<sup>4</sup> R.E. Caves and L.B. Krause (eds, 1984), *The Australian Economy: A View from the North*, Allen and Unwin, Sydney, at 276.

<sup>5</sup> These results relate to scenario I in Chapter 5.

same direction. The structural impact of immigration therefore constitutes an additional factor explaining the 'closing' of the Australian economy during the post-war period, in stark contrast to the experience of virtually all other industrial countries. This is an explanation which has not hitherto been advanced.

Economic policy, however, has shifted in the last two decades from a relatively interventionist stance to one of deregulation. Effective rates of industry assistance have been halved since 1970, and the financial markets were liberalised in the early 1980s. The stated policy imperative is to open the economy to expose it further to the competitive pressures of the international market. It is necessary to ask whether the immigration programme facilitates this process of structural adjustment.

#### *8.2.2 Future prospects: a summary of the principal findings of this work*

Various approaches have been adopted to investigate the long term economic consequences of immigration. Particular attention has been devoted to the relationship between immigration and capital formation. Without sufficient capital to equip additions to the population, especially the labour force, immigration is likely to have a detrimental effect on the economy. It appears, however, on the basis of historical evidence presented in Chapter 2 that the investment which has been induced by immigration may have been sufficient to maintain the capital intensity in the economy. This was adopted as a working assumption; further research to confirm the validity of this assumption would be beneficial.

Immigrant fund transfers have assumed increasing importance in recent years, although this phenomenon has received little attention in the literature. A central aim of this work has been to rectify this lack of attention. In Chapter 2, a number of theoretical arguments were adduced to support the proposition that immigrant fund transfers increase the rate of domestic capital formation, contrary to the implications which flow from the assumption of a small open economy which is customarily used to analyse problems of this sort.

Unfortunately, in addition to the numerous problems normally associated with identifying determinants of investment, the period for which immigrant fund transfers have been significant is too short to support a time series or econometric analysis. It is therefore difficult to test empirically the proposition that immigrant fund transfers have a real effect on the economy. Nevertheless, the magnitude of the sums transferred recently, and the theoretical arguments advanced in Chapter 2, point to the potential importance of this development for the Australian economy. Subsequent chapters explored the consequences of 'financial' immigration, assuming that the funds transferred increase the level of economic activity. Throughout, these have been compared with the consequences of 'unfinancial' immigration.

Chapter 3 probed the dynamic link between immigration and capital accumulation, taking as its starting point the standard neoclassical growth model. It was demonstrated that, on certain

assumptions,<sup>6</sup> fund transfers increase GDP per capita in the long run, by adding to the productive capacity of the economy. This conclusion was broadly confirmed by the ORANI simulations reported in Chapter 5.

The use of a multisectoral computable general equilibrium (CGE) model offered a number of additional insights. Most importantly, it allowed the structural consequences of immigration to be analysed in some detail. The pattern of industrial activity, and hence employment, differed quite markedly between the two scenarios considered. Unfinancial immigration improves the international competitiveness of the trading sector of the economy. Because of the twin constraints of a fixed supply of agricultural land and low elasticity of foreign demand for certain key commodities, however, exports are projected to grow less rapidly than GDP. The position of domestic import-competing industries is improved.

In contrast, financial immigration is projected to reduce the international competitiveness of the trading sector. In the simulations reported, export receipts actually contract, while import payments outstrip GDP growth. The precise magnitudes of the projections are relatively inconsequential; the important feature is the underlying structural adjustment which is revealed. Financial immigration has a depressing effect on the trading

---

<sup>6</sup> The assumptions were that (1) the capital intensity is maintained in the face of immigration by an inflow of foreign capital; and (2) immigrant fund transfers represent a further addition to the capital stock.

sector, which may be contrasted with the fillip it provides to the non-trading (mainly construction) sector.

On balance, the boost to the non-trading sector outweighs the relative decline of the trading sector, so that living standards are projected to grow slightly as a result of financial immigration. The ramifications of this structural trend are difficult to assess. It may entail a loss of competitiveness due to the relatively smaller proportion of the economy which will be exposed to the international market.<sup>7</sup> It is interesting to note that the structural impact of financial immigration based on the ORANI results runs contrary to the policy of opening the economy to international competition which is currently favoured by the government. While the formulation of economic policy is an imprecise art, it would seem preferable to avoid two contradictory policies. On the face of it, the ORANI results suggest that immigration policy represents an obstacle to the evolution of a more open economy.

These remarks, however, fail to take into account the entrepreneurial dimension of immigration. Although the transfer of funds may set in motion structural forces of adjustment via a balance of trade constraint, the contribution of immigrants at a microeconomic level may in the long run prove far more important. This theme emerges from the case study of business migration in Chapter 7. Clearly, a model such as ORANI is unable to capture in a detailed way the contribution that business migrants make to the economy, such as the introduction of new

---

<sup>7</sup> In order to support this hypothesis, it would be necessary to show that productivity is lower in the non-trading sector than in the trading sector.

products and technology, and the opening up of new export markets. This is because the model is implemented on a historical database.

