Oil Price Shocks and Developing Countries: A Case Study of the Gulf Crisis

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ABBREVIATIONS

ASEAN	Association of South East Asian Nations
b/d	barrels per day
GDP	gross domestic product
GNP	gross national product
IEA	International Energy Agency
mb	million barrels
mb/d	million barrels per day

OIL PRICE SHOCKS AND DEVELOPING ECONOMIES

1. INTRODUCTION

Although the 1990 Gulf crisis caused only a short period of high oil prices, this shock had an impact on oil-importing developing economies in different ways. In the first place, the crisis had an effect on their oil import bills and balance of payments, and secondly, these effects varied between countries. To start with, the characteristics of their oil import structure (e.g. between crude and products) differed, as well as access to the world petroleum market. Also, each economy responded in a different way to the oil shock. This study will focus on a sample group of countries and elaborate on the diverse structural, institutional and policy characteristics which may largely be responsible for the non-symmetric impact of the Gulf crisis.

The increase in oil prices had a three-fold economic impact on oil-importing developing economies. First, oil import bills increased because in the short run the price elasticity of demand for petroleum products was very low. Even where oil import volumes declined, the bills increased. Financing of costlier oil imports took up a greater proportion of export revenues and, with certain exceptions, the balance of payment deficits increased. Secondly, the higher international oil prices were passed on domestically, albeit with different lags, and this tended to fuel inflation. Thirdly, the rate of economic growth was affected, in some cases, either by the direct impact of the crisis, or by the adjustment policies, or both. Since the structure of oil imports was different between countries, other things being equal, then countries with large shares of certain products in their imports invariably faced the possibility of a higher increase in their oil import bill. This is because some product prices rose by a higher percentage than crude oil. Furthermore, not all developing economies were paying spot prices in the last two quarters of 1990. As a result, both the pattern and terms of purchase differed. Some countries were more dependent than others on supplies from Iraq and/or Kuwait before the August 1990 invasion. Some easily replaced lost supplies from the Gulf with new term contracts, while some had the benefit of adequate stock coverage in both crude oil and products during the initial periods of the crisis. As far as alternative supply is concerned, not only were the terms of supply important, but also the actual supply itself. Despite assurances to the contrary from OPEC member countries, there is no evidence that developing countries as a whole (burdened as they were with foreign exchange problems and without any oil-sharing agreement), benefited in any way from preferential access to oil supplies (United Nations, *World Economic Survey*, 1991).

The response of different economies to the oil crisis was determined not only by the structure of imports, but also by factors such as the strength of the current account, changes in private and official resource transfers, the degree of domestic demand management, and access to external financial assistance. This indicates the extent to which the impact of the higher oil prices on an economy was either modified or exacerbated, both in the short term and in the long term. The economy could respond to the higher prices by heavy borrowing and/or a depletion of foreign reserves, or it could either curtail or ration imports in order to reduce the balance of payments deficit and conserve foreign reserves. In the short run, an export-led

response was not possible in most developing countries because this requires a certain flexibility in the production of goods and services, as well as incentives to, and investment in this sector. However, a strong initial trade surplus can cushion the impact of an oil shock. Also, access to external financing can ease the short-term problem of paying for costlier imports, although in the medium/long term, higher trade deficits and a higher external debt will cause problems of adjustment for the economy. Import curtailment and/or rationing has welfare implications as well as implications for the growth of the economy in general. If the imports curtailed or rationed are household fuels, there is a direct impact on domestic welfare. If the imports curtailed or rationed are industrial fuels, production is lowered and, through an indirect impact on oil-related sectors such as transport, economic growth decreases. Such a policy, if combined with short- and long-term loans to finance the costlier oil imports, can actually worsen the balance of payments situation.

The eleven countries chosen for the study are Bangladesh, Brazil, India, Kenya, Pakistan, the Philippines, South Korea, Sri Lanka, Thailand, Turkey and Yugoslavia. They cover different geographical regions and are at different stages of development. Primarily agrarian economies, such as Bangladesh and Kenya, are included — as well as the newly industrializing, such as Thailand and South Korea. Tables 1.1 and 1.2 show the GNP per capita, the GDP and structure of GDP for these economies.

Table 1.1: GDP and GNP per capita. 1990. Million Dollars and Dollars Per Capita.

	GDP ($ million)	GNP per Capita ($)
BANGLADESH	22,880	210
BRAZIL	414,060	2,680
INDIA	254,540	350
KENYA	7,540	370
PAKISTAN	35,500	380
PHILIPPINES	43,860	300
SOUTH KOREA	236,400	5,400
SRI LANKA	7,250	470
THAILAND	80,170	1,420
TURKEY	96,500	1,630
YUGOSLAVIA	82,310	3,060

Source: World Bank, *World Development Report*, 1992.

Table 1.2: Sectoral Distribution of GDP. 1990. Percentages.

	Percentage Share of GDP in		
	Agriculture	Industry	Services
BANGLADESH	38	15	46
BRAZIL	10	39	51
INDIA	31	29	40
KENYA	28	21	51
PAKISTAN	26	25	49
PHILIPPINES	22	35	43
SOUTH KOREA	9	45	46
SRI LANKA	26	26	48
THAILAND	12	39	48
TURKEY	18	33	49
YUGOSLAVIA	12	48	40

Source: World Bank, *World Bank Development Report*, 1992.

The countries in the sample are all net oil importers but differ in terms of (a) the volume of oil imports, (b) the relative proportions of crude oil and petroleum products in this total volume, (c) the size and composition of domestic supply and demand, and (d) the volume and type of domestic refining capacity available. As a result, they vary in their ability to cope with external shocks. The possible responses have been outlined above. Table 1.3 shows their trade balances.

The impact of the oil shock on trade balances will be seen in both the 1990 and 1991 data. In Brazil, the trade surplus decreased by $5.6 billion in 1990. Trade deficits increased significantly in other countries — in Korea by $6.7 billion, in Turkey by $5.3 billion, in Thailand by $4.3 billion, in Yugoslavia by $3.1 billion, and in the Philippines by $1.5 billion. Pakistan, Sri Lanka, and less significantly Kenya, also registered increased trade deficits in 1990. Bangladesh, however, reduced its trade deficit by $413 million, while India had the more substantial reduction of $3 billion in 1990.[1]

[1] In 1990, India had reduced its import bill by $1.23 billion to $23.629 billion; and increased its export revenues by $1.82 billion to $17.965 billion. Although, an increase in exports of this magnitude is possible, the reduction of the import bill is more suspect. It is quite likely that these IMF figures have significantly over-estimated the reduction in the trade deficit in 1990.

Table 1.3: Trade Balance. 1987—91. Million Dollars.

	1987	1988	1989	1990	1991
BANGLADESH	-1,640	-1,747	-2,362	-1,949	-1,743
BRAZIL	9,643	17,734	14,508	8,890	8,691
INDIA	-7,843	-8,932	-8,714	-5,665	-2,670
KENYA	-830	-971	-1,251	-1,257	-682
PAKISTAN	-2,910	-3,366	-3,269	-3,464	-1,933
PHILIPPINES	-1,468	-1,657	-3,350	-4,856	-4,016
SOUTH KOREA	5,182	7,837	-57	-6,721	-11,268
SRI LANKA	-660	-762	-715	-832	-1,129
THAILAND	-1,404	-4,504	-5,940	-10,232	-9,682
TURKEY	-3,836	-2,406	-4,012	-9,276	-8,523
YUGOSLAVIA	-1,178	-550	-1,442	-4,563	-697

Sources and Notes:
IMF Balance of Payments Data, *International Financial Statistics*, September 1992.
IMF data is adjusted for Imports c.i.f. 1987—90 data for the Philippines, Sri Lanka, Kenya, Korea, Thailand, Turkey and Yugoslavia are based on actual c.i.f. figures from IMF, *Balance of Payments Statistics Yearbook*, volume 42, part I, 1991.

The rather better performance of Bangladesh, India, and to a lesser extent Sri Lanka and Kenya can be explained partly by import curtailment and partly by increased exports. Higher export revenues can, in turn, be explained by the steady depreciation and/or outright devaluation of the currencies of some of these countries. This would have made the exports relatively cheaper and hence relatively more competitive. For most of these economies, significant depreciation was most apparent in the last quarter of 1989, as in Sri Lanka, and the first two quarters of 1990, as in Bangladesh, India, and Kenya. This is not to say that the increased exports can be completely accounted for by exchange rate movements. However, the possibility of an outright increase in exports, particularly those of textiles, in what are generally thought to be tightly regulated markets for such manufactures, appears to be limited. None the less, Bangladesh is recorded as having increased its agriculture and garment exports, and Sri Lanka its garment and tea exports (UNCTAD, *Trade and Development Report*, 1991). In Kenya, export revenues from petroleum fuels increased by 59 per cent to $123 million in 1990, whereas in volume terms, the 534,000 tonnes exported in 1990 represented only a 4 per cent increase from 1989 levels (*Kenyan Economic Survey*, 1991). These exports partially offset the increased costs of oil imports.

The change in the current account balance of the selected countries between 1989 and 1990 (see Table 1.4) shows the extent to which private and official transfers compensated for and/or aggravated deteriorating balance of trade accounts. Between 1989 and 1990, Bangladesh, Kenya and Sri Lanka reduced their respective current account deficits, although

only Bangladesh had a reduced trade deficit in 1990, as well as an increased flow of official transfers. In Kenya and Sri Lanka, there was an increase in private transfers in 1990, which modified the impact of increased trade deficits on the current account. Pakistan and Thailand increased their current account deficits. Thailand had seen a significant deterioration in its trade balance, and with decreasing official and private transfers, the current account deficit was aggravated. In Korea, Turkey, and Yugoslavia, the current account balance changed from surplus to deficit. In Korea this was largely due to the deterioration in the trade balance, and in Turkey and Yugoslavia, it occurred despite an increase in official transfers.

Table 1.4: Current Account Balance. 1987—91. Million Dollars.

	1987	1988	1989	1990	1991
BANGLADESH	-238	-273	-1,100	-397	49.8
BRAZIL	-1,450	4,159	1,025	n.a	n.a
INDIA	-5,192	-7,148	-6,826	n.a	n.a
KENYA	-495	-460	-588	-477	n.a
PAKISTAN	-562	-1,424	-1,335	-1,578	n.a
PHILIPPINES	-444	-390	-1,456	-2,695	n.a
SOUTH KOREA	9,854	14,161	5,056	-2,172	-8,726
SRI LANKA	-326	-395	-414	-298	-557
THAILAND	-365	-1,655	-2,498	-7,282	-7,564
TURKEY	-806	1,596	961	-2,620	270
YUGOSLAVIA	1,248	2,487	2,427	-2,364	-1,161

Sources:
IMF, *Balance of Payments Statistics Yearbook*, volume 42, part 2, 1991 and IMF, *International Financial Statistics*, September 1992.

The option of borrowing externally was available to only the more developed of these countries. Table 1.5 shows the flow of capital, excluding reserves, in the period 1989—90.

For Bangladesh, Kenya, Pakistan and Sri Lanka, access to external financial help in 1990 was lower than in 1989. In Bangladesh and Kenya, this was largely reflected by lower long-term capital flows, and in Pakistan and Sri Lanka, by a decrease in short-term deposits by foreign banks held in domestic banks. In South Korea, Thailand, Turkey and Yugoslavia, external borrowing increased significantly in 1990, due to increased portfolio investment and short-term loans in Korea, and increased direct investment and short-term loans in Thailand. Turkey and Yugoslavia benefited mostly from short-term capital flows to banks and other sectors.

Table 1.5: Capital Flows, Excluding Change in Reserves. 1989—90. Million Dollars.

	1989	1990
BANGLADESH	795	676
BRAZIL	n.a	n.a
INDIA	n.a	n.a
KENYA	520	407
PAKISTAN	1,382	1,312
PHILIPPINES	1,354	2,057
SOUTH KOREA	-2,626	2,969
SRI LANKA	580	488
THAILAND	6,621	9,168
TURKEY	-1,876	3,018
YUGOSLAVIA	-214	3,504

Source: IMF, *Balance of Payments Statistics Yearbook*, vol.42, part I, 1991.

Finally, with the exception of Bangladesh, Thailand, Turkey and Yugoslavia, the other countries in the sample all ran down their international reserves. For Thailand, Turkey and Yugoslavia this can perhaps be explained by the availability of foreign loans. Table 1.6 shows the stock of International Reserves excluding Gold in 1989 and 1990.

Table 1.6: International Reserves, Excluding Gold. 1989—90. Million Dollars.

	1989	1990
BANGLADESH	502	629
BRAZIL	7,535	7,441
INDIA	4,108	1,521
KENYA	285	205
PAKISTAN	521	296
PHILIPPINES	1,417	924
SOUTH KOREA	15,214	14,793
SRI LANKA	244	423
THAILAND	9,515	13,305
TURKEY	4,781	6,050
YUGOSLAVIA	4,136	5,474

Source: World Bank, *World Tables*, 1992.

This study consists of six chapters. Chapter 1 is the Introduction. Chapter 2 focuses on two aspects of oil price movements during the crisis: the difference in the rates of crude oil and petroleum product price increases; and the difference in the rates of product price increases between markets. The relevance of oil price changes and regional market characteristics to the impact of the Gulf crisis on oil-importing developing countries is also examined. Chapter 3 takes an introductory look at the three factors influencing the oil import bill: the composition and the volume of, and the average unit prices paid for oil imports. Variations in the behaviour of these three factors are responsible for the differing changes in oil bills between the various countries in 1990. Chapter 4 discusses the differences between countries as regards the average prices of oil imports over the period 1989—90; and examines whether the post-August 1990 oil supply arrangements explain some of these differences. Chapter 5 looks at the relationship between changes in composition and volume of oil imports and changes in oil bills, as well as the cushioning provided by the domestic oil industry through stocks and excess refining capacity. Chapter 6 examines the general factors which either modified and/or reinforced the impact of the Gulf crisis on the oil bills of the developing countries. These include the degree of domestic demand management, the strength of export performance and the degree of access to external financing. Chapter 7 is the Conclusion.

2. CRUDE OIL AND PRODUCT PRICE MOVEMENTS

Two main points need to be made regarding crude oil and product price movements during the crisis. First, although both petroleum product prices and crude oil prices increased, the rate of increase differed. The increase in crude oil prices between the second and third quarter of 1990 was much higher than the increase in product prices during the same period. On the other hand, the price increase between the third and the fourth quarters of the year was much higher for most products than for crude oil. Secondly, the rate of product price increases varied both between products and between different regional markets. This is significant because it reflects differences in the exposure of developing countries purchasing products during the Gulf crisis, both in terms of which products were purchased and where they were purchased from.

Table 2.1 shows the quarterly changes in crude oil prices in 1990. A number of different crudes are included to show that, on average, most crude prices increased by about 65—70 per cent between the second and third quarters of 1990, and by about 20 per cent between the third and fourth quarters of the year.

Table 2.1: Quarterly Crude Oil Price Change in 1990 and Yearly Change, 1989—90. Percentage Increase.

	Price Increase		
	2nd Q — 3rd Q	3rd Q — 4th Q	1989—90
Dated Brent	66.4	21.8	29.8
Fateh-Dubai	67.8	17.0	30.3
Oman	66.1	16.8	30.1
Urals	79.6	21.5	29.8
Es Sider	70.3	22.2	30.9
BBQ	65.6	22.0	30.8
ANS	70.1	16.3	24.2
Arabian Heavy	65.3	20.6	28.8

Sources:
Platts Oil Price Handbook, 1990 Prices. For Arabian Heavy prices see MEPEP, *International Crude and Product Prices*, January 1992. Data is based on average prices derived from contract formulae to the Far East.

A representative crude oil price increase of about 30 per cent from 1989 levels can therefore be established. This facilitates a comparison with the average yearly product price changes

in the different markets, which, although moving in the same direction as crude oil prices, tended to increase at different rates from those of crude oil. Certainly, an average increase of 30 per cent in the spot price of crude oil contrasts with the greater range of actual average unit price increases of crude oil imports in our group of countries, as we will see in Chapter 4.

The variations in rates of change of product prices are also significant between products and between markets. During the Gulf crisis, product markets diverged altogether and there were strong premiums on prompt supply. Table 2.2 shows the quarterly price changes in 1990 spot product prices in three different markets: US Gulf Coast, Mediterranean, and Japan. When crude oil prices increased by 30 per cent on average in 1990 relative to 1989, US Gulf Coast prices for mogas increased by 24 per cent, kerosene by 30 per cent, gasoil by 25 per cent, and fuel oil by 13 per cent. In the Mediterranean-Italy, prices (f.o.b.) for mogas increased by 44 per cent, for kerosene by 36 per cent, for gasoil by 31 per cent, and for fuel oil by 16 per cent. Finally, Japan (c&f) prices in the same period increased by 28 per cent for mogas, by 35 per cent for both kerosene and gasoil, and by 19 per cent for residual fuel oil.

The increase in product prices has been greater in the European and Far Eastern markets than in the US Gulf Coast, especially in the fourth quarter of 1990. On average, the greatest price changes in the fourth quarter of the year occurred in kerosene (from 43 per cent in the US Gulf Coast to 54 per cent in the Mediterranean) and gasoil (from 33 per cent in the US Gulf Coast to 49 per cent in the Mediterranean) followed by fuel oil (from 27 per cent in the US Gulf Coast to 36 per cent in Japan). The lowest price increase was in gasoline (from 6 per cent in the US Gulf Coast and Mediterranean to 12 per cent in Japan).

As seen in Table 2.2, the highest rates of change in kerosene and gasoil were in the Mediterranean and Japan. This reflects the seasonal shift in the winter away from gasoline demand to the middle distillates, primarily the heating oils. The jump in gasoline prices, in all three markets, was greater in the third quarter, approximately 20—40 per cent, than in the fourth quarter, approximately 5—12 per cent. This reflects the end of the summer season with the August peak in gasoline demand. On average, the opposite tendency marked prices in kerosene and gasoil which increased at a greater rate in the last quarter of the year. The greatest increases occurred in the Mediterranean and Japan markets due to the stronger demand for heating oils such as kerosene (Japan, South Korea) and gasoil (Germany) in these markets relative to the North American market.

The absolute prices of products, however, are almost consistently higher in the Far East market, with the exception of the fuel oil price which in the latter part of 1990 tended to be the same in all three markets. In the third quarter of 1990, the kerosene price was $22/tonne higher in Japan than in the Mediterranean, and $31/tonne higher than in the Gulf Coast. By the fourth quarter, the difference had increased to $26/tonne relative to the Mediterranean and $65/tonne to the US Gulf Coast. In the third quarter of 1990, gasoil prices were $28/tonne higher in Japan than in the Mediterranean, and $32/tonne higher than in the US Gulf Coast. The fourth quarter saw the price differential in Japan decrease to $12/tonne relative to the Mediterranean, but increase to $50/tonne relative to the US Gulf Coast. Later on in the crisis, cargoes from North America started coming into the Far East to take advantage of the regional premiums.

Table 2.2: Quarterly Average Spot Prices of Petroleum Products in the US Gulf Coast, Mediterranean, and Japan Markets. Quarterly Price Changes in 1990 and Yearly Change 1989—90. Dollars per Tonne and Percentage.

QUARTERLY AVERAGE SPOT PRICES OF PRODUCTS

US GULF COAST		Unleaded Motor Gasoline	Jet Kerosene	Fuel Oil No.2	Fuel Oil No.6 1%S
	1Q	215	206	175	117
	2Q	225	167	149	88
	3Q	269	228	195	126
	4Q	284	326	260	61
MED.ITALY (f.o.b.)		Regular Gasoline 0.4	Jet Kerosene	Gas Diesel Oil	Heavy Fuel Oil 1%S
	1Q	199	185	169	120
	2Q	201	156	141	82
	3Q	287	236	199	115
	4Q	305	365	297	155
JAPAN (c&f)		Unleaded Gasoline	Jet Kerosene	Gas Diesel Oil	Fuel Oil 180 cst
	1Q	230	206	189	109
	2Q	227	175	165	85
	3Q	320	259	228	113
	4Q	358	391	310	155

CHANGE IN PRODUCT PRICES

		Motor Gasoline	Jet Kerosene	Gas Diesel Oil	Fuel Oil
US GULF COAST	2Q-3Q	19.4%	36.0%	30.6%	42.1%
	3Q-4Q	5.7%	43.0%	33.3%	27.9%
	'89-'90	24.0%	30.0%	25.0%	13.0%
MED. ITALY (f.o.b.)	2Q-3Q	43.3%	51.2%	41.0%	40.0%
	3Q-4Q	6.2%	54.3%	49.1%	35.1%
	'89-'90	44.0%	36.0%	31.0%	16.0%
JAPAN (c&f)	2Q-3Q	40.8%	47.6%	37.9%	32.7%
	3Q-4Q	11.8%	51.0%	36.1%	36.5%
	'89-'90	28.0%	35.0%	35.0%	19.0%

Sources and Notes:
Platts Oil Price Handbook, 1990 Prices. Conversion factors from *BP Statistical Review*, 1990 and *Energy Statistics Yearbook*, UN, 1990.
Based on Platts' product specifications, prices are assumed to be the same for aviation gasoline and motor gasoline, and kerosene and jetfuels. US Gulf Coast prices serve the South American market; Mediterranean basis, Italy (f.o.b.) prices serve the African and Central European markets, and Japan (c&f) prices serve the Far East and South Asian markets. Japan (c&f) prices are used instead of Singapore due to the lack of consistent product data for the latter. Further, the computation of the yearly change in gasoil prices is based on 1989 Singapore prices and 1990 Japan (c&f) prices. This is due to the lack of Japan (c&f) price data for 1989.

The divergence of product markets is clear even in terms of 1990 average annual prices. Japan (c&f) yearly average spot prices for mogas, kerosene and gasoil were significantly higher than prices in the Mediterranean, and in the US Gulf Coast. Relative to other markets, the Japan (c&f) price for mogas was $35—$40/tonne higher, for kerosene it was $22—$27/tonne higher, and for gasoil, it was $16—$24/tonne higher. The higher absolute prices in Japan were a result of a sharp increase in demand for products and the initial perception of tightness in the products market.

According to the World Bank, following the Iraqi invasion of Kuwait in August 1990, sharp increases in demand were reported in Thailand (25—30 per cent), South Korea (25 per cent), India, Pakistan and the Philippines (17 per cent) (World Bank/IFC, Office Memorandum, *Crude and Product Prices*, December 1990). The sudden abrogation of contracts and the realization that the domestic economic flexibility and potential in fuel switching was essentially limited, resulted in panic buying on the spot market for a number of developing economies, perhaps most significantly for India, Pakistan and the Philippines. For South Korea and Thailand, economies boasting high rates of demand growth in any case, the high demand of this period was perhaps a reflection of the delayed pass-through of higher prices domestically (Korea increased domestic product prices at the end of November 1990), as well as the need to maintain a continuously safe level of stocks.

The fourth quarter of 1990 saw considerably less panic buying and in fact, by the last quarter of 1990, most developing countries had implemented some sort of demand management programme (partial pass-through of international prices, and/or rationing). Price increases in this period were more a result of market perceptions and premiums on the impending UN deadline of 15 January, 1991 to Iraq and the imminence of war than panic buying and perceptions of a tight products market.

From the above description of the impact of the invasion of Kuwait on oil prices, it is evident that the crisis beginning with crude oil developed rapidly into a products crisis primarily in the Far Eastern market, and the worst hit products were kerosene and gasoil. This would have a significant impact on a country's oil import bill, depending on both the weight of petroleum products in total oil imports as well as the specific regional market off which oil purchases were made.

3. THE CHANGE IN OIL IMPORT BILLS, 1989—90

Table 3.1 presents the oil import bills of our sample countries in 1989 and 1990. In all cases, the oil import bill was higher in 1990, although this was not, of course, entirely attributable to the oil shock. Allowance has to be made for the trend increase/decrease in volume imports and therefore oil import bills. If past trends in oil bill changes are taken into account, then the oil crisis had a significant impact on all the countries with the exception of Bangladesh, Yugoslavia, and to a lesser extent Thailand. This is because on average oil bills in these three countries were increasing at rates relatively close to the actual increase in the oil bill in 1990. A relatively small change in the import bill, however, does not imply that the crisis had only a minimal impact on a country. The impact was also conditioned by the country's volume response to the higher oil prices, as well as other consequences of the crisis, for instance the cessation of overseas remittances from the Middle East. Again, accounting for past trends in oil bill changes, the greatest impact of the crisis was on Brazil, Kenya, the Philippines, Sri Lanka and Turkey. This is because the actual oil bill increases for these economies was significantly higher than what was expected from past trends. Absolute import bills were greatest for Brazil, India, South Korea and Turkey. In fact, if the additional cost of oil imports for the developing countries is estimated at about $10 billion (United Nations, *World Economic Survey*, 1991), then about 70 per cent of this additional sum was borne by these four countries.

The oil import bill is affected by two main factors: the structure of oil imports which comprises composition and volumes, and the average unit prices paid for crude oil and petroleum product imports. The structure of oil imports is in turn influenced by domestic demand and the flexibility of the domestic oil industry, in terms of refining capacities and stock levels. The average unit price is influenced by the terms of the supply contract as well as by the timing of supply, particularly for spot market purchases. Both import prices and import structure will be examined in greater detail in later chapters. We shall concentrate here on the impact that a change in oil import composition and volumes had on bills. In cases where the change in oil import structure had relatively little impact on the increase in the bill, average unit prices of imports in 1990 and the change in these prices from 1989 clearly assume greater significance.

Table 3.1: Oil Import Bills and Percentage Change 1989—90. Million Dollars and Percentage.

	Oil Bill 1989	Oil Bill 1990 (*)	Oil Bill with 1989 Import Composition and Volumes and 1990 Average Unit Prices (*)	Oil Bill with 1989 Import Composition; Volumes adjusted for past growth trends and 1990 Average Unit Prices (*)
BANGLADESH	338	446 (31.8)	466 (37.9)	494 (46.0)
BRAZIL	3,655	5,110 (39.8)	5,363 (46.8)	5,250 (43.7)
INDIA	3,716	5,739 (54.4)	4,868 (31.0)	5,677 (52.8)
KENYA	302	402 (33.4)	367 (21.6)	361 (19.8)
PAKISTAN	1,184	1,718 (45.2)	1,695 (43.3)	1,953 (65.0)
PHILIPPINES	1,181	1,930 (63.4)	1,828 (54.8)	2,015 (70.6)
SOUTH KOREA	5,363	8,153 (52.0)	6,889 (28.5)	7,903 (47.4)
SRI LANKA	252	359 (42.2)	367 (45.6)	360 (42.8)
THAILAND	2,095	2,826 (34.9)	2,388 (14.0)	2,798 (33.6)
TURKEY	2,611	4,048 (55.0)	3,101 (18.8)	3,541 (35.6)
YUGOSLAVIA	2,057	2,390 (16.2)	2,271 (10.4)	2,441 (18.7)

Sources and Notes:
1989 Import Volume data from *Energy Statistics Yearbook*, UN, 1989. 1990 Import Volume and Value data from national sources: see Table 4.1
Annual Changes in volume imports are based on annual average growth rates of crude oil and product imports in the period 1987—9. Data for Bangladesh, India, and Pakistan is based on each country's fiscal year. For Bangladesh and Pakistan, data in the first column refers to financial year 1990 i.e. July 1989—June 1990. Data in the second column refers to financial year 1991 i.e. July 1990—June 1991. In India, the fiscal year begins on April of stated year. For India and South Korea, the average unit prices used are disaggregated according to specific product.
* The percentage change in brackets refers to the change from the 1989 import bill.

Table 3.1 also shows two hypothetical 1990 oil import bills. The first assumes that the 1989 composition and volume of oil imports have remained constant in 1990 but have been applied to 1990 average unit prices. The second hypothetical bill assumes that the 1989 composition of oil imports has remained constant in 1990, but volumes have been adjusted based on past growth trends, and 1990 average unit prices have been applied. Some interesting observations can be made regarding the differences between the actual increases in oil import bills between 1989 and 1990 and the changes that would have occurred on the basis of the hypothetical cases constructed in Table 3.1.[2]

[2] In order to draw a consistent picture of the cost of oil imports for any one developing country over the period 1987—9, this study has made certain assumptions about the markets that serve each country, and hence the spot prices at which crude petroleum and petroleum products are bought.

The influence of the oil import structure on the extent of change in oil bills is most apparent in those countries where the difference between the actual change in the bill and the hypothetical change in the bill (normalized for 1989 structure) is large. This is true for all countries in our sample with the exception of Pakistan and Sri Lanka.

In Bangladesh and Brazil, if the composition and volume of oil imports had been retained at 1989 levels, the import bill would have been significantly higher. We know from 1990 import data that imports were in fact reduced in both countries. In Bangladesh product imports were reduced, and in Brazil, oil imports as a whole decreased.

In Bangladesh, the volume of oil imports was on an increasing trend in the years before 1990. The second hypothetical case in Table 3.1 suggests that this country managed to mitigate the impact of the crisis on its oil import bill from a 46 per cent increase to a 31.8 per cent increase by reducing volume imports of oil below trend levels.