As a result, its projections are limited to adjustments in industries which existed at the time to which the database relates.<sup>8</sup> In addition, changes in production technology occur in ORANI as a result of relative price changes in intermediate inputs and primary factors, or exogeneously imposed technological change. In the absence of information relating to anticipated technology transfer associated with business migration, which is impossible to obtain, changes in future production technology are limited to relative price effects. The creation of new export markets is equally difficult to incorporate within the ORANI framework. While an increase in demand for exports can be simulated, it is impossible to predict in advance the commodities for which the increase in demand will occur.<sup>9</sup> The immigration programme may therefore confer benefits on the Australian economy which are difficult to capture using a model such as ORANI.

As discussed in Chapter 1, there are several additional channels through which immigration may influence productivity, including economies of scale and an increased rate of technological progress. Further research is needed, however, to substantiate the links between immigration and these sources of productivity growth.

---

<sup>8</sup> The version of ORANI used here is implemented on a 1980-81 database. This is the most recent available.

<sup>9</sup> Moreover, the products exported may be new.

Neither effect was incorporated in the present work, on the basis that the evidence in support of positive links is decidedly casual.

Although the use of ORANI has provided a very detailed picture of the effect of immigration on the economy, further disaggregation may yield dividends. In particular, the ORANI treatment of income distribution is rudimentary, as it contains only one class of household. It is thus only possible to derive information on income accruing to different factors. An extension to include several classes of household would be advantageous, particularly since the impact of immigration on poorer socioeconomic groups has received a great deal of attention in the literature.

A second type of disaggregation is spatial. Some progress in that direction has been made in the disaggregation of ORANI results to the state level in Chapter 6. This revealed significant regional variation in the impact of immigration, more pronounced in the case of financial immigration. The main differential impact, however, may be between urban and rural areas, given the propensity of immigrants to settle in urban centres, particularly Sydney and Melbourne. Further spatial disaggregation would require data relating to the place of eventual, rather than intended, settlement by immigrants. It would also require attention to the possibility that urban congestion is exacerbated by immigration.

The effect of international migration on the economy of the receiving country is a quintessentially geographical inquiry. The neoclassical methodology on which most of the work has been

based is a useful point of departure in addressing such a complex geographical problem. Clearly, there are reservations about the underlying assumptions, which were discussed in Chapter 5. It is nevertheless possible to modify certain of the assumptions which seem unwarranted, for example, the small open economy assumption, while adhering to the general framework. Moreover, the approach may be complemented by additional perspectives, such as the case study in Chapter 7.

The overall conclusion which may be drawn from the various methods adopted here is that the benefits flowing from immigration are comparatively modest, even taking fund transfers into account. The size of the economy expands greatly, and the structure of the economy alters considerably, but the welfare of the population as a whole, and particularly the original residents, does not seem to be greatly improved as a result of immigration. As a policy to foster growth, immigration operates at the extensive, rather than the intensive, margin of the economy. Furthermore, it may set in motion structural forces which jeopardise further prospects of growth in living standards.

This may be unduly harsh, for two reasons. Aggregate growth may ease the process of structural adjustment which is currently under way in Australia after a long period of excessive protection. Change may be less painful in a growing economy than a relatively stagnant one. The extent to which this might outweigh the adverse structural effects of immigration is difficult to gauge.

Secondly, there may be broader strategic reasons for continuing the immigration programme. The role of immigration in promoting regional integration is considered in the final section.

### 8.3 The geopolitical significance of immigration

As a nation, Australia has always preferred history to geography. The belief that it is culturally linked to Europe has often transcended the fact that it is part of Asia.<sup>10</sup> Throughout the better part of Australian history since federation, this attitude has manifested itself as a reluctance to pursue regional integration. Until recently, large-scale immigration was viewed as a means of ensuring economic and political insulation from the region. At its inception, the post-war immigration programme was simply a continuation of this strategy.

Gradually, however, Australia was forced to seek some sort of accommodation with Asia. There were two watersheds. The first was the demise of Britain as the major trading partner, and its replacement by Japan. The inevitable consequence was a greater degree of economic integration with Asia, although the role played by Australia was that of an unimaginative supply depot of raw materials, rather than a dynamic trading partner. The second watershed was Vietnam, which demonstrated the military and political limitations of the United States in the region, and underlined the need to establish an independent foreign policy which went beyond the cultivation of 'great and powerful friends'.

---

<sup>10</sup> G.E.C. Fell (1991), 'Australia and the New Europe: A Fatal Distraction', *Oxford International Review* 2(2), 33-36.

Insularity as the Australian *modus operandi* in Asia became increasingly untenable. Moreover, as the integration of the world economy proceeded apace, and Asia emerged as the booming region, aloofness began to look like economic lunacy. The problem for Australia was how to carve out a role in the region when for so long its stance had pointed to an obsession with protection from Asia. The immigration programme at that time operated firmly with the constraints of the White Australia policy, which restricted entry almost exclusively to Europeans. Before the Second World War, this meant primarily those of Anglo-Celtic extraction. In the aftermath of the war, entry conditions were relaxed to admit huge numbers of displaced persons from Southern and Eastern Europe. The White Australia policy, however, remained in place as symbolic and practical evidence of Australian distrust of its neighbours and a fundamental obstacle to closer relations.