In Brazil, the volume of oil imports was on a decreasing trend in the past few years. Brazil managed a greater reduction in oil import volumes in 1990 than expected from the earlier trend. Product imports decreased by 27 per cent and crude oil imports by 3 per cent. As a result, the import bill increased by 39.8 per cent instead of 43.7 per cent, the rise that would have occurred assuming constant composition and a trend reduction in volume. Note however that average import prices had a part to play in the change in the oil bill. The crude oil average import price paid by Brazil in 1990 increased by 46 per cent. This, combined with the fact that the oil import structure of this country is heavily biased toward crude oil, modified the impact of an otherwise significant reduction in product imports on the 1990 bill.

In our calculation of import bills for 1987 and 1990, actual crude oil bills are taken. In exceptional cases such as that of Sri Lanka, the average yearly price of the largest crude supplier is worked out. Hence the Sri Lankan crude bill for 1989 is worked out on the basis of Malaysian Tapis and Iranian Light prices for 1989. As far as product import bills are concerned, these are actual bills in the 1989—90 period, barring one exception. The Korean import bill for motor spirit and aviation spirit is approximated using average spot prices for these products in 1990.

In general, the 1987—8 data on product import bills uses spot market prices. Product import bills therefore err on the lower side since freight rates are not included in the average yearly spot prices for the various products. The product bills are therefore approximations. However, because actual crude oil bills are used, and crude oil comprises a large part of the oil import bill, the overall approximation is a close one, and adequate to indicate the general trend in developing countries in the 1987—8 period.

An important note to make here is that although prices are averaged over the calendar year, data for Pakistan, India, and Bangladesh refers to fiscal years. The Pakistani and Bangladeshi fiscal year ends in June of the stated year, while the Indian fiscal year begins in April of the stated year. Although this does not make a significant difference to our study, it should be remembered that the average yearly spot prices for petroleum products may not be exactly the same for these three countries. In fact, the 1990 average spot prices relevant to Bangladesh, India and Pakistan may be slightly higher than those for the calendar year 1990, for the simple reason that the average would take into account the higher product prices in early 1991 as well. A comparison between the actual average unit prices paid for product imports and the spot market prices of these products in 1990 (see Table 4.3), therefore has taken this into consideration by computing average spot prices according to the relevant fiscal year and adding the appropriate freight charges. For Yugoslavia, freight rates are assumed to be minimal given that the relevant spot market is f.o.b. Mediterranean Basis. In this case, therefore, spot market prices are not adjusted.

The import bills of five countries, Kenya, India, the Philippines, South Korea, Thailand and Turkey, would not have increased as much as they did had the 1989 oil import structure remained constant. We compare the change in the actual oil import bill in 1990 with the change in the hypothetical oil import bill given 1989 import composition and volumes. In three of these five countries, the share of product imports in total oil imports increased relative to the share of crude oil imports. The change in the oil bill was therefore much higher than what it would have been if this compositional change had not taken place. In the Philippines the share of crude oil in total oil imports increased in 1990. This increase combined with the fact that average crude oil prices increased by a significant 56 per cent for the country in 1990 resulted in a big actual change in the oil bill. The increase in Turkey's oil bill was largely due to increased volume imports rather than a significant change in import composition (crude oil retained a 95—96 per cent share of total oil imports) or oil prices.

A comparison of the actual change in the oil bill with the second hypothetical change (allowing for adjusted volume imports in 1990) of some countries, show that they imported more than expected from past volume trends. These countries were Kenya, South Korea, Thailand to a lesser extent, and Turkey. Volumes of oil imported increased by about 3 million tonnes in India and Thailand and about 5—6 million tonnes in Turkey and South Korea. In Kenya, volume imports of oil increased by only 165,000 tonnes. A decreasing growth trend of volume imports in past years meant that if past growth rates had been adhered to, the change in the oil import bill would have been much lower than the actual change. In fact, Kenya reversed the decreasing growth trend of past years by increasing oil imports in 1990. While crude oil imports increased by about 4 per cent from 1989 levels, product imports trebled from 1989 levels. The change in the import bills of these countries was therefore influenced by the change in composition, and exacerbated in some cases, by increases in volume. The story, for some countries therefore, is not exclusively one of higher prices.

As mentioned earlier, the difference between the actual change in oil import bills and the change assuming constant 1989 structure, is not very significant for Pakistan and Sri Lanka. In Sri Lanka, if composition and volumes had remained constant at 1989 levels, the bill would have been only about 8 per cent higher than the actual change. This was because the reduction in volume imports of oil was insignificant, as was the compositional change in oil imports. With the import bill adjusted for volume changes in 1990, the change from 1989 levels was only slightly higher than the actual change due to the trend of decreasing oil imports in the past few years.

In Pakistan, the hypothetical change in the oil import bill (assuming constant 1989 structure) was only 4 per cent lower than the actual change. Again, this was primarily because, the high increase in crude oil imports was modified by the 16 per cent decrease in product imports. Interestingly enough, however, if the 1989 import composition had been maintained with adjusted volume levels for 1990, the change in the oil bill would have been significantly higher. This is because Pakistani oil imports in 1989 comprised 41 per cent crude oil and 59 per cent petroleum products and in 1990, the average unit price paid for products was significantly high. Table 3.1 shows that with volume imports adjusted for past growth trends, the change in the oil bill is 65 per cent rather than the actual 45 per cent. It is evident that the change in the oil import structure was significantly influenced by the average prices paid.

4. THE CHANGE IN OIL IMPORT PRICES 1989—90

The prices paid for oil imports are of crucial importance in determining the level of the oil bill. Although changes in the composition and volume of imports are also important, price changes influence the extent of the structural response to the crisis. The average unit prices of crude oil and petroleum product imports paid by various countries are influenced by the nature of the supply contract and by the timing of supply. Thus, prices paid by particular countries for their oil imports were affected by the degree of dependency on Kuwaiti and Iraqi supplies, the terms at which alternative contracts were secured, and/or, the extent to which terms for existing supply arrangements changed as a result of the Gulf crisis. Before assessing why average unit prices of oil imports differed from country to country, we will attempt to establish the extent of the differences.

4.1 Average Unit Prices of Crude Oil and Product Imports, 1989—90

Table 4.1 shows the yearly average unit price for imported oil in selected developing economies. Wherever possible, the average unit prices are calculated for specific and/or total products, and for crude oil imports.

Keeping in mind that the Gulf crisis brought about an approximate 30 per cent increase in the average spot price for crude oil, it is clear that the crude oil import price increases faced by most developing countries were more varied. The increase in the average unit price of crude oil imports ranged from 11.2 per cent in Yugoslavia to 56.1 per cent in the Philippines. The greatest increase was registered in the Philippines, Brazil, Bangladesh and Sri Lanka. Increases in Kenya, India, South Korea and Thailand ranged between 22 per cent to 26 per cent. The increase in the average crude oil import price in Turkey and Pakistan was significantly mitigated by the 'free oil' that the two countries received from Saudi Arabia during the crisis. If the free crude oil had been purchased at spot market rates, the percentage change in average unit prices would have been much higher.

The change in the average import prices of petroleum products is far more difficult to establish. As far as possible, actual 1990 data is used. For general comparison purposes, average import prices for products in 1989 are computed based on spot market prices in the relevant market. The comparison, therefore, with 1990 average import prices is essentially limited but provides us with a general picture of the extent of variation in the change in average import prices in 1990.[3]

[3] The computation of certain average unit prices for product imports, particularly for Yugoslavia, give rise to what appear to be inflated figures. These figures cannot be accounted for, and may cause some distortions in the computation of changes in oil bills as well (see Table 3.1). In Table 4.2, a similar statistical quirk can be seen in Portugal's average import prices for kerosene and medium oils.

Table 4.1: Average Unit Prices of Crude Oil and Petroleum Product Imports in 1989 and 1990, and the Change in Import Prices in 1990. Dollars per Tonne and Percentage.

	Oil Import	Average Unit Import Price		Price Change(%)
		1989	1990	1989—90
BANGLADESH	Crude Oil	138.00	190.30	37.90
BRAZIL	Crude Oil	116.29	170.82	46.89
	Fuel Oil	113.18	136.22	20.36
KENYA	Crude Oil	138.41	169.07	22.15
INDIA	Crude Oil	129.30	163.56	26.50
	Kerosene	211.05	325.19	54.08
	Jet Fuels	202.37	163.93	-18.99
	Gasoil	194.92	259.81	33.29
PAKISTAN	Crude Oil	121.00	117.25	-3.10
			*135.76	*12.20
PHILIPPINES	Crude Oil	101.47	158.35	56.06
SOUTH KOREA	Crude Oil	122.36	154.63	26.37
	Kerosene	194.95	316.98	62.60
	Gasoil	164.63	282.05	71.32
	Fuel Oil	102.83	133.48	29.81
SRI LANKA	Crude Oil	127.56	173.00	35.62
THAILAND	Crude Oil	127.44	157.40	23.51
	Motor Gasoline	185.40	230.31	24.22
TURKEY	Crude Oil	131.92	153.11	16.06
			*178.22	*35.10
YUGOSLAVIA	Crude Oil	163.20	181.40	11.15
	Mogas/light oils	242.83	251.15	3.43
	Kerosene/med.oils	243.15	270.58	11.28
	Gasoil	367.74	254.27	-30.86
	Fuel Oil	91.57	116.04	26.70

(*) Average unit price and price change (per cent) if free oil had been bought at spot prices.

Table 4.1 Continued.

Sources and Notes:

Bangladesh:	ADB Asian Development Outlook, 1991.
Brazil:	1989 Crude bill from *ABECOR*; average unit prices of fuel oil computed from spot prices in the relevant market. 1990 data Petrobras (London) Library.
Kenya:	*Kenyan Economic Survey*, 1991.
India:	Oil India Limited Library.
Korea:	1989 data from IMF, *International Financial Statistics Yearbook*, 1990; Fuel oil data from the *Economics Statistics Yearbook*, Bank of Korea, 1991; average unit prices of other products computed from spot prices in the relevant market. 1990 data from *Statistical Yearbook of Foreign Trade*, 1990. Average Unit Prices for motor spirit and aviation spirit computed from spot market quotes.
Pakistan:	Financial year 1990 data from ADB, *Asian Development Outlook*, 1991. Financial year 1991 data from the Ministry of Finance Library.
Philippines:	1989 data from IMF, *International Financial Statistics Yearbook*, 1990; 1990 aggregated product data from *BP (London) Movement Matrix Data* (volumes); crude bill from 1991 *Philippines Statistical Yearbook* and *PIW*, 29 April, 1991 (total oil bill).
Sri Lanka:	1989 Crude oil bill computed from average prices of Malaysian Tapis and Iranian Light, the two main crudes supplied. 1990 aggregated data from Central Bank of Sri Lanka, *Annual Report*, 1990.
Thailand:	1989 data from IMF, *International Financial Statistics Yearbook*, 1990. Gasoline bill from *Quarterly Bulletin*, Bank of Thailand, December 1990. 1990 data from *Petroleum Authority of Thailand Library* (volumes); *Quarterly Bulletin*, Bank of Thailand, December 1990 (import bills).
Turkey:	1989 data from *Main Economic Indicators*, March 1991. 1990 data from *Monthly Economic Indicators*, State Institute for Statistics, Prime Ministry, Republic of Turkey (import bills); *OECD Quarterly Oil Statistics and Energy Balances*. Second Quarter 1991 (volumes).
Yugoslavia:	1989 and 1990 data from Statistical Paper Series, Series D, Various Volumes, *Commodity Trade Statistics*, United Nations, NY 1990.

The increase in fuel oil prices ranged from 20.4 per cent in Brazil to 29.8 per cent in Korea. In Yugoslavia, the average import price of fuel oil increased by 26.7 per cent in 1990. Gasoil prices increased by 71.3 per cent in Korea, 33.3 per cent in India, and decreased by about 30.9 per cent in Yugoslavia. Data regarding the change in jet fuel import prices is available for India alone, where the average price decreased by 19 per cent. In Yugoslavia, where kerosene and jetfuels are considered in aggregation as medium oils, the average import price increased by 11.3 per cent. This price change is therefore comparable to the increase in kerosene average import prices. In India, the average import price of kerosene increased by 54.1 per cent and in Korea, the price increased by 62.6 per cent. Finally, in the case of gasoline, we have data from only two countries. In Thailand, the average unit price for gasoline imports increased by 24.2 per cent while that in Yugoslavia increased by 3.4 per cent.

Table 4.2 shows the change in average unit prices of oil imports in the 1989 and 1990 period for three OECD countries. The three economies chosen, Germany, Portugal and Japan differ in terms of their respective stages of development and are different in terms of the markets

that serve each country. Hence Portugal in western Europe which represents a relatively less developed OECD economy, and Japan in the Far East, which may or may not have been faced with a similar sort of product price increase as other Asian developing economies during the period of the crisis.

Our computation of the change in the average unit prices of oil imports for these three countries shows that they experienced a far more limited range of price increase. Crude oil prices increased from 28 per cent to 32 per cent. The average import prices for Mogas/light oils increased from 31 per cent in Japan to 38 per cent in Portugal. The price for kerosene/medium oils increased from 24 per cent in Japan to 33 per cent in Germany. Gas oil prices increased by 17 per cent in Portugal, but by 26—7 per cent in Japan and Germany. Finally, fuel oil prices increased by 10 per cent in Portugal but by a more consistent 21—4 per cent in Germany and Japan. The overall picture is one of fewer differences between the three sample OECD economies, and therefore the comparison with our sample developing countries is that much more striking.

It is interesting to note how the average unit prices paid for petroleum product imports compared with the average yearly spot market quotes for products. Table 4.3 shows this comparison for six of our selected group of countries. Approximate average yearly freight rates are added to the spot market prices so that the comparison between the actual import price and the spot price is closer to reality. In India, Korea, Pakistan and Yugoslavia, average prices paid for kerosene and gasoil imports were higher than the average spot prices, adjusted for freight, of these products in the relevant markets. In India and Yugoslavia, the difference between the prices for kerosene was about 11 per cent, in Korea 15 per cent and in Pakistan, 26 per cent. The gasoil import price in India was 4 per cent higher than the spot price, in Korea 20 per cent, in Brazil 10 per cent, in Pakistan 9 per cent, and in Yugoslavia, 23 per cent. In many other instances, however, the average unit prices paid for certain imports in 1990 were lower than the corresponding annual average spot price adjusted for freight in the relevant regional market. Thus, in Thailand, the average unit price of motor gasoline imports was 22 per cent lower than the 1990 average spot price in the Singapore/Japan market; in Brazil, import prices were about 15 per cent lower than the US Gulf Coast spot quotes for gasoline and 6 per cent lower for kerosene. In India, the import price of jet fuel was 44 per cent lower and in Korea, 8 per cent below the average spot price; in Pakistan, that of fuel oil was 8 per cent below.

This uneven pattern may be, and perhaps to a large extent, a reflection of the timing of imports in a year when product prices were subject to very large fluctuations both before and during the crisis. It must be emphasized that our average import prices are annual averages. Because quarterly information is not available, these import prices include those paid in periods of much lower spot prices, as at the beginning of 1990. One should not infer from this data that some countries were able to purchase petroleum products on any given day below spot prices and others were forced to pay substantial premia. To investigate such phenomena requires information on contracts which is not available. All that can be seen from comparing annual averages of import and spot prices is that the timing of purchase which may reflect good or bad luck, trading skills or the lack of them, and many other factors, have a considerable effect on the *average* price paid for imports.

Table 4.2: Average Unit Prices of Crude Oil and Petroleum Product Imports in 1989 and 1990, and the Change in Average Prices in 1990 in Selected OECD Countries. Dollar per Tonne and Percentages.

	Average Unit Import Price ($/tonne)		Price Increase(%)
	1989	1990	1989—90
GERMANY			
Crude Oil	136.86	175.01	27.88
Mogas/light oils	190.90	258.23	35.27
Kerosene/medium oils	194.86	259.00	32.92
Gas oils	163.96	208.18	26.97
Fuel oils n.e.s	107.57	129.64	20.49
Total Products	168.68	221.69	31.43
Total Oil	148.26	191.09	28.89
JAPAN			
Crude Oil	122.48	160.22	30.81
Gasoline	156.64	204.98	30.86
Kerosene incl. Jetfuel	203.21	251.70	23.86
Gas oil	182.37	229.85	26.03
Heavy oil	122.72	151.89	23.77
Total Products	162.18	210.15	29.58
Total Oil	131.03	168.62	28.69
PORTUGAL			
Crude Oil	132.89	175.32	31.93
Mogas/light oils	171.53	236.51	37.88
Kerosene/medium oils	423.76	546.43	28.95
Gas oils	179.68	210.68	17.25
Fuel oils n.e.s	89.70	98.27	9.55
Total Products	122.76	152.28	24.05
Total Oil	130.32	170.21	30.61

Sources:
Germany and Portugal data from *Commodity Trade Statistics*, Statistical Papers, Series D, United Nations, various volumes, New York 1990, 1991. Japan data from *Japan Statistical Yearbook*, 1991, Statistics Bureau, Management and Coordination Agency.

Table 4.3: Average Spot Market Prices of Products in 1990 and Actual Average Unit Prices Paid for Product Imports in 1990. Differences as Share of Spot Prices. Dollar per Tonne and Percentages.

	Product Imports	Average Unit Price of Imports	Spot Market Price + Freight	Difference as % of Spot Price
BRAZIL	Aviation Gasoline	234.38	276.59	-15.26
	Motor Gasoline	234.38	276.59	-15.26
	Kerosene	244.84	260.95	-6.17
	Jet Fuels	244.84	260.95	-6.17
	Gasoil	244.84	223.49	+9.55
	Fuel Oil	136.22	131.97	+3.22
INDIA	Kerosene	325.19	291.75	+11.46
	Jet Fuels	163.93	291.75	-43.81
	Gasoil	259.81	249.79	+4.01
PAKISTAN	Motor Gasoline	333.15	322.84	+3.19
	Kerosene	384.20	304.58	+26.14
	Gasoil	285.42	261.46	+9.16
	Fuel Oil	117.58	128.23	-8.31
SOUTH KOREA	Kerosene	316.98	275.19	+15.19
	Jet Fuels	253.71	275.19	-7.81
	Gasoil	282.05	234.37	+20.34
	Fuel Oil	133.48	126.96	+5.14
THAILAND	Motor Gasoline	230.31	295.14	-21.97
YUGOSLAVIA	Mogas/light oils	251.15	254.66	-1.38
	Kerosene/med.oils	270.58	241.64	+11.98
	Gas oil	254.27	206.28	+23.26
	Fuel oil	116.04	120.39	-3.61

Sources and Notes:
For average unit prices paid for product imports in 1990 see Table 4.1; for spot market prices for petroleum products in 1990 see Table 2.2. Spot market prices are adjusted for fiscal years in India and Pakistan. Approximate freight rates added to spot market prices are based on proportional distance calculations relative to rates on major routes:

Brazil Clean: 263% of Caribbean-USG; Dirty: 50% of WAF-USG
India Clean: 55% of Singapore-Japan
Korea Clean: 88% of Singapore-Japan; Dirty: 69% of AG-FE
Pakistan Clean: 100% of Singapore-Japan; Dirty: 26% of AG-FE
Thailand Clean: 29% of Singapore-Japan
Distances from *BP Worldwide Marine Distance Tables.*
Freight rates from *Platt's Oilgram Price Report*, various issues.
The difference between average unit prices paid for product imports and spot market prices of products is recorded as a share of the latter.

That the change in average unit prices of oil imports varied across developing countries is clear from Tables 4.1 and 4.3 and the discussion above. The extent to which this variation influenced and impacted on the various oil bills of these countries depended mainly on the composition of oil imports and the volume response. The impact of a rise in average unit prices on the oil import bill is obviously greater in the economy where volume imports are

not restrained, and where price elasticity, at least in the short term, for the product for which the import price has risen significantly, is low. However, even in cases where there has been a volume reduction in response to the high oil prices, the adverse economic impact of the crisis may have by-passed the import bill but still manifested itself in the costs of import curtailment on the domestic economy. These repercussions, although significant, cannot be easily assessed.

4.2 The Replacement of Lost Supplies from Iraq and Kuwait

The differences in the average unit prices paid for oil imports are partly determined by certain structural and institutional factors. One of these is the extent of a country's dependency on Kuwaiti and Iraqi supplies, in particular, and the terms on which alternative supply arrangements were secured.

Estimating the supply gap left by the loss of Iraqi and Kuwaiti oil can be based on actual 1989 export levels (OPEC, *Annual Statistical Bulletin*, 1990); on actual July production levels minus an estimated 0.4 mb/d in domestic consumption of Iraq and Kuwait; or on the projected fourth quarter exports of these two countries given production at maximum capacity in the absence of the crisis. Loss estimates range from 3.9 mb/d to 5.16 mb/d. A supply gap of about 4.5 mb/d is therefore a safe approximation (OIES, *The First Oil War*, September 1990).

Estimating the supply loss of either Iraqi and/or Kuwaiti oil for specific countries is more difficult. Consistent country data for 1990 are not yet available. For some countries the supply loss is aggregated in terms of products and crude oil; for others it is aggregated in terms of Iraq and Kuwait. It is apparent, however, that although absolute import levels in the various countries may be low, the share of oil imports from Kuwait and Iraq in the total oil imports of these countries is far more significant. Information specific to developing economies will help put the supply loss into perspective. Following the August invasion of Kuwait, the subsequent economic sanctions on Iraq, and the abrogation of various term contracts, the supply loss for the countries in our sample was as follows:

Country	Loss of Crude oil Supplies (% of Total Crude Oil Imports)	Loss of Petroleum Product Supplies (% of Total Product Imports)
BRAZIL	200,000 b/d (37%)	
INDIA	170,000 b/d (43%)	33,000 b/d (23%)
PAKISTAN		70,000 b/d (88%)
PHILIPPINES	60,000 b/d (25%)	
SOUTH KOREA	75,000 b/d (9%)	
THAILAND	23,000 b/d (11%)	13,000 b/d (12%)
TURKEY	140,000 b/d (38%)	11,000 b/d (58%)
YUGOSLAVIA	65,000 b/d (28%)	

The severity of the economic dislocation caused by the crisis was a direct result of the dependency levels on Iraqi and Kuwaiti oil and was compounded by the lack of cushioning through domestic stocks and the lack of financial flexibility to deal with the significantly higher oil prices. These latter two factors will be considered in Chapters 5 and 6. For most countries, the main problem was a financial one, having to pay for the now more expensive oil imports. For some, the financial problems were compounded by the difficulty in assuring alternative supplies and/or term contracts, and hence the use of the only option available, the spot market, in which supply was not always assured. Both the ease with which and the terms at which alternative supplies were assured varied widely. These two factors, in turn, had important implications on the need for domestic demand management as well as the extent of the volume effect in response to the crisis. Domestic demand management will be considered in greater detail in a later section. Table 4.4 shows the term contract patterns in the pre-crisis period and the pattern of alternative supplies in the period after August 1990.

Bangladesh

Bangladesh's situation was primarily aggravated by the cessation of overseas workers' remittances which had accounted for about 12 per cent of the country's foreign earnings or about $100 million (ODI, *Impact of the Gulf Crisis on LDCs*, February 1991). With total oil imports of about 60,000 b/d primarily from Saudi Arabia and Abu Dhabi, there was no apparent disruption of oil supplies, although the higher prices still cost the economy an estimated $140 million.

Brazil

Brazil had arranged to make up its 200,000 b/d deficit by the middle of August. An extra 50,000 b/d from Saudi Arabia, 50,000 b/d from Venezuela, and 100,000 b/d from Iran achieved this. In fact, by 1 November, Brazil had negotiated the renewal of another 100,000 b/d contract with Iran, in which contract prices were trimmed for November and December by a total of $10 million ($-0.60/bbl for light crude and $-1.22/bbl for heavy crude), and for which payment terms were extended (*Oil & Gas Journal*, 22 April, 1991). Although the deal with Iran did not compensate for the loss of the multi-billion dollar barter relationship with Iraq (oil supplies in return for market for Brazilian goods: armaments, vehicles, engineering services), there was the possibility of some compensation given that the Brazilians were expected to sell Iran services and equipment in return for the favourable contract (*Platts*, 5 December, 1990). This may have modified an otherwise high average unit price for its crude imports. The significance of a barter relationship for Brazil is perhaps more adequately reflected in the fact that in 1989 Brazil imported about $3.5 billion worth of crude oil and petroleum products. Sixty-three per cent of the crude imports was purchased on barter terms (*Petroleum Economist*, August 1990). The oil price increase was therefore more of a problem for Brazil than securing alternative supplies, although it mitigated the impact of the loss of Iraqi crude, to a certain extent, by reducing its crude imports in 1990 by about 1.34 million tonnes. The price shock, compounded by the loss of gasoline export revenues and the risks associated with the impending strike by oil workers and a decreasing inventory, accentuated the domestic inflationary pressures and external payments difficulties of Brazil.

India

The Indian economy faced a precarious financial position even before the Gulf crisis. Domestic demand was outpacing the slow increase in oil production; refineries were running at capacity; product imports were increasing significantly and the Soviet cutback in long-term supplies implied an end to a favourable barter/soft currency relationship and an increase in hard currency costs. Because of the above, austerity measures had been implemented with a view to restricting domestic demand and product imports, particularly gasoline and gas oil. In fact, product stocks were already being depleted in May because of the government's refusal to fund Indian Oil Company's 25,000 b/d purchase tenders. In August the IOC was obliged to resort to the spot market later than usual since purchase funds were refused when the crisis actually occurred (*PIW*, 6 August, 1990). Consequently, an estimated 20 per cent of the $4 billion in hard currency for oil imports was already used up in competing with other buyers of kerosene and gas oil on the spot market (*PIW*, 22 October, 1990). The loss of about 75,000 b/d of crude oil and 33,000 b/d of petroleum products was made up primarily from the spot market in the case of products, and in short-term crude purchase agreements with Saudi Arabia, Iran and Abu Dhabi. The agreement with Malaysia was the only one which extended for six months and was then increased to 100,000 b/d in March 1991 as a one-year contract. Concessionary agreements, for instance those allowing for extended credit and payment terms, were only entered upon in January 1991 onwards with Venezuela, Iran and Malaysia. It is perhaps important to note here that the Indian average unit price for crude oil would have been much higher if its fiscal year did not extend to March 1991, and if the term contracts arranged in the first quarter of 1991, when spot prices had started to come down, had not been made. The product supply crunch in the early days of the crisis caused by Middle Eastern refineries either diverting production to military needs and/or ceasing production altogether, was most acutely felt in markets east of Suez, as a result of which alternative supplies were sought from markets as far away as Rotterdam and the Caribbean (*PIW*, 3 September, 1990). This and the higher prices of oil imports necessitated domestic demand management in India, in terms of both domestic price increases in October, and supply cuts in February. The impact of the Gulf crisis in terms of total costs is estimated by the Overseas Development Institute to be about $1.6 billion (ODI, *Impact of the Gulf Crisis on LDCs*, February 1991). Of this total, the loss of overseas remittances and the cost of repatriation of the 100,000 odd workers would be about $200 million and the loss of exports to the region another $200 million (*Platts*, 9 October, 1990). At risk also were various Indian project investments in Iraq valued at about $435 million (*Platts*, 25 January, 1991). Relative to the countries considered above, India was particularly badly hit during the Gulf crisis. The term contracts of traditional suppliers had been abrogated, alternative supplies were difficult to secure, and the costlier oil imports had to be contended with alongside balance of payments difficulties, foreign exchange problems, and a relentless growth in domestic demand.

Kenya

Kenya's predicament during the crisis is not well documented. Although there is some discussion about Kenya being amongst the African economies who were pledged oil supply at favourable prices by Nigeria (United Nations, *World Economic Survey*, 1991), no further information attesting to this is available. Saudi Arabia, Iran and the UAE did increase crude

supplies to the country in 1990. The terms of supply, however, are not known.

Pakistan

The Gulf crisis created problems for Pakistan, Philippines, and Thailand which were largely financial. Pakistan, however, did encounter some difficulty in replacing lost product supplies. Crude supplies were mostly unaffected as the main suppliers were Saudi Arabia, Iran, and the UAE. Product imports, however, over 80 per cent of which came from Kuwait, were an important cause of the country's vulnerability. Although Saudi Arabia replaced a proportion of these, a far more significant amount had to be tendered for in the spot market. With the rest of the Indian sub-continent, Thailand, South Korea and Japan, competing for kerosene and gas oil, cargoes tendered for were not always awarded. In fact, during the crisis, Pakistan sought processing place in a number of foreign refineries (*Energy Compass*, 12 July, 1991), due to a lack of domestic upgrading facilities, and tight supplies on the spot market. Financial assistance to meet costs, however, was available. Moreover, in the first quarter of 1991, Saudi Arabia delivered 50,000 b/d of Arabian Light, worth about $100 million, at no cost other than that of transport.

Philippines

The government of the Philippines had few problems in securing additional oil supplies. Its main concerns were domestic: raising domestic prices and reducing the pressure on the exchequer and the Oil Stabilization Fund. Although Kuwait and Iraq accounted for a large share of the Philippines' oil imports (about 25 per cent in 1st half 1990), make-up supplies were fairly promptly secured through the country's ASEAN and Iranian connections. An average 34,000 b/d of alternative supplies were secured for the last four months of the year. The Iranian contract, a one-year arrangement, was agreed at lowered premiums to 4th quarter prices, in other words at $.25—35/bbl over 4th quarter prices rather than $1—1.50/bbl (*Petroleum Intelligence Weekly* (PIW), 3 September, 1990). In fact, by October Malaysia had doubled its supply to the Philippines to about 9,000—10,000 b/d. 1990 crude oil import data show that the highest average prices paid for crude oil imports in 1990 were for supplies from Indonesia ($258.5/tonne), Pakistan ($216.1/tonne), Brunei ($184.1/tonne) and Malaysia ($173.6/tonne). The lowest prices paid were for crude oil supplies from the Middle East ($154.14/tonne) and China ($119.7/tonne) (*1991 Philippines Statistical Yearbook*, National Statistical Co-ordination Board, October 1991). The main problem was the foreign exchange constraint. By August the Oil Stabilization Fund was in deficit by $200 million to refiners. By October, the foreign exchange requirement for the increased oil import bill was about $200 million/month, of which Manila bankers could only provide $150 million/month. Attempts at selling Dubai cargoes, which had been bought in August, were not wholly successful for lack of bids.