Eventually, the strategy of containing communism in Asia forced the Australian government to cultivate closer relations with certain states. It was no coincidence that the first parliamentary debate on broadening the intake occurred in March 1966, just before Australia committed troops to Vietnam. The need to dismantle its discriminatory immigration policy was plain; as one commentator observed:

It was difficult for an Australian government to speak about winning the hearts and minds of Asians for democracy when

it was not prepared to treat them for immigration purposes as the human equal of Europeans.<sup>11</sup>

The abolition of the White Australia policy, completed by the Whitlam government in 1973, unleashed a powerful force for the integration of Australia into the region. It has introduced into Australian community people who are familiar with Asian markets and who have an already established network of contacts. The link between trade and immigration would make an interesting focus for further research. There are grounds for expecting that the connection may be more significant in the future as the composition of Australian exports changes:

[I]n the past, migrants may have only enhanced Australian export potential a little, due to relatively limited involvement in the traditional resource-based export areas. But what of the future? If there is a need to develop export-oriented high value-added manufacturing or internationally competitive services, then an intimate understanding of foreign markets is crucial. Such knowledge is more likely with a continuing immigrant inflow for Australia.<sup>12</sup>

It is widely accepted that a diversification of the export base is crucial to Australia's future economic prospects.<sup>13</sup> Two broad

---

<sup>11</sup> B. Grant (1988), *What Kind Of Country?*, Penguin, Ringwood, Victoria, at 147.

<sup>12</sup> G. Withers (1987), 'Immigration and Australian Economic Growth', in L. Baker and P. Miller (eds), *The Economics of Immigration*, proceedings of a conference at the Australian National University, Australian Government Publishing Service, Canberra, 29-55, at 48.

<sup>13</sup> The composition of Australian exports of goods is unprocessed primary products (48 per cent), processed minerals and fuels (14 per cent), processed food (12 per cent), simply transformed manufactures (11 per cent), and elaborately transformed manufactures (11 per cent). Source:

facets of this strategy have been emphasised: a higher degree of processing of raw materials<sup>14</sup> and the exploitation of market niches for manufactured goods and services.<sup>15</sup> Immigrants' knowledge of export markets is likely to be very useful to the exploitation of market niches. Since it is anticipated that Asian markets offer Australia the best prospects for export growth,<sup>16</sup> there is probably an advantage in the increasing Asian proportion of the immigration programme.

The dismantling of the White Australia policy has also conveyed the message to regional neighbours that Australia now considers itself to be part of Asia. The goodwill which this engenders is critical to the establishment and success of regional cooperation initiatives. The most striking foreign policy measure initiated by the Australian government was the establishment of the Asia Pacific Economic Cooperation (APEC) group of twelve Pacific rim countries.<sup>17</sup> One of the main objectives of APEC is to promote multilateral trade liberalisation, especially relating to agriculture and textiles, and a joint statement by the members contained a commitment to reduce barriers to trade in goods and services among members, provided that any such liberalisation is

---

Australian Manufacturing Council (1990), *The Global Challenge: Australian Manufacturing in the 1990s*, Melbourne.

<sup>14</sup> Economic Planning and Advisory Council (1988), 'Raw Materials Processing: Its Contribution to Structural Adjustment', Paper No. 31.

<sup>15</sup> G. Hooke (1987), 'Prospects for Expanding the Export of Services', *Economic Papers* 6(3), 15-26.

<sup>16</sup> R.J. McLean (1985), 'Exploiting Opportunities in the Pacific Basin', Committee for Economic Development of Australia, Strategic Issues Forum, Monograph No. M82.

<sup>17</sup> The twelve members are the six ASEAN states (Indonesia, Malaysia, The Philippines, Singapore, Thailand and Brunei), Japan, South Korea, Australia, New Zealand, Canada and the United States.

consistent with GATT principles and not detrimental to other parties.<sup>18</sup>

However, after the collapse of the Uruguay round, the fate of GATT depends on the success of recent efforts to renew negotiations. If the outstanding conflict over agricultural policy is not resolved, then the circumstances may be ripe for the degeneration of the world trading system into three blocs. In theory, that is a second-best solution for all concerned. In practice, it may be the best solution available to Asian-Pacific countries if European and North American markets become increasingly difficult to penetrate. While it would be an exaggeration to claim that APEC is a precursor to a Pacific Community analogous to the EC, it is nevertheless a nascent organisation which might in certain circumstances develop along European lines. Furthermore, the integration of Australia into the region offers additional rewards, not least of which in the long run are the sort of benefits which members of the EC have reaped by virtue of the Community.

The role of immigration in promoting the process of regional integration may be very important. This is not a general claim about the dynamics of regional integration, but one which is peculiar to Australia's history:

If Australia is to reap the potentially large returns from being located in the Asian-Pacific region, arguably the area of the world most likely to grow rapidly over the next two

---

<sup>18</sup> *Far Eastern Economic Review*, 1 November 1990, at 46-47.

decades, then it must be positioned to exploit its comparative advantages, to restructure away from areas of inefficiency and generally be seen as a force for progress in the region and not as a protectionist European colony in the South Pacific.<sup>19</sup>

Indubitably, Asian perceptions have been coloured by Australia's history of protectionist trade policy and discriminatory immigration policy. Regional integration involves a willingness on the part of all countries involved. The abolition of the White Australia policy signalled a recognition of geographical and economic reality by Australia. At the same time it rendered Australia's regional aspirations acceptable to its neighbours. It is arguable that the momentum towards regional integration would be undermined to some extent by a reduction in the level of the immigration programme. In any event, immigration seems likely to enhance Australia's trade prospects in the region, the key to future prosperity. After many years of introspection, it is a rapid way of building regional links and intercultural penetration so crucial to trading performance.