Table 4.4: Pre-Crisis Term Contract Patterns and Post-August 1990 Alternative Supplies.

BANGLADESH

January—July 1990
Total oil imports of about 60,000 b/d, in normal circumstances immediately prior to the crisis. Supplies sourced mainly from Saudi Arabia and Abu Dhabi.

Post-August 1990
No documentation on disruption of oil supplies. Apparently the biggest impact of the crisis was the loss of 12% of foreign earnings due to the cessation of overseas remittances from Bangladeshi labour in Iraq and Kuwait.

BRAZIL

1989
Imports of crude oil 590,000 b/d of which:

Saudi Arabia	130,000 b/d
Iraq	220,000 b/d
Iran	54,000 b/d
UAE	10,000 b/d
Nigeria	36,000 b/d
Mexico	20,000 b/d
Venezuela	20,000 b/d
Kuwait	30,000 b/d

January—July 1990
Pre-Crisis: 1st half 1990 average crude imports 550,000 b/d of which:

Iraq	270,000 b/d; by July 160,000 b/d (extensive barter)
Kuwait	30,000—35,000 b/d
Iran	15,000 b/d
Saudi Arabia	150,000 b/d
Venezuela	5,000 b/d
Nigeria	40,000 b/d (barter?)

Post-August 1990: Make-up supplies for 200,000 b/d deficit arranged by end-August 1990

Iran	200,000 b/d Nov/Dec onwards; initial contract negotiated for 100,000 b/d and increased during crisis; partial barter and discounted crude: contract prices for both light and heavy crude trimmed, extended payment terms adopted and 30 day letter of credit not required.
Venezuela	55,000 b/d
Saudi Arabia	200,000 b/d

Table 4.4 Continued.

INDIA

1989

Imports of crude oil 380,000 b/d of which: 1989 spot market crude purchases 90,000 b/d and term supplies c. 270,000—300,000 b/d

Main sources of imports:

Saudi Arabia	100,000 b/d
USSR	90,000 b/d
Iraq	80,000 b/d
Iran	80,000 b/d
UAE	40,000 b/d

January—July 1990

Nature of Purchase/Contract
Total oil: Term Contracts 64%; Spot Purchases 36%; Crude oil: Term Contracts 75%; Spot Purchases 25%

Main sources of imports:

Abu Dhabi	20,000 b/d crude
Iran	30,000 b/d crude
Kuwait	30,000 b/d crude; 24,900 b/d kerosene; 8,300 b/d gasoil
Iraq	45,000 b/d crude
Saudi Arabia	60,000 b/d crude
Soviet Union	90,000 b/d crude (via Iraq); 30,000 b/d directly, 57,000 b/d product

Post-August 1990

Make-up Supplies from:

Abu Dhabi	48,000 b/d for September
Iran	84,000 b/d for September; 85,000 b/d Jan—Mar 1991: deferred payment, 90 days credit basis
Saudi Arabia	48,000 b/d for September
Soviet Union	70,000 b/d for 2nd half 1990; 110,000 b/d Jan—June 1991
Malaysia	30,000 b/d Sept—Mar 1991; 10,000 b/d March onwards 1 year contract : 90 days credit basis
Venezuela	30,000 b/d Jan. onwards: 70% of supply on 180 days credit, balance due in 5 years.

1990—91

Nature of Purchase/Contract of Total Oil Imports
Term Contract: 55% of volume; 47% of import bill; Spot Purchase: 45% of volume; 53% of import bill.

Table 4.4 Continued.

PAKISTAN

January—July 1990
Total oil imports averaged 140,000 b/d, with 60,000 b/d for crude oil, and 80,000 b/d for petroleum products.
Main crude suppliers: Saudi Arabia, Iran, UAE;
Main product supplier: Kuwait 69,500 b/d of which: kerosene 7,800 b/d, gas oil 48,900 b/d and fuel oil 12,800 b/d.

Post August 1990

Saudi Arabia	20,000 b/d of crude plus 40,000 b/d of products from October to December 1990; 44,000 b/d of an earlier contract renewed. Plus 1st quarter 1991 delivery of 50,000 b/d of Arabian Medium, worth $100 million, at cost of shipping only (*The Asia-Pacific Petroleum Report*, July 1991
Malaysia	15,000—20,000 b/d
Iran	20,000 b/d
Brunei	Unknown Volume

PHILIPPINES

1989
Imports of crude oil 200,000 b/d of which:

Saudi Arabia	16,000 b/d
Iran	28,000 b/d
UAE	34,000 b/d
Kuwait	28,000 b/d
China	13,000 b/d

January—May 1990

Iraq/Kuwait	60,000 b/d (25% of Philippines oil imports)
Saudi Arabia	30,000 b/d (?)
Iran	40,000 b/d (largest single supplier in 1989)

Post-August 1990
Make up supplies 4.1 mb = 34,000 b/d (over four months):

Iran	2.4 mb = 20,000 b/d (through August 1991; at lowered premiums to 4th Q prices to contend with Saudi sales drive in Far East)
Saudi Arabia	0.9 mb = 7,500 b/d (original 30,000 b/d contract doubled for 30 days of September)
Malaysia	0.5 mb = 4,167 b/d; plus 5,000 b/d October onwards
Indonesia	0.3 mb = 2,500 b/d
China	2.2 mb = 6,000 b/d January onwards at concessionary terms, deferred payment, etc.

Table 4.4 Continued.

SOUTH KOREA

1989

Imports of crude oil 800,000 b/d of which:

Saudi Arabia	100,000 b/d
UAE	130,000 b/d
Kuwait	43,000 b/d

January—July 1990

Kuwait/Iraq crude oil 75,000 b/d (11% of crude imports)
Kuwait/Iraq products 35,000 b/d of kerosene and gas oil(?)
Biggest suppliers in 1st half 1990 of 928,177 b/d of crude:
Oman (22.7%), Iran (11.2%), UAE (17.5%).
Saudi Arabia 50,000 b/d; Iran 60,000 b/d; Oman 59,700 b/d; Malaysia 40,000 b/d; Mexico/Yemen/Egypt 0.

Post-August 1990

Make-up supplies:
August/September arrangements for 4th Q deliveries: extra 117,000 b/d of which:

Iran	55,000 b/d
Mexico	25,000 b/d
Malaysia	8,000 b/d
Oman	4,500 b/d
Yemen	21,500 b/d
Egypt	3,000 b/d

Preliminary understanding with Indonesia to import 50,000 b/d by November(?).
September contract (one year from September) with Saudi Arabia 155,000—175,000 b/d
Term contract with Iran 115,000 b/d October-December.

By January 1991 biggest suppliers: Saudi Arabia (38.5%), Oman (12.8%), UAE (12.4%), Iran (12.1%)

Nature of Contract 1990: Long-term (average) 52.7% Planned increase of these to 70% of total imports in order to reduce dependence on spot market.
Spot (average) 42.4%
Long-term contracts increased substantially in August, September and November. The incidence of spot contracts fell initially in August, rose in September, and rose dramatically in October. The volume of crude oil secured under long-term contracts increased from 500,000 b/d pre-crisis to 700,000 b/d in December 1990.

Table 4.4 Continued.

THAILAND

1989
Imports of crude oil 200,000 b/d of which:

Saudi Arabia	32,000 b/d
Iraq	7,000 b/d
Iran	5,000 b/d
UAE	140,000 b/d
Kuwait	19,000 b/d

January—July 1990
Total crude imports c. 43 mb of which:
Kuwait 15,000 b/d crude (delivered by August?); 7,100 b/d fuel oil (5,000 b/d delivered; shortfall=approx.800,000 bbls/yr)

Share of pre-crisis crude oil imports: Malaysia 20%; Saudi Arabia 18.8%; Brunei 11.3%; UAE 6.3%; Oman 4.8%; Iran 4.7%

Post-August 1990
Total crude imports c. 33 mb of which shares: Malaysia 32.5%; Saudi Arabia 23.9%; Brunei 9.2%; UAE 11.9%; Oman 9.7%; Iran 6.0% (16,250 b/d Sept-Dec.1990)

Product replacement by Singapore and Japan.

TURKEY

1989
Imports of crude oil 370,000 b/d of which:

Saudi Arabia	21,000 b/d
Iraq	238,000 b/d
Iran	32,000 b/d
USSR	17,000 b/d
Libya	37,000 b/d
China	5,000 b/d

January—July 1990
Crude oil imports of about 370,000 b/d, of which Iraq 225,000—238,000 b/d which were scheduled to rise in 1990.

Post-August 1990

Saudi Arabia	Additional 92,000 b/d Sept.—Dec. 1990; August agreement: 160,000 b/d Sept—Dec 1990 plus 170,000 b/d Jan.—Dec. 1991. With $1.6 billion of free oil promised in 1990, and $1.1 billion of free oil promised in 1991, the crude supplies were in fact heavily subsidized.
U.A.E.	Additional 92,000 b/d Sept.—Dec. 1990; with 100,000 b/d promised for 1991, the September arrangement was essentially a long-term 1 year (?) contract.
USSR	50,000 b/d (up from 30,000 b/d in 1st half 1990)
China	40,000 b/d (up from 13,500 b/d in 1989-1990)

Table 4.4 Continued.

YUGOSLAVIA

1989
Imports of crude oil 230,000 b/d of which:

Iraq	60,000 b/d
Iran	20,000 b/d
USSR	144,000 b/d
Libya	4,000 b/d
U.K.	500 b/d

January—July 1990

Iraq	65,000 b/d
USSR	130,000 b/d
Iran	47,000 b/d
Libya	20,000 b/d

Post-August 1990
37,000 b/d of contracted Iraqi supply delivered before embargo, leaving an estimated shortfall of 27,000 b/d of deficit to be made up on the spot market.
USSR 130,000 b/d in 2nd half 1990; 80,000 b/d in 1st half 1991

Sources:
1989 Imports: *UN Energy Statistics Yearbook*, 1989. 1990 Imports: *Petroleum Argus*, *PIW*, *Compass*; various issues. National sources include the *Korea Energy Review Monthly*; and information from Petrobras, London; Oil India; and Petroleum Authorityof Thailand(PTT)

South Korea

South Korea made up its deficit of 75,000 b/d rather quickly, and also secured additional long-term contracts to ensure a more than adequate stock coverage (by increasing the oil refineries' commercial stockpile) throughout the crisis. By the end of August, South Korea had already contracted for an additional 92,500 b/d from Iran, Mexico, Malaysia, and Oman. In September, a one-year contract of approximately 175,000 b/d was concluded with Saudi Arabia. As a result, long-term contractual purchase increased from about 500,000 b/d before the crisis to about 700,000 b/d by December 1990 (*Korea Energy Review Monthly* (KERM), March 1991). Spot market demand was mainly in petroleum products. Kerosene and gas oil were required for winter stockpiling and for complementing domestic production given the runaway demand in distillates. In the period August—October 1990, there was strong demand and steady buying of jet A-1 as well as high sulphur jet A-1 despite the higher prices. Not only had the Korean government reduced the restrictions on allowable sulphur levels, it had also agreed to reimburse the refiners for the losses incurred by higher priced crude and products imports for the month of November (*KERM*, January/February 1991). By December, the country had high stock levels of both kerosene and gas oil. There was little problem in securing oil supplies for Korea. In fact, in January 1991, the month the Gulf war started, Korean oil refineries recorded a 98.8 per cent completion rate in oil shipments (*KERM*,

January/February 1991).

Thailand

As in the Philippines, Thailand's problems were mainly fiscal. Imports from Iraq were insignificant. Oil imports from Kuwait amounted to 28,000 b/d, of which 15,000 b/d was in term crude oil and 7,100 b/d in fuel oil (*Energy Compass*, 30 August, 1990; *Argus*, 3 August, 1990). The crude oil from Kuwait had been delivered by August 1990, as had the 7,100 b/d of fuel oil (Petroleum Authority of Thailand (PTT) Library Data), leaving an approximate overall shortfall of 5,900 b/d of crude oil from other sources. With increased imports from the main crude oil suppliers Malaysia, Saudi Arabia, UAE, Oman and Iran (17,500 b/d from September to December 1990), and a proportion of product supply assured by several term contracts with Singapore, oil supplies were more or less assured (*Energy in Japan*, no.112, November 1991, p.20.). The higher prices and the quickly depleting Oil Stabilization Fund, however, still had to be contended with. In fact, it is argued that the loss of Middle Eastern markets for Thai rice and textiles and the decrease in Thailand's growth rate given the costlier oil imports would have more significance economically than any oil supply loss. There was, however, no apparent move to curb consumption domestically.

Turkey

Turkey's problems during the crisis were more a result of lost exports and lost pipeline revenues than financial difficulties in securing supplies and/or a physical shortage of supplies (Overseas Development Institute (ODI), *Impact of the Gulf Crisis on LDCs*, February 1991). The country was generously compensated, in financial terms, for the oil supply loss incurred due to the UN sanctions on Iraq. The cost of observing the sanctions against Iraq in 1990 was estimated at $1.5 billion (*Energy Compass*, 16 November, 1990). Furthermore, the loss of about 140,000 b/d of crude oil and 11,000 b/d of petroleum products was compensated for by alternative term contracts with Saudi Arabia and the United Arab Emirates amongst others. An additional 92,000 b/d each from Saudi Arabia and the UAE was secured for the four remaining months of 1990. This was in addition to the approximately 160,000—170,000 b/d (September 1990—December 1991) contract secured from Saudi Arabia in August 1990. The offer of $1.16 billion of free oil for 1990 essentially allowed for 180,000 b/d of crude, and deliveries were completed on 16 September, 1990, after which Turkey paid for its imports by a barter arrangement. Without the benefit of the free oil, Turkey would have had to contend with an average unit price of $178.22/tonne for its crude oil rather than the $153.11/tonne it actually paid in 1990. The Saudi offer of $1.1 billion of free oil was repeated in July 1991, and eventually took the form of a contribution to a fund for the modernization of the Turkish military in October 1991 (*Middle East Economic Survey* (MEES), 7 October, 1991).