It is a great irony that a policy which was based at its inception on the protection of Australia from Asia should evolve into a driving force behind regional integration. This may provide a rationale for a continuation of the immigration programme. Although the narrow economic arguments in favour of immigration are not compelling, these broader geopolitical considerations may tip the balance.

---

<sup>19</sup> M.G. Porter (1985), 'The Labour of Liberalisation', in J. Scutt (ed.), *Poor Nation of the Pacific: Australia's Future?*, Allen and Unwin, Sydney, 37-61, at 37.

Although this is highly speculative, it does emphasise the broad geopolitical context in which decisions about immigration policy must be made. Australia faces the choice whether to remain a supply depot on the outskirts of Asian development or become an active participant in the region, economically and politically. The current government has clearly indicated its intention to realign the country towards the region. Whether the realignment proves permanent will ultimately depend on the conviction of the Australian people that regional integration is preferable to splendid isolation.

## BIBLIOGRAPHY

---

Adelman, I. and S. Robinson (1978), *Income Distribution Policy in Developing Countries*, Oxford University Press, Oxford.

Armington, P.S. (1969), 'The Geographic Pattern of Trade and the Effects of Price Changes', *IMF Staff Papers* 16, 176-199.

Arndt, H.W. (1968), 'Migration and the National Economy', in *A Small Rich Industrial Country*, Cheshire, Melbourne.

Australian Bureau of Statistics (1989), *Australian Yearbook*, Australian Government Publishing Service, Canberra.

Baker, L. and P.W. Miller (eds, 1987), *The Economics of Immigration*, proceedings of a conference at the Australian National University, Australian Government Publishing Service, Canberra.

Baker, L. (1987), 'Immigration and Per Capita Investment', in L. Baker and P. Miller (eds), *The Economics of Immigration*, proceedings of a conference at the Australian National University, Australian Government Publishing Service, 73-89.

Baker, P. 'Business Migration', *Law Institute Journal* 62(9), 833-835.

Baran, P.A. (1955), *The Political Economy of Growth*, reprinted by Penguin (1973), Harmondsworth, England.

Bayoumi, T. (1990), 'Saving-Investment Correlations: Immobile Capital, Government Policy, or Endogeneous Behaviour?', *IMF Staff Papers* 37(2), 360-387.

Bensusan-Butt, D.M. (1950), 'Investment and Immigration in Australia in the 1950s', *Economic Record* 26, 201-216.

Bergman, L. (1990), 'The Development of Computable General Equilibrium Modelling', in L. Bergman, D. Jorgenson and E. Zalai (eds), *General Equilibrium Modelling and Economic Policy Analysis*, Basil Blackwell, Oxford, 3-30.

Berry, R. and R. Soligo (1969), 'Some Welfare Aspects of International Migration', *Journal of Political Economy* 77, 778-794.

Bhandari, J.S., N.U. Haque and S.J. Turnovsky (1990), 'Growth, External Debt and Sovereign Risk', *IMF Staff Papers* 37(2), 388-417.

Boadway, R. and D. Treddenick (1978), 'A General Equilibrium Computation of the Effects of the Canadian Tariff Structure', *Canadian Journal of Economics* 11, 424-446.

Borjas, G.J. and M. Tienda (1987), 'The Economic Consequences of Immigration', *Science* 235(4789), 645-651.

Brain, P.J., R.L. Smith and G.P. Schuyers (1979), *Population, Immigration and the Australian Economy*, Croon Helm, Melbourne.

Branson, W.H. (1979), *Macroeconomic Theory and Policy* (2nd ed.), Harper and Row, New York.

Branson, W.H. (1988), 'Comments: Political vs Currency Premia in International Real Interest Differentials', by J.A. Frankel and A.T. MacArthur', *European Economic Review* 32, 1119-1121.

Brems, H. (1973), *Labour, Capital, and Growth*, Lexington Books, Lexington, Massachusetts.

Brosnan, P. and J. Poot (1986), 'An Econometric Model of Trans-Tasman Migration after World War II', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 138, Canberra.

Bureau of Immigration Research (1990), *Immigration Update, 1990*, Australian Government Publishing Service, Canberra.

Burgess, D.F. (1988), 'On the Relevance of Export Demand Conditions for Capital Income Taxation in Open Economies', *Canadian Journal of Economics* 21(2), 285-300.

Calwell, A.A. (1945), *How Many Australians Tomorrow?*, Read and Harris, Melbourne.

Calwell, A.A. (1949), *Immigration Policy and Progress*, Department of Immigration, Canberra.

Carmichael, J. and N. Dews (1987), 'The Role and Consequences of Investment in Australian Economic Growth', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 163.

Caves, R.E. and L.B. Krause (eds), *The Australian Economy: A View from the North*, Allen and Unwin, Sydney.

Centre for International Economics (1988), 'The Relationship Between Immigration and Economic Performance', in Committee to Advise on Australia's Immigration Policies (1988), *Immigration: A Commitment to Australia* (2 vols), Australian Government Publishing Service, vol. 2.

Centre for International Economics (1990), 'Immigration and Economic Management: Short Term Economic Consequences of Minor Variations in Immigration', Report submitted to Bureau of Immigration Research.

Clark, C. (1970), 'Net Capital Stock', *Economic Record* 46(116), 449-466.