Yugoslavia

Yugoslavia had to deal with the abrogation of Iraqi term supplies (second largest supplier after the Soviets), a reduction of Soviet term supplies from 130,000 b/d to 80,000 b/d in 1991, and an economy in dire financial straits having to contend with the insecurity and prices of

a spot market purchase. The replacement of lost oil supplies, estimated at 14.6 mb, from the spot market, would have presumably cost Yugoslavia about $240 million. The overall cost, including the sacrifice of a $1 billion economic trade and co-operation agreement with Iraq, for the last four months of the year, was estimated by the IEA to be approximately $1.35 billion (*Oil & Gas Journal*, 11 February, 1991).

5. THE VOLUME AND COMPOSITION OF OIL IMPORTS

The oil import structure of developing countries refers to both the relative proportions of crude oil and petroleum products in the total oil imports, as well as to the volumes imported. Effectively, it reflects the degree of exposure of any one country to the Gulf crisis. Two factors which conditioned the volume response in 1990 were the degree of cushioning provided by stocks of crude oil and products, and the extent of spare and/or appropriate domestic refining capacity. As we shall see, some countries managed to reduce volumes of oil imported in 1990 due to the availability of either stocks or excess refining capacity. For some countries, the retention of stocks at pre-crisis levels was a more important consideration, and volume imports of oil therefore increased significantly in 1990.

5.1 Oil Import Structure

Appendix A.1 and A.2 show the oil imports of the 11 sample countries over the period 1987—90 in terms of volume and value, respectively. Although it is generally true that crude oil imports comprised an important part of oil imports, this share varied significantly.

The relative importance of crude oil and petroleum product imports can best be seen in terms of the share of crude oil and product costs in the total oil import bill. Table 5.1 shows these shares for 1989 and 1990. In 1989, the share of crude oil in seven of the countries studied: Turkey, the Philippines, Korea, Kenya, Brazil, Sri Lanka and Yugoslavia, was 86 per cent or above. This share was 68 per cent in India, and ranged from 35 per cent to 62 per cent in Bangladesh, Pakistan, and Thailand. For the bulk of the developing countries, particularly for those where crude oil was not so predominant, gasoil and to a lesser extent kerosene and fuel oil accounted for a large share of total oil import costs.

In 1989, gasoil represented 30 per cent of the oil bill of Thailand, 33 per cent of that of Bangladesh, and 44 per cent of Pakistan's. In India, gasoil and kerosene accounted for most of the product imports. Kerosene was also a significant component of the bill in Pakistan (12 per cent), and Bangladesh (11 per cent). In the Philippines, the main product import was fuel oil, which accounted for about 10 per cent of the oil bill in 1989.

Table 5.1: Share of Crude Oil and Product Imports in Total Oil Bill. 1989 and 1990. Percentage.

	Crude Oil		Petroleum Products	
	1989	1990	1989	1990
BANGLADESH	41	51	59	49
BRAZIL	93	95	7	5
KENYA	96	84	4	16
INDIA	68	59	32	41
PAKISTAN	36	37	64	63
PHILIPPINES	86	89	14	11
SOUTH KOREA	92	78	8	22
SRI LANKA	91	86	9	14
THAILAND	61	58	39	42
TURKEY	94	86	6	14
YUGOSLAVIA	93	90	7	10

Sources and Notes:
See Table A.1 in Appendix. Data for Bangladesh, Pakistan and India refer to Fiscal Years: 1989 for Bangladesh and Pakistan refers to the financial year 1990 i.e. July 1989—June 1990. 1989 for India refers to the financial year 1989 i.e. April 1989—March 1990.

The 1990 Gulf crisis caused significant changes in the relative weight of expenditures on products and crude oil in the total oil import bill. In many of our selected countries, with the exception of Brazil, Bangladesh, Pakistan and the Philippines, the share of crude oil in the total oil import bill decreased while the percentage share of petroleum products in general and kerosene, gas oil and fuel oil in particular, consistently rose. This was despite the fact that volume imports of crude oil increased in all of our sample countries with the exception of Brazil and Sri Lanka. This fact, perhaps more than others, points to the nature of the Gulf crisis as one impacting more on petroleum products than on crude oil, and therefore on developing countries with specific 'product' heavy oil imports. Table 5.2 shows the share of product costs in the total oil bills in 1989 and 1990, as well as the share of product costs in a hypothetical oil bill, which assumes constant 1989 composition and volumes of oil imports applied to 1990 average unit prices.

Table 5.2: Share of Petroleum Product Costs in Total Oil Bills. 1989 and 1990. Percentage.

	Product Share in Import Bills		Product Share in Hypothetical(*) Import Bill	Percentage Change in Hypothetical Oil Bill (*) from 1989 Actual Oil Bill
	1989	1990		
BANGLADESH	59.2	48.7	59.2	37.9
BRAZIL	7.0	3.7	6.9	46.8
INDIA	32.2	41.0	34.5	31.0
KENYA	3.6	8.5	3.2	21.6
PAKISTAN	64.2	63.5	75.8	43.2
PHILIPPINES	13.6	10.6	12.0	54.8
SOUTH KOREA	8.0	21.7	9.5	28.5
SRI LANKA	9.3	14.2	15.5	45.6
THAILAND	38.4	42.0	33.2	14.0
TURKEY	6.0	13.7	8.2	18.8
YUGOSLAVIA	7.3	9.0	7.1	10.4

Sources and Notes:
See Table A.1 in the Appendix and Table 3.1 above. (*) The hypothetical oil bill refers to an import bill assuming constant 1989 composition and volumes of oil imports applied to 1990 average unit prices of oil imports.

In Bangladesh, Brazil, Pakistan, the Philippines and Sri Lanka, the share of product in the hypothetical oil bill is greater than the product share in the actual 1990 oil bill. This suggests that the impact of the higher oil prices was mitigated, to a certain extent, by compositional and or volume changes affecting the product share in the oil bill. In all these countries, if specific composition and/or volume changes had not been made, the product share of the oil bill would have been higher. The share of product imports in total volume imports of oil was reduced from 50 per cent to 39.6 per cent in Bangladesh; from 6.1 per cent to 4.7 per cent in Brazil; from 59.3 per cent to 44.3 per cent in Pakistan; from 12.5 per cent to 11 per cent in the Philippines and from 7.3 per cent to 6.6 per cent in Sri Lanka. With the exception of Pakistan and the Philippines, the change in the total oil bill of these countries would also have been higher if product imports (volume) had not been reduced. In Pakistan and the Philippines, if 1989 structure and volumes of imports had been maintained at 1990 prices, the change in the oil bill would have been lower than the actual change. This was because in Pakistan, crude oil imports (volume) in 1989 were significantly lower than those in 1990, and in the Philippines, the lower share of crude imports in total volume imports would have meant a lower overall bill given the significant rise in average crude prices in 1990.

For India, Kenya, Korea, Thailand, Turkey and Yugoslavia, the product share in the hypothetical oil bill is less than the actual product share in the 1990 oil bill. In all these cases, the compositional and/or volume changes made aggravated the impact of the higher oil prices and oil bills increased more than they would have if 1989 structure had been retained.

In India, the product share in volume imports of oil increased from 23.3 per cent to 28.4 per cent, with the volume increase primarily in gasoil and kerosene. In Kenya, the product share increased from 2.1 per cent to 5.8 per cent. Judging from import data from past years, the increase was probably in gasoil and gasoline. In Korea, the product share increased from 7.3 per cent to 16.5 per cent, with most of the increase in gasoil, kerosene and fuel oil imports. The product share in the hypothetical oil bill of Thailand is in fact lower than the actual share in 1990. This is because, the average unit price for products in 1990 was unaccountably lower than the average price in 1989. In this country, the product share in volume imports of oil was increased from 32.3 per cent to 41.01 per cent, with gasoil and fuel oil accounting for the bulk of this increase. Turkey's product share in imports increased marginally from 5.1 per cent to 5.7 per cent, with gasoline accounting for a large part of the increased product volumes. Yugoslavia increased its product share in imports from 6.4 per cent to 8.1 per cent, mainly in gasoline and kerosene.

Table 5.2 shows the hypothetical change in import bill, assuming constant 1989 structure and volumes, and 1990 average unit prices (which was previously presented in Table 3.1). Barring a few exceptions including Brazil, the Philippines and Sri Lanka, it is evident that, in general, the higher the share of products in the oil bill in 1989, the higher was the change in the hypothetical oil bill from the actual 1989 oil bill. This fact evidences the strong link between a product-heavy oil import structure and the high exposure of a developing country in the Gulf crisis given the movement of product prices. We have, therefore, high shares of products in the total oil bills of Bangladesh, India, and Pakistan, which correspond to a relatively high change in the hypothetical oil bill. Conversely, we have low product shares in the oil bills of Kenya, Turkey and Yugoslavia, which correspond to relatively lower changes in the hypothetical oil bill.

Brazil and the Philippines had low product shares in their oil bills in 1989, yet witnessed a high change in their hypothetical bill. Korea and Sri Lanka also had relatively low proportional product costs in their oil bills but high changes in the bill assuming structure and volumes constant at 1989 levels. In all these cases, the high change in the oil bills are attributable to both the level and change in average unit prices over the 1989—90 period (see Table 4.1). In Brazil and the Philippines, crude oil prices in 1990 were high and the change from 1989 was also significant. In Korea, the average unit prices of gasoil and kerosene had increased significantly from 1989 levels and were amongst the highest in the selected group of countries in 1990. In Sri Lanka, the average unit price for 'total products' in 1990 was unaccountably high. Finally, in the case of Thailand, which was characterized by a high share of products in the 1989 oil bill (38 per cent) but a low change in the hypothetical oil bill (14 per cent), the explanation lies in the relatively low change in and level of average petroleum product prices in 1990. It is clear, then, that with the exception of Brazil and the Philippines, where the crude oil share of both the volume and value of oil imports is significant, for the other countries the main impact of the Gulf crisis was largely related to the share of products in the oil bill and the average unit prices paid for these products in 1990.

5.2 Domestic Demand Growth and Oil-Import Dependency

With the rapid growth of an economy, domestic demand for energy increases and, in the process, makes the economy increasingly vulnerable to price disruptions. With increasing

development, urbanization and higher incomes, the structure of energy demand changes. There is increasing consumption of energy in the household and services (particularly transportation) sectors, where there is little or no room for fuel substitution. The differences in economic structure and development between countries have been seen in Chapter 1. The sectoral share of GNP in industry, the GNP per capita are greatly varied in the sample countries and are evidence of the range and different degrees of development in these economies.

Generally speaking, the average growth in final demand for petroleum products over 1987—9 was greater than the average growth in intermediate demand for crude oil, which basically means that the net imports of petroleum products increased over this period. This specifically points to the potential sources of vulnerability in the developing countries during the Gulf crisis. The greatest structural vulnerability of an economy would be for commodities for which (a) the domestic market was large in absolute terms, (b) the rate of growth for demand was high, (c) the import dependency high, and (d) where the cost share of the import was high in total import costs. Table 5.3 shows the domestic markets for crude oil and petroleum products in the sample countries as well as the share of imports in the domestic market for the period 1987—9. The rates of demand growth and the relative cost shares of crude oil and products in the total bill are based on Tables A.1 and A.2 in the Appendix.

An economy's general structural response during an oil crisis can broadly indicate why its oil bill has risen more or less *vis à vis* other economies. The import structure indicates which area of import constitutes the most probable source of structural weakness in terms of domestic market, domestic demand growth and import dependency. The volume response indicates to what extent the impact of higher oil prices has been modified by reduced imports or aggravated by increased imports. The issue of varying average unit prices for oil imports has been discussed in an earlier section. It is perhaps important to note here that reducing the volume of oil imports may modify the increase of the oil bill, but it has its own opportunity costs domestically, much in the same way that domestic demand management through price increases does.

Bangladesh

Import dependency was high in crude oil, gasoil and to a lesser extent kerosene. With domestic demand growth highest in crude oil, and growth of about 3—4 per cent per annum in gasoil and kerosene, it is evidently in the import of crude oil and these latter products, that Bangladesh faced problems. Judging from the country's decision to cut product imports in the financial year 1991 and increase crude imports, it is clear that Bangladesh was using its option of excess refining capacity to reduce the costlier product imports and satisfy domestic demand through domestic refining.

Brazil

Domestic demand was growing fastest in motor gasoline, gas oil and jet fuels. However from its 1989 imports, it is evident that in terms of size, the significant product imports are fuel oil and gas oil. Domestic refining capacity was apparently sufficient to satisfy domestic demand in motor gasoline (although the high growth rate of demand would have meant a loss

Table 5.3: Domestic Demand for Crude Oil and Petroleum Products and Share of Imports in Domestic Demand. 1987—9. Thousand Tonnes and Percentages.

	Crude Oil	Aviation Gasoline	Motor Gasoline	Kerosene	Jetfuels	Gas Diesel Oil	Residual Fuel Oil	Total Oil Demand
BANGLADESH								
FY1988	1,239 (97.8)	1 (100.0)	53 (1.9)	384 (36.5)	81 (88.9)	701(72.0)	319 (6.6)	2,778(70.3)
FY1989	1,307 (97.9)	1 (100.0)	61 (1.6)	435 (34.5)	82 (91.5)	749(69.4)	297 (7.4)	2,932(69.9)
BRAZIL								
1987	59,106 (51.8)	55 (13.0)	14,034 (0.0)	388 (0)	2,202 (0.0)	20,855 (2.4)	11,778 (7.2)	108,418(30.0)
1988	59,405 (53.4)	64 (6.3)	14,642 (0.0)	320 (0)	2,446 (1.1)	21,144 (2.3)	12,115 (13.9)	110,136(31.0)
1989	59,511 (49.1)	68 (2.9)	15,899 (0.0)	309 (0)	2,608 (1.1)	21,744 (3.9)	11,256 (9.0)	111,395(28.0)
INDIA								
FY1987	48,185 (37.5)	0 (-)	2,658 (0.6)	7,269 (30.5)	1,660 (1.8)	17,472 (6.3)	7,977 (0.0)	85,221(25.1)
FY1988	49,292 (35.9)	0 (-)	2,683 (0.0)	7,448 (32.3)	1,813 (4.5)	18,363 (11.3)	8,984 (5.2)	88,583(25.7)
FY1989	52,604 (37.1)	0 (-)	3,238 (0.0)	8,170 (31.8)	1,862 (14.4)	20,932 (14.6)	8,804 (0.0)	95,610(26.6)
KENYA								
1987	2,131(100.0)	7 (71.4)	322 (2.2)	134 (3.7)	250 (2.4)	600 (10.5)	411 (0.0)	3,855(57.5)
1988	2,042(100.0)	7 (128.6)	325 (4.3)	155 (3.9)	255 (0.0)	570 (10.9)	393 (0.0)	3,747(56.9)
1989	2,101(100.0)	7	377	181	274	570	371 *(2.5)	3,881(55.3)
PAKISTAN								
FY1989	5,969 (63.7)	2 (100.0)	951 (13.0)	899 (64.1)	465 (0.0)	4,072 (57.2)	2,433 (29.9)	14,791(51.1)
FY1990	5,697 (64.4)	2 (100.0)	1,020 (14.0)	1,044 (62.2)	525 (0.0)	4,502 (63.1)	2,425 (30.9)	15,215(52.9)
PHILIPPINES								
FY1987	8,971 (96.8)	8 (100.0)	1,240 (0.0)	331 (0.0)	468 (3.2)	2,374 (5.6)	3,934 (21.2)	17,326(55.8)
FY1988	10,358 (97.0)	4 (100.0)	1,210 (0.0)	364 (0.0)	610 (0.0)	3,027 (4.8)	3,661 (17.2)	19,234(56.3)
FY1989	10,331 (97.4)	3 (100.0)	1,365 (0.4)	468 (6.0)	533 (5.3)	2,983 (5.7)	4,539 (26.4)	20,222(56.9)

Table 5.3 Continued.

	Crude Oil(Share of Imports)	Aviation Gasoline	Motor Gasoline	Kerosene	Jetfuels	Gas Diesel Oil	Residual Fuel Oil	Total Oil Demand
SOUTH KOREA								
1987	29,530(100.0)	0 (-)	1,217 (0.0)	1,086(30.7)	1,347 (0.0)	8,888 (15.9)	11,103 (20.4)	53,171(63.1)
1988	35,667(100.0)	0 (-)	1,597 (0.0)	1,292(4.7)	1,430 (0.0)	10,488 (10.4)	13,596 (12.1)	64,070(60.0)
1989	40,312(100.0)	0 (-)	2,168 (0.0)	1,970(27.0)	1,812 (0.0)	11,561 (8.0)	15,381 (11.0)	73,204(59.4)
SRI LANKA								
1987	1,706(100.0)	0 (-)	140(0.0)	155 (3.2)	108(36.1)	719 (29.2)	569 (0.0)	3,397(57.7)
1988	1,772(100.0)	0 (-)	169(0.0)	161 (1.2)	98(13.3)	639 (20.2)	489 (0.0)	3,328(57.6)
1989	1,793(100.0)	0 (-)	145(0.0)	156 (1.3)	73(17.8)	495 (25.3)	425 (0.0)	3,087(62.6)
THAILAND								
1987	8,816 (89.2)	10 (100.0)	1,947 (8.5)	114 (0.0)	1,219(25.3)	5,511 (42.1)	2,318 (13.7)	19,935(55.1)
1988	8,590 (87.3)	10 (100.0)	2,117(12.0)	105 (0.0)	1,493(29.4)	6,238 (51.2)	2,674 (10.1)	21,227(55.0)
1989	11,273 (89.9)	10 (100.0)	2,455(19.0)	105 (0.0)	1,720(22.3)	7,415 (50.6)	3,548 (6.6)	26,526(56.5)
TURKEY								
1987	22,732 (86.6)	0 (-)	2,221 (0.4)	296 (0.0)	300 (0.0)	6,896 (8.9)	7,141 (0.0)	39,586(52.4)
1988	24,237 (89.4)	0 (-)	2,243 (0.4)	262 (0.0)	357 (0.0)	6,960 (8.8)	6,200 (0.0)	40,259(55.4)
1989	21,491 (86.5)	0 (-)	2,799 (1.0)	239 (0.0)	413 (0.0)	7,112 (13.2)	6,529 (0.4)	38,583(50.8)
YUGOSLAVIA								
1987	14,718 (73.6)	4 (50.0)	2,020 (5.0)	0 (-)	370 (18.9)	4,179 (0.0)	5,598 (16.5)	26,889(44.4)
1988	16,802 (71.8)	5 (60.0)	2,150 (4.7)	0 (-)	421 (31.6)	4,300 (0.7)	6,822 (13.2)	30,500(43.4)
1989	15,496 (75.4)	----------2,136 (9.4)----------		----------391 (25.6)----------		4,260 (2.6)	6,800 (5.6)	29,083(42.9)

Sources and Notes:
See Tables A.1 and A.2 in the Appendix.
0 indicates the lack of imports of the particular product;
- indicates the lack of imports of the particular product.
*(2.5) in Kenya refers to the share of product imports in total product demand. This share decreased from 6.3% in 1988 and increased to 7.4% in 1990.

of export revenue during the crisis), and in jet fuels. Fuel oil demand was relatively low and was, as a result, easier to further rationalize. Crude oil and to a much lesser extent gas oil needs, therefore, constituted the most significant problems for Brazil during the crisis. The high degree of 'crude' orientation in Brazilian oil imports and the prices secured in alternative crude contracts were, therefore, the main reasons behind one of the highest percentage changes in the average unit price paid for crude imports relative to 1989 levels.

India

The Indian import structure for 1989 shows that the economy's import requirements were most significant in crude oil, gasoil and kerosene. This was borne out by the nature of the economy's imports in 1990. Crude oil imports increased slightly but the share of crude oil in the oil bill decreased from 68 per cent in 1989 to 59 per cent in 1990. Product imports, particularly gasoil and kerosene increased significantly, as did the share of these products in the oil bill. The share of gasoil increased from 15 per cent to 19 per cent, and the share of kerosene increased from 16 per cent to 22 per cent in 1990. The 54 per cent increase in the oil bill from year earlier levels, therefore, was mainly a result of the increased imports of these products due to the limitations of Indian domestic refining in supplying the necessary products.

Kenya

In Kenya, the 1989 import structure indicates that the most probable source of weakness during the Gulf crisis would be the country's dependence on crude oil imports. Crude oil accounted for about 96 per cent of the oil bill in 1989, and the import dependency was 100 per cent. While crude oil imports increased in 1990, the share of crude oil in the oil bill decreased from 96 per cent in 1989 to 92 per cent in 1990. The main reason behind the increase in the import bill was the increased share of products in the oil bill which rose from 3.6 per cent in 1989 to 8.5 per cent in 1990. Volume imports of petroleum products increased from 45,000 tonnes (2.1 per cent of total demand) in 1989 to 133,000 tonnes (5.8 per cent of total demand) in 1990. The domestic market for gasoil in 1989 was relatively large at about 515,000 tonnes and relied on imports for 9 per cent of its supplies. Gasoil accounted for the second largest share of the oil bill at about 3 per cent in past years and for these reasons may have been the main source of the increased share of products in the total oil bill in 1990. The export of petroleum fuels in 1990, however, mitigated the impact of the higher crude oil and product prices.

Pakistan

The Pakistani import structure of earlier years shows that the economy's most significant import requirements were in crude oil and gasoil. In fiscal year 1989, the share of gasoil in the oil bill was at 44 per cent even higher than that of crude oil (34 per cent), the growth rate of demand for gasoil was 12 per cent per annum compared to the stable growth for crude oil, and the import dependency for both was about the same at 64 per cent. In fiscal year 1991, Pakistani data show increasing imports of crude oil and decreasing imports of products. The

relative share of crude in the oil bill increased slightly while the share of products decreased slightly in this year. The necessity of reducing kerosene and even gasoil imports was clearly influenced by the high average unit prices of these products, as well as by the possibility of some capacity expansion in domestic refining. The 45 per cent increase in the oil import bill in 1990—91 was therefore mainly due to the increased crude imports and to a certain extent by gasoil and kerosene imports, whose shares in the oil bill did not change significantly from year earlier levels.

Philippines

Import dependency in crude oil and fuel oil was high, and together the import costs of these constituted 96 per cent of the oil bill in 1989. In terms of import dependency and size of the domestic market as well, both crude oil and fuel oil are very significant to the economy. The Gulf crisis impacted on the economy through these very pressure points. The share of crude oil in the oil bill fell, although volume imports increased slightly. The share of products, however, increased significantly from 14 per cent to 18 per cent. This was despite the decrease in volume imports of products in 1990. Although crude oil imports played the main part in the increased oil bill, the very high average unit price paid for product imports in general, heightened the impact of the crisis on the economy quite considerably.

South Korea

The South Korean story is somewhat similar to the Indian one. Import requirements, however, extended also to fuel oil. The crude oil share of the oil bill decreased significantly from 92 per cent in 1989 to 78 per cent in 1990, while the share of kerosene increased from 2 per cent to 9 per cent, gasoil from 3 per cent to 6 per cent, and fuel oil from 3 per cent to 7 per cent. In volume terms, although crude imports increased only marginally, the increase in kerosene, gasoil and fuel oil imports was very significant. The 52 per cent increase in the oil import bill in 1990 was, therefore, largely a result of these imports. The interesting difference between South Korea and India was in the significantly higher percentage change in the average unit prices paid for products by the former. As will be seen in Chapter 6, the impact of these higher average unit prices on Korea was largely modified by the general macroecomic and financial health of the economy.

Sri Lanka

Import dependency is high in crude oil, gas oil and jet fuels. Given the small size of the domestic market in jet fuels, it is clear that the main problem for Sri Lanka was in securing crude oil and gas oil supplies. The reduction of both crude oil and product imports in 1990 was an indication of the high average prices of products in 1990, and the lack of adequate cracking capacity in the domestic refining industry which, if available, may have encouraged increased imports of crude oil.

Thailand

Import dependence in gas oil was about 51 per cent, and in fuel oil only about 7 per cent. Gasoil imports accounted for 30 per cent of oil imports but fuel oil imports for only 1 per cent. However, the domestic market for fuel oil was large, the rate of growth in domestic demand high, and the electricity sector significantly dependent on this fuel. In fact in 1990, the most significant increase in product imports occurred in fuel oil. The share of crude in the oil bill decreased although the volume of crude imports in this period increased as well. The share of products in the oil bill increased particularly in the medium-high distillate category. Thailand's oil import bill increased by only 35 per cent, which given the increase in volumes imported, was relatively low compared to other countries. This was evidently because the average unit prices paid by Thailand for its oil imports did not change by a very high proportion.

Turkey

The increase in Turkey's oil import bill of 55 per cent was second greatest after the Philippines. The increased costs of product imports were the main reason behind the higher import bill. The share of crude oil in the import bill decreased from 94 per cent in 1989 to 86 per cent in 1990, while the share of products increased from 6 per cent to 14 per cent. In 1989, import dependence in gas oil amounted to 13 per cent, the size of the domestic market was large at 141,000 b/d, and the share of gasoil costs about 6 per cent of the total oil bill. Gas oil, therefore, seems to be one of the likely explanations behind the increased product bill. Although domestic refining capacity appears adequate to satisfy the demand for motor gasoline, 1990 volume imports show an increase in motor gasoline imports. The change in average unit prices paid for oil imports was lower for Turkey than it was for the Philippines. Consequently, the change in the import bill, which was similar to that of the Philippines, can probably be attributed more to the significant volume increase of crude oil imports (23 per cent), as well as the increase in product imports (15 per cent) in 1990.

Yugoslavia

Data from past years shows that in terms of the size of the domestic market, fuel oil imports are significant for the country. However, in terms of growth rates, import dependency and the share of costs in the oil bill, motor gasoline and gas oil are more important. While the share of fuel oil costs remained at about 2 per cent in 1990 and the gas oil share decreased from 2 per cent to 1.6 per cent in 1990, the share of motor gasoline / light oils costs doubled from 2.4 per cent to 4 per cent in 1990.

5.3 Flexibility in the Domestic Oil Industry

Two potential shock absorbers during times of high oil prices and/or supply disruptions are (a) the extent of stock coverage and (b) the type and extent of spare refinery capacity in the refining sector. The resilience of an economy to oil price shocks is greatly enhanced if there exists an adequate stock coverage, and enough spare refining capacity of the relevant kind.

In such a case, the calling of *force majeure* on traditional term contracts does not necessarily lead the country to the spot market; and in this crisis particularly where, in some regions and at certain times, petroleum product prices seemed to have been under greater pressure than crude oil prices, excess refining capacity can mean less of a shortfall in essential products and therefore less domestic demand restraint, as well as a lower dependence on the costlier, less secure supplies of the spot market. The impact of the Gulf crisis on developing economies was conditioned by these two factors. Certainly the severity of the impact differed because not all the economies could avail themselves of these 'cushioning' factors.

5.3.1 Stock Levels of Crude Oil and Petroleum Products

Amongst the few developing countries for which stock data is available (see Table 5.4),[4] Pakistan was perhaps the worst off in terms of having only one week's coverage, the least number of days covered by domestic stocks. In fact, the week's worth of oil stocks was quickly exhausted, and the only attempt made by the country to replenish these stocks was apparently in November 1990 when product imports increased by 13 per cent reflecting the increased stocking of kerosene for winter (*Energy Compass*, 9 November, 1990).

Table 5.4: Oil Stocks in Selected Countries During the Gulf Crisis. Total Stocks in Days.

BRAZIL	August: 45 Total of which 38 Crude January: 45 Products
INDIA	August: 30 of which 15 crude; 15 products
PAKISTAN	August: 7 November: Increased stocking of kerosene
PHILIPPINES	August: 70 October: 60 January: 90
SOUTH KOREA	August: 90 of which refiners: 40 and government: 50 November: high gas oil stocks February: 11 mb of crude added to stocks; post-war 106 mb=92 days
SRI LANKA	August: 30 March: 2.2 mb crude + 0.5 mb products = 60 days cover (accumulated over October-March period)
THAILAND	August: 30 February: Product Oversupply

Sources:
Argus, Platts, PIW; various issues.

[4] Documentation on petroleum inventory levels in developing economies is sparse, and if some general information is available, it is not always clear whether the data is aggregated for petroleum products and crude oil or otherwise.

In August 1990, India, Sri Lanka and Thailand had 30 days of stock coverage each. India, alone, showed a breakdown of the total inventory level into 15 days of crude oil, and 15 days of petroleum products. The latter included about 11 million tonnes of products (*Platts*, 16 October, 1990). Theoretically, defence planning requires at least 45 days of stocks, although, even the storage facilities in the country cannot cope with such a requirement (*Platts*, 18 December, 1990). It is evident that India was not able to build up any adequate level of stocks during the crisis, because by November, when most of the region had rebuilt inventories, India, along with the Philippines was still trying to access the Dubai market for supplies and was unable to for lack of foreign exchange (*PIW*, 19 November, 1990).

Sri Lanka and Thailand seemed somewhat better off. During the period October 1990 to March 1991, Sri Lanka managed to accumulate 2.2 mb of crude oil and 0.5 mb of products (*PIW*, 25 March, 1991). Calculated against 1989 domestic consumption data, this meant stock levels rebuilt to cover 60 days of domestic needs. Although not much information is available for Thailand, there is some evidence that by February 1991, the perception in the country was that of an over-supply of some products (*Energy Compass*, 8 February, 1991). With petroleum inventories at 45 days supply, Brazil seemed adequately cushioned at the beginning of the crisis. In fact, this 'cushioning' appeared to persist until the Gulf war started in January 1991. In November, oil imports were 64 per cent higher than a year earlier due to stock-piling, and in January, product inventories were estimated to be at 45 days worth (*PIW*, 21 January, 1991) and Petrobras storage tanks filled to capacity with 31.4 mb of oil (*Platts*, 10 January, 1991). The continuous threat of oil workers' strikes was a more serious problem to contend with than the Gulf crisis, and in fact probably reinforced the need for a continuous and adequate stock coverage (*PIW*, 18 March, 1991).