Clark, C. (1978), 'Population Growth and Productivity', in *Research in Population Economics* 1, 143-54.

Codsi, G., M. Horridge and K. Pearson (1988), 'An Implementation of ORANI Using the GEMPACK Program TABLO', Impact Project, Computing Document No. C8-01.

Committee to Advise on Australia's Immigration Policies (1988), *Immigration: A Commitment to Australia* (2 vols), Australian Government Publishing Service, Canberra.

Coopers and Lybrand W.D. Scott (1988), 'Immigration Selection Mechanisms', in Committee to Advise on Australia's Immigration Policies (1988), *Immigration: A Commitment to Australia* (2 vols), Australian Government Publishing Service, Canberra, vol. 2.

Corden, W.M. (1955), 'The Economic Limits to Population Increase', *Economic Record* 31(61), 242-260.

Corden, W.M. (1979), 'Tell Us Where the Extra Jobs Will Be', *Bank of New South Wales Review* 30, 6-11.

Cronin, M.R. (1979), 'Export Demand Elasticities with Less than Perfect Markets', *Australian Journal of Agricultural Economics* 23, 69-72.

D. Douglas (ed., 1982), *The Economics of Immigration*, proceedings of a conference at the University of Sydney, Australian Government Publishing Service, Canberra.

Department of Immigration and Ethnic Affairs (1985), *Business Migration Program Survey: Study Parameters and Summary of Findings*.

Dervis, K., J. de Melo and S. Robinson (1982), *General Equilibrium Models for Development Policy*, Cambridge University Press, Cambridge.

Devargan, S., J.D. Lewis and S. Robinson (1986), 'A Bibliography of Computable General Equilibrium (CGE) Models Applied to Developing Countries', Division of Agriculture and Natural Resources, University of California, Berkeley, Discussion Paper No. 400.

Dixon, P.B. (1987), 'Medium-Run Forecasts for the State Economies Using the ORANI Model', Institute of Applied Economic and Social Research, University of Melbourne, Working Paper No.5/1987.

Dixon, P.B., B.R. Parmenter and J. Sutton (1978), 'Some Causes of Structural Maladjustment in the Australian Economy', *Economic Papers* 57, 10-26.

Dixon, P.B., B.R. Parmenter, J. Sutton and D.P. Vincent (1982), *ORANI: A Multisectoral Model of the Australian Economy*, North-Holland, Amsterdam.

Dooley, M. and P. Isard (1980), 'Capital Controls, Political Risk and Deviations from Interest-Rate Parity', *Journal of Political Economy* 88(2), 370-384.

Dooley, M., J. Frankel and D. J. Mathieson (1987), 'International Capital Mobility: What Do Saving Investment Correlations Tell Us?', *IMF Staff Papers* 34(3), 503-530.

Dornbusch, R. and S. Fischer (1987), *Macroeconomics* (4th ed.), McGraw-Hill, New York.

- Duffy-Deno, K.T. (1991), 'Public Capital and the Factor Intensity of the Manufacturing Sector', *Urban Studies* 28(1), 3-14.
- Easterlin, R.A. (1968), *Population, Labour Force, and Long Swings in Economic Growth*, National Bureau of Economic Research, New York.
- Economic Planning and Advisory Council (1988), 'Raw Materials Processing: Its Contribution to Structural Adjustment', Paper No. 31.
- Epstein, L. (1974), 'Some Economic Effects of Immigration: A General Equilibrium Analysis', *Canadian Journal of Economics* 7(2), 174-190.
- Feldstein, M. (1983), 'Domestic Saving and International Capital Movements in the Long Run and the Short Run', *European Economic Review* 21, 129-151.
- Feldstein, M. and C. Horioka (1980), 'Domestic Saving and International Capital Flows', *Economic Journal* 90, 314-329.
- Fell, G.E.C. (1991), 'Australia and the New Europe: A Fatal Distraction', *Oxford International Review* 2(2), 33-36.
- Fieleke, N. (1982), 'National Saving and International Investment', *Saving and Government Policy*, Federal Reserve Bank of Boston Conference Series No. 25.
- Frankel, J.A. (1985), 'International Capital Mobility and Crowding Out in the U.S. Economy: Imperfect Integration of Financial or Goods Markets?', National Bureau of Economic Research, Working Paper No. 1773.
- Frankel, J.A. and A. T. MacArthur (1988), 'Political vs. Currency Premia in International Real Interest Differentials', *European Economic Review* 32, 1083-1121.
- Frenkel, J. and R. Levich (1977), 'Covered Interest Arbitrage in the 1970s', *Economics Letters* 8(3), 267-274.
- Gaab, W., M. J. Granziol and M. Horner (1986), 'On Some International Parity Conditions: An Empirical Investigation', *European Economic Review* 30(3), 683-713.

Gregory, R.G. (1976), 'Some Implications of the Growth of the Mineral Sector', *Australian Journal of Agricultural Economics* 20(2), 71-91.

Grubb, D., R. Jackman and R. Layard (1983), 'Wage Rigidity and Unemployment in OECD countries', *European Economic Review* 21, 11-39.

Gruen, F.H. (1986), 'How Bad is Australia's Economic Performance and Why?', *Economic Record* 62(177), 180-193.

Habakkuk, H.J. (1971), *Population Growth and Economic Development since 1750*, Cambridge University Press, Cambridge.

Hacche, G. (1979), *The Theory of Economic Growth*, Macmillan, London.

Hahn, F.H. and R.C.O. Matthews (1964), 'Growth and Technical Progress: A Survey', *Economic Journal* 74, 825-850.

Halfpenny, J. (1986), 'Union View', in Bureau of Industry Economics, *Revitalising Australian Industry - the Paths and Prospects for Long Term Growth*, Australian Government Publishing Service, Canberra, 87-99.

Hamada, K. and K. Iwata (1989), 'On the International Capital Ownership Pattern at the Turn of the Twenty-First Century', *European Economic Review* 33, 1055-1079.

Hamberg, D. (1971), *Models of Economic Growth*, Harper and Row, New York.

Hansen, A.H. (1939), 'Economic Progress and Declining Population Growth', *American Economic Review* 29, 1-15.

Harberger, A.C. (1983), 'Vignettes on the World Capital Market', *American Economic Review* 70, 331-337.

Harrison, D.S. (1984), 'The Impact of Immigration on a Depressed Labour Market: the South Australian Experience', *Economic Record* 60, 57-67.

Higgs, P.J., B.R. Parmenter and R.J. Rimmer (1983), 'Modelling the Effects Economy-Wide Shocks on a State Economy in a Federal System', Impact Project, University of Melbourne, Preliminary Working Paper No. OP-37.

Hooke, G. (1987), 'Prospects for Expanding the Export of Services', *Economic Papers* 6(3), 15-26.

Horridge, M. (1985), 'Long-Run Closure of ORANI: First Implementation', Impact Project, Preliminary Working Paper No. OP-50.

Inada, K. (1964), 'On a Two-Sector Model of Economic Growth: Comments and a Generalisation', *Review of Economic Studies*, 119-27.

Industries Assistance Commission (1984), 'The ORANI Trade Parameters', Impact Project, University of Melbourne, General Paper No. G-58.

Industries Assistance Commission (1987), 'A Guide to the IAC's Use of the ORANI Model', Information Paper, Australian Government Publishing Service.

Inglis, P.A. and T. Stromback (1983), 'A Descriptive Analysis of Migrants' Labour Market Experience', Bureau of Labour Market Research, Draft Working Paper.

Isard, W. (1951), 'Interregional and Regional Input-Output Analysis: A Model of a Space Economy', *Review of Economics and Statistics* 33, 318-328.

Isard, W. and L. Anselin (1982), 'Integration of Multiregional Models for Policy Analysis', *Environment and Planning A* 41, 359-376.

Jensen, R.C. (1990), 'Construction and Use of Regional Input-Output Models: Progress and Prospects', *International Regional Science Review* 13(1-2), 9-25.

Johansen, L. (1960), *A Multi-sectoral Study of Economic Growth*, North-Holland, Amsterdam.

Jones, H. (1975), *An Introduction to Modern Theories of Economic Growth*, Nelson, London.

Kaldor, N. (1961), 'Capital Accumulation and Economic Growth', in F.A. Lutz and D.C. Hague (eds), *The Theory of Capital*, Macmillan, London.

Kaspura, A. and G. Weldon (1980), 'Productivity Trends in the Australian Economy, 1900-01 to 1978-79', Department of Productivity, Working Paper No. 9.

Keating, M. (1983), 'Relative Wages and the Changing Industrial Distribution of Employment in Australia', *Economic Record* 59(167), 384-397.

Kelley, A.C. (1972-3), 'Scale Economies, Inventive Activity, and the Economics of American Population Growth', *Explorations in Economic History* 10, 35-52.

Kelley, A.C. and R.M. Schmidt (1979), 'Modelling the Role of Government in Post-War Australian Immigration', *Economic Record* 55(149), 127-139.

Kemp, M.C. (1966), 'The Gain from International Trade and Investment', *American Economic Review* 56(4), 788-809.

Keynes, J.M. (1937), 'Some Economic Consequences of a Declining Population', *Eugenics Review* 29, 13-18, quoted in B. Thomas (ed., 1958), *Economics of International Migration*, Macmillan, London, at 382.

Kmenta, J. (1966), 'An Econometric Model of Australia, 1948-1961', *Australian Economic Papers* 5(2), 131-164.

Krugman, P. (1989), 'Comment: 'On the International Capital Ownership Pattern at the Turn of the Twenty-First Century', by K. Hamada and K. Iwata', *European Economic Review* 33, 1083-1085.

Kuznets, S. (1958), 'Long Swings in the Growth of Population and in Related Economic Variables', *Proceedings of the American Philosophical Society* 102, 25-52.

Kuznets, S. (1960), 'Population Change and Aggregate Output', in Universities-National Bureau of Economic Research, *Demographic and Economic Change in Developed Countries*, Princeton University Press, Princeton, New Jersey.

Layard, R. and S. Nickell (1987), 'The Labour Market', in R. Dornbusch and R. Layard (eds), *The Performance of the British Economy*, Clarendon Press, Oxford, 131-179.

Leontief, W.W., A. Morgan, K. Polenske, D. Simpson and E. Tower (1965), 'The Economic Consequences - Industrial and Regional - of an Arms Cut', *Review of Economics and Statistics* **48**, 217-241.

Lindbeck, A. and D. Snower (1985), 'Explanations of Unemployment', *Oxford Review of Economic Policy* **1**(2), 34-59.