The 70 days stock coverage in the Philippines had been extended to a 90 day coverage by January 1991 (*Platts*, 8 January, 1991). The main reason for this stock-piling was to protect the country in the event of open hostilities and further disruptions to the oil supply, and more importantly, to conserve the much needed foreign exchange.

South Korea was the most protected country in terms of stock coverage. At the beginning of the crisis in August, South Korean refiners had 40 days coverage and the government had 50 days coverage (*Argus*, 27 August, 1990). By the end of the war in February 1991, South Korean stocks at 106 mb, 92 days coverage were slightly above pre-war levels. Interest in the winter fuel gas oil was minimal in November due to high stock levels (*Argus*, 16—22 November, 1990), in February of the next year, the net intake of crude inventories was 11 mb (*PIW*, 6 May, 1991), and by March of the next year, jet/kerosene stocks were still at, what were termed very comfortable levels (*Argus*, 1—7 March, 1991). Evidently, a shortage of supply did not exist in the South Korean case, and in fact, stock levels were being continually replenished. Furthermore, the foreign reserves cover, in August 1990, extended to four months of oil imports.

5.3.2 Refining Capacities

A main feature of the Gulf crisis was that certain product prices rose faster than crude oil prices, particularly in the fourth quarter of 1990. Consequently, both spare and adequate,

qualitatively speaking, refining capacity was clearly advantageous to have. An approximate picture of the refining capacity available in selected developing countries can be seen in Table 5.5. For much of the developing world, a major problem in the refinery sector is to reconcile the increasing demand for distillates with the generally less than adequate cracking capacities, and minimal upgrading facilities. For some economies, such as Thailand, even primary distillation is barely adequate given the high rate of growth in domestic demand for petroleum products. Given the nature of the Gulf crisis, excess capacity as well as the cracking and upgrading capacity of the refining industry was essential. The issue of quantity is important as can be seen in the magnitude of product imports, but the issue of quality even more so, as is evidenced by the large imports of medium to light distillates.

South Korean refineries, in terms of spare primary distillation capacity and upgrading capacity, are the most flexible amongst the developing countries. During the crisis, by the end of 1990, refinery runs reached about 1 mb/d. Furthermore, high sulphur crudes such as the Iranian, Oman and Dubai were also being run for export purposes (*Argus*, 8—14 February, 1991).

Table 5.5: Refining Capacities of Selected Countries. 1990. Thousand Barrels per Day.

	Domestic Production of Petroleum Products 1989	Crude Capacity	Catalytic Cracking	Catalytic Reforming
BANGLADESH	17	31	-	2
BRAZIL	1,664	1,412	317	24
INDIA	761	1,122	137	28
KENYA	41	90	-	9
PAKISTAN	105	121	-	5
PHILIPPINES	177	279	27	38
SOUTH KOREA	663	*1,163	-	*130
SRI LANKA	26	50	-	4
THAILAND	213	221	26	28
TURKEY	364	729	41	666
YUGOSLAVIA	259	609	52	75

Sources and Notes:
Worldwide Refining Survey, *Oil & Gas Journal*, 31 December, 1990. Approximate Domestic Production of Petroleum Products statistics from *UN Energy Statistics Yearbook*, 1989. Aggregate Production does not include LPG.
* Korean data for 1990 was significantly underestimated at 867,000 b/d of crude capacity and 62,450 b/d of catalytic reforming capacity. In fact the 1991 data indicated in this table holds for 1990 as well. *Oil & Gas Journal*, 23 December, 1991.

Brazilian refineries, during the period of the crisis, were more preoccupied with problems related to striking workers than the lack of either primary distillation and/or cracking capacity.

In fact, it was the result of maintenance shut-downs and a threat of an impending strike that gave impetus to increased product imports in August, and the call for *force majeure* on the 20,000 b/d gasoline exports to the United States. And in February, when the strike actually occurred and refinery runs were reduced by 60 per cent, the stockpile was drained and product imports increased again to avoid acute shortages (*PIW*, 18 March, 1991).

Primary distillation capacity in the Philippines is thought to be adequate, although cracking is only 10 per cent of capacity. The main problem for the country was and remains the reconciliation of domestic demand growth in gas oil and fuel oil with the severe shortfall in foreign exchange, as during the crisis (*Argus*, 3 September, 1990). In fact, during the crisis, an attempt was made by the government of the Philippines to cover the distillate shortfall by leasing out 25,000 b/d refinery space in November and December but buying back products such as kerosene and gas oil (*Argus*, 29 October, 1990). As in India, this attempt did not meet with much success.

In Thailand, as a newly industrializing economy, even primary distillation capacity is inadequate. And with average per annum product demand growth at about 20 per cent, the problems were compounded and product shortages handled with some difficulty (*Argus*, 3 September, 1990). Fortunately, Thailand's term contracts and/or replacements as well as stock levels, compensated for the lack of an entirely efficient refining sector. It is possible that despite the economy's plans to increase refining capacity to 600,000 b/d by the mid-1990s, domestic requirements, given the high growth rates, may still not be satisfied (*Oil & Gas Journal*, 5 November, 1990, p.22).

In Pakistan, the problem is one of the quantity and quality of domestic refining. Primary distillation capacity only meets about 60 per cent of domestic demand needs. The local crude supply of about 60,000 b/d meets only half the requirement, and the waxy nature of the crude allows for only a straight run yield pattern (*Energy Compass*, 5 April, 1991). Furthermore, the main domestic demand is in kerosene and gas oil, and with no upgrading facilities, distillate yield is only 40 per cent (*PIW*, 3 September, 1990). In fact, Pakistan seems to be wasting the equivalent of 20,000 b/d of gasoline and kerosene due to the inadequacy of cracking facilities (*Oil & Gas Journal*, 6 January, 1992, p.34). Furthermore, the country exports 10,000 b/d of its crude oil production due to the lack of refining capacity at home (*Energy Compass*, 24 April, 1992). There was consequently a serious shortage of distillates during the crisis, and attempts were made to secure refining space in foreign refineries (*Energy Compass*, 26 July, 1991).

India's refining problems are also one of runaway demand growth in distillates, and the inability to use the distillation plant surplus because of the high wax content in the local crude (*Argus*, 3 September, 1990). Besides only 60 per cent of refining requirements were met by local crude supply and hence crude imports were necessary. The shortage of even baseload distillation capacity necessitated large product imports particularly of gas oil (*PIW*, 10 September, 1990). It is important to note here that during the year of the crisis, India's domestic demand was about 1.2 mb/d, making primary distillation capacity barely adequate. In July, before the crisis, projections made on product demand in India showed a drop in the domestic availability of product in general, from 86 per cent of demand to less than 80 per cent, and a drop in the domestic availability of middle distillate in particular, from 76.5 per

cent of demand to 72.3 per cent (*Petroleum Economist*, July 1990). The seriousness of the situation during the crisis was aggravated by the lack of adequate transport facilities and the consequent inability of the country to export the growing stockpile of fuel oil and earn some much needed foreign exchange (*PIW*, 24 September, 1990). The Indian offer of 140,000 b/d surplus capacity to third-party refiners in October did not meet with a positive response mainly due to the buy-back clause which would have allowed India to retain kerosene (*Argus*, 29 October, 1990).

The story for the rest of the countries included in this study is less clear. In the financial year 1989, Bangladeshi product imports accounted for 47 per cent of domestic demand requirements. Most of the import requirements were and are met by Singapore. The Gulf crisis forced some capacity expansion in Bangladeshi refineries, a reduction in product imports and an increase in crude oil imports. The country did, therefore, avail itself of the cushioning provided by the excess refining capacity. Kenya has negligible cracking facilities but excess primary distillation capacity. Refinery throughput increased by about 4 per cent in 1990, product imports increased substantially, and product exports only slightly by 2 per cent. In Sri Lanka, primary distillation capacity seems adequate, although cracking capacity is not. During the crisis, the country reduced both crude oil and product imports to compensate for the high product prices which had to be paid. The case of Yugoslavia is particularly unfortunate. Prior to the crisis, the country was building up crude and product deliveries to eastern Europe. By October 1990, however, three of the seven refineries were no longer working, and the rest had severe feedstock supply problems (*Oil & Gas Journal*, 11 February, 1991). It is quite probable that even alternative supply arrangements and/or spot market purchases may not have been adequate to satisfy domestic requirements.

6. GENERAL ECONOMIC FACTORS MITIGATING THE IMPACT OF THE GULF CRISIS

The state of the trade balance, the degree of domestic demand management and the extent of access to external financing are all economic features that can either exacerbate or mitigate the impact of an external shock on an economy. A country with good export potential and performance can cope with the effect of costlier oil imports. Sensible domestic demand management and pricing ensure that undue strain on the exchequer due to domestic price subsidies is avoided as are the adverse economic effects of borrowing abroad to meet the increased prices. And access to external financing, where possible, can remove short-term financial constraints.

6.1 Dependency on Oil Imports

The importance of oil imports for developing countries is reflected in the share of oil imports in total imports, while the extent of the financial burden of these imports is reflected in the degree to which export revenues finance oil imports. Because economic conditions vary from country to country, even amongst the net importers of oil, there are a range of variations in the degree of dependency on oil. Table 6.1 shows the share of the oil bill in the total import bill and in total export revenues.

Two main observations can be made on the basis of Table 6.1. First, as a result of the Gulf crisis, the share of the oil import bill in total export receipts rose significantly in all of the sample countries, and the share of the oil bill in the total import bill also increased for all countries with the exception of Yugoslavia. Secondly, there existed important variations in dependency on oil imports. In 1990, for instance, the share of oil imports in total imports ranged from 9 per cent in Thailand to 24 per cent in India, and the variations in the amount of export revenues required to finance oil imports ranged from 12 per cent in Thailand to 40 per cent in Kenya.

The extent that each economy is dependent on and burdened by its oil imports is apparent in both 1989 and 1990 figures. Low percentage shares of oil imports in total imports can reflect either the underdevelopment of an agrarian economy such as Bangladesh where there is an import dependency on a much wider range of goods besides oil, or the relative development of economies such as Korea and Thailand, where there is greater potential for substitution and conservation. The differences in the extent that oil imports are financial burdens on the economy, however, is apparent from the degree of dependency of oil imports on export revenues. The greater the difference between the share of oil imports in total imports and the share of oil imports in total export revenues, the greater the vulnerability to oil price disruptions. This is for the simple reason that oil dependency is not offset by any great strength in export potential. For example, although countries such as Bangladesh do not show

very high oil dependency in terms of the share of oil imports in total imports (approximately 13 per cent in the financial year 1991), the amount of export revenues needed to finance these oil imports is disproportionately high (approximately 27 per cent in the financial year 1991). The closer the two shares, the greater the resilience of the economy based on export strength. Hence, in 1989, only 10 per cent of Thailand's export revenues and only 9 per cent of Korea's export revenues financed each economy's oil imports, which in turn constituted only 8—9 per cent, respectively, of their total imports. This export based economic strength is apparent in 1990 as well, when both the share of oil imports in total imports and in export receipts remained close in value, despite the increase in absolute terms. In Thailand, oil imports constituted 9 per cent of total imports which were financed by 12 per cent of its export receipts. And in South Korea, the oil import bill constituted 12 per cent of total imports and only 13 per cent of export revenues.

Table 6.1: Share of Total Oil Imports in Total Merchandise Imports and Exports (Value). 1989—90. Percentages.

	Share of Total Imports (Exports)	
	1989	1990
BANGLADESH	9.0 (22.8)	12.8 (26.7)
BRAZIL	18.4 (10.6)	22.7 (16.3)
INDIA	15.2 (22.0)	23.8 (31.6)
KENYA	13.9 (32.6)	17.7 (39.8)
PAKISTAN	14.5 (24.0)	22.5 (27.7)
PHILIPPINES	10.6 (15.2)	14.8 (22.2)
SOUTH KOREA	8.7 (8.6)	11.7 (12.5)
SRI LANKA	11.4 (16.2)	13.4 (18.1)
THAILAND	8.1 (10.4)	8.6 (12.3)
TURKEY	16.5 (22.5)	18.1 (31.2)
YUGOSLAVIA	13.7 (15.2)	12.7 (16.7)

Sources and Notes:
IMF, *International Financial Statistics*, September 1992.
Data for Bangladesh, Pakistan and India is based on the Fiscal Year as explained in Table 5.1.
The oil import bill is comprised generally of crude oil, aviation and motor gasoline, kerosene and jet fuels, gas oils and residual fuel oils, with the following exceptions: Product import costs for Bangladesh in FY 1990 and FY 1991, Kenya in 1989 and 1990, Pakistan in FY 1990, Sri Lanka in 1990 and Turkey in 1990, may not correspond identically to the product categories listed above.
See Appendix A.2 for details.

Where the share of oil imports in export receipts is high, as in Turkey, Kenya and India, the financial burden on the economy is greater relative to other countries. The extent to which exports provide a means of financing increasingly expensive oil imports is therefore an important feature of structural strength in an economy, in that it is an important cushioning factor against the impact of costlier oil imports.

6.2 Domestic Demand Management and Access to External Financial Help

One of the factors that can cushion the impact of an oil price crisis on an economy is the extent and speed with which the higher international prices are allowed to be passed through domestically. This is particularly true of countries where adequate oil price stabilization funds are not available and subsidizing domestic consumption has a direct and immediate impact on the national exchequer. Borrowing abroad is an option for some countries, but more often than not, external financing, particularly from the World Bank and/or the International Monetary Fund (IMF), is heavily conditional on general economic reform and especially upon the removal of domestic price subsidies. Thus domestic economic reform and/or domestic demand management and access to foreign financing and loans are very closely linked. Table 6.2 shows the import coverage in months (based on gross foreign exchange reserves) of our sample countries.

Table 6.2: Import Coverage. Months. 1990.

BANGLADESH	1.8
BRAZIL	2.8
INDIA	1.9
KENYA	0.9
PAKISTAN	1.2
PHILIPPINES	1.5
SOUTH KOREA	2.2
SRI LANKA	1.7
THAILAND	4.4
TURKEY	3.1
YUGOSLAVIA	2.2

Sources and Notes:
World Bank, *World Development Report*, 1992.
Import Coverage is based on Gross Foreign Exchange Reserves.

Brazil

Brazil, much in the same way as India, had implemented stringent economic reforms at the beginning of the year. The intention of the anti-inflationary measures was to rationalize the energy