Lloyd, P.J. (1982), 'The Effects of Immigration on Economic Growth via Technological Change and Economies of Scale', in *The Economics of Immigration*, proceedings of a conference at the University of Sydney, 57-65.

Love, D. and L. Pashute (1978), 'The Effects of Population Size, Growth, and Concentration upon Scientific Productivity', in J.L. Simon (ed.), *Research in Population Economics* **1**, 127-142.

MacDougall, G.D.A. (1960), 'The Benefits and Costs of Private Investment from Abroad: A Theoretical Approach', *Oxford University of Statistics Bulletin* **22**(3), 189-211.

Macmillan, W.D. (1991), 'Computable Equilibrium and the Analysis of Spatial Economies', paper presented to the Annual Meeting of the Association of American Geographers, Miami, April 1991.

Madden, J.R., D.W. Challen and A.J. Hagger (1982), 'The Effects on the Tasmanian Economy of the Mining Boom', Centre for Regional Economic Analysis, University of Tasmania, Paper No. RS-02.

Makin, A.J. (1989), 'Is the Current Account Deficit Sustainable', *Australian Economic Review* (Q2), 29-33.

McCarthy, M.R. and T.G. McCarthy (1989), 'Irish Migration: The Search for the Efficiency and Equity Basis of a European Regional Policy', *Economic and Social Review* **21**(1), 71-84.

McLean, R.J. (1986), 'Exploiting Opportunities in the Pacific Basin', Committee for Economic Development of Australia, Strategic Issues Forum, Monograph No. M82.

Meade, J.E. (1961), *A Neoclassical Theory of Economic Growth*, Allen and Unwin, London.

Miller, P.W. (1982), 'The Economic Position of Immigrants: Facts and Fallacies', *Australian Bulletin of Labour* **8**(4), 229-248.

Mishkin, F. (1984), 'The Real Interest Rate: A Multi-Country Empirical Study', *Canadian Journal of Economics* 17(2), 283-311

Mishkin, F. (1984), 'Are Real Interest Rates Equal Across Countries? An Empirical Investigation of International Parity Conditions', *Journal of Finance* 39, 1345-1358.

Monadjemi, M. (1990), 'Testing the Degree of International Capital Mobility', *Australian Economic Papers* 29(54), 30-39.

MSJ Keys Young Planners (1990), *Expectations and Experiences: A Survey of Business Migrants*, Australian Government Printing Service, Canberra (hereafter BMP Survey).

Murphy, R. (1984), 'Capital Mobility and the Relationship Between Saving and Investment Rates in OECD Countries', *Journal of International Money and Finance* 3, 327-342.

Norman, N.R. and K. Meikle (1983), 'Immigration - the Crunch Issues for Australia', Committee for the Economic Development of Australia, Information Paper No. IP8.

Norman, N.R. and K. Meikle (1985), *The Economic Effects of Immigration on Australia* (2 vols), Committee for Economic Development of Australia.

Obstfeld, M. (1986), 'Capital mobility in the World Economy: Theory and Measurement', *Carnegie-Rochester Conference Series on Public Policy* 24, 55-103.

Pagan, A.R. and J.H. Shannon (1987), 'How Reliable are ORANI conclusions?', *Economic Record* 63, 33-45.

Parmenter, B.R. 'On the Economics of Immigration', Institute of Applied Economic and Social Research, University of Melbourne, Working Paper No.3/1990.

Parmenter, B.R. and G.A. Meagher (1985), 'Policy Analysis Using a Computable General Equilibrium Model: A Review of Experience at the Impact Project', *Australian Economic Review* (Q1), 3-15.

Parmenter, B.R. and M.W. Peter (1990), 'A Reinterpretation of the CIE Projections of the Long-Run Economic Effects of Immigration', Institute of Applied Economic and Social Research, University of Melbourne, Working Paper No. 3/1990.

Parmenter, B.R. and M.W. Peter (1990), 'Australia's Medium-Run Economic Prospects, Including an Analysis of the Role of Immigration', Institute of Applied Economic and Social Research Working Paper (draft).

Penati, A. and M. Dooley (1984), 'Current Account Imbalances and Capital Formation in Industrial Countries, 1949-81', *IMF Staff Papers* 31(1), 1-24.

Phelps, E.S. (1968), 'Population Increase', *Canadian Journal of Economics* 1, 497-518.

Pitchford, J.D. (1974), *Population in Economic Growth*, North-Holland, Amsterdam.

Pitchford, J.D. (1989), 'A Sceptical View of Australia's Current Account and Debt Problem', *Australian Economic Review* (Q2), 5-13.

Pitchford, J.D. (1990), *Australia's Foreign Debt: Myths and Realities*, Allen and Unwin, Sydney.

Poot, J. (1986), *Immigration and the Economy: A Review of Recent Australian Findings on the Economic Consequences of Immigration and the Relevance of These Findings for New Zealand*, Victoria University Press, Wellington.

Poot, J., G. Nana and B. Philpott (1988), *International Migration and the New Zealand Economy*, Victoria University Press, Wellington.

Pope, D. (1987), 'Population and Australian Economic Development 1900-1930', in R. Maddock and I.W. McLean (eds), *The Australian Economy in the Long Run*, Cambridge University Press, Cambridge, 33-60.

Porter, M.G. (1985), 'The Labour of Liberalisation', in J. Scutt (ed.), *Poor Nation of the Pacific: Australia's Future?*, Allen and Unwin, Sydney, 37-61.

Powell, A.A. and T. Lawson (1990), 'A Decade of Applied General Equilibrium Modelling for Policy Work', in L. Bergman, D. Jorgenson and E. Zalai (eds), *General Equilibrium Modelling and Economic Policy Analysis*, Basil Blackwell, Oxford, 241-290.

Powell, J.M. (1988), *An Historical Geography of Modern Australia: The Restive Fringe*, Cambridge University Press, Cambridge.

Russell, B. and W.J. Tease (1988), 'Employment, Output and Real Wages', Reserve Bank of Australia, Research Discussion Paper No. 8806.

Salop, J. and E. Spittaller (1980), 'Why Does the Current Account Matter?', *IMF Staff Papers* 27(1), 101-134.

Sams, D. and P. Williams (1983), 'The Impact Population Projection Facility: A Non-Technical Overview', Impact Project, University of Melbourne, Working Paper No. B-22.

Scarf, H.E. (1967), 'On the Computation of Equilibrium Prices', in W.J. Feliner (ed.), *Ten Economic Studies in the Tradition of Irving Fischer*, Wiley, New York.

Scott, M.F. (1989), *A New View of Economic Growth*, Clarendon Press, Oxford.

Shapiro, M.T. (1988), 'Comments: Political vs Currency Premia in International Real Interest Differentials', by J. A. Frankel and A. T. MacArthur', *European Economic Review* 32, 1114-1118.

Simon, J.L. (1986), *Theory of Population and Economic Growth*, Basil Blackwell, Oxford.

Simon, J.L. (1986), 'Some Theory of Population Growth's Effect on Technical Change in an Industrial Context', *Australian Economic History Review*, 148-158.

Simon, J.L. (1989), *The Economic Consequences of Immigration*, Basil Blackwell, Oxford.

Sjaastad, L.A. (1962), 'The Costs and Returns of Human Migration', *Journal of Political Economy* 70, 80-93.

Smith, B. (1987), 'The Role of Resource Development in Australia's Economic Growth', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 167.

Smith, C. (1989), *Integrated Multiregion Models for Policy Analysis: An Australian Perspective*, North-Holland, Amsterdam.

Snape, R.H. (1977), 'Effects of Mineral Development on the Economy', *Australian Journal of Agricultural Economics* **21**(3), 147-156.

Solow, R.M. (1956), 'A Contribution to the Theory of Economic Growth', *Quarterly Journal of Economics* **70**, 65-94.

Solow, R.M. (1970), *Growth Theory: An Exposition*, Clarendon Press, Oxford,

Stilwell, F. (1987), 'Immigration Policy: Sound Economic Foundations?', *Australian Journal of Political Economy* **21**, 49-65.

Swan, T.W. (1956), 'Economic Growth and Capital Accumulation', *Economic Record* **32**, 334-361.

Tobin, J. (1983), 'Comments: 'Domestic Saving and International Capital Movements in the Long Run and the Short Run', by M. Feldstein', *European Economic Review* **21**, 153-156.

Tulpulé, A. (1984), 'Effects of Alternative Migration Strategies on Government Expenditure', Committee for the Economic Development of Australia, Information Paper No. IP12.

Usher, D. (1977), 'Public Property and the Effects of Migration upon Other Residents of the Migrants' Countries of Origin and Destination', *Journal of Political Economy* **85**(5), 1001-1020.

Vincent, D.P. (1990), 'Applied General Equilibrium Modelling in the Australian Industries Assistance Commission: Perspectives of a Policy Analyst', in L. Bergman, D. Jorgenson and E. Zalai (eds), *General Equilibrium Modelling and Economic Policy Analysis*, Blackwell, Oxford, 291-347.

Waldinger, R., H. Aldrich and R. Ward (1990), *Ethnic Entrepreneurs: Immigrant Business in Industrial Societies*, Sage, Newbury Park, California.

Walsh, B.M. (1989), 'Tests for Macroeconomic Feedback from Large-Scale Migration Based on the Irish Experience, 1948-87: A Note', *Economic and Social Review* **20**(3), 257-266.

Walters, R. and R. Dippelsman (1986), 'Estimates of Depreciation and Capital Stock in Australia', Australian Bureau of Statistics, Occasional Paper No.1985/3.

Warren, R.S. (1982), 'Immigration and the Natural Rate of Unemployment in Australia', *Journal of Macroeconomics* 4, 449-459.

Wilde, P.D. (1981), 'From Insulation Towards Integration: the Australian Industrial System in the Throes of Change', *Pacific Viewpoint* 22, 1-24.

Withers, G. (1986), 'Migration and the Labour Market: Australian Analysis', Centre for Economic Policy Research, Australian National University, Discussion Paper No. 144.

Withers, G. (1987), 'Immigration and Australian Economic Growth', in L. Baker and P. Miller (eds), *The Economics of Immigration*, proceedings of a conference at the Australian National University, Australian Government Publishing Service, Canberra, 29-55.

Withers, G. (1987), 'Labour', in R. Maddock and I.W. McLean (eds), *The Australian Economy in the Long Run*, Cambridge University Press, Cambridge, 248-288.

Withers, G and D. Pope (1985), 'Immigration and Unemployment', *Economic Record* 61(173), 554-563.

World Bank (1984), *World Development Report*, Oxford University Press, Oxford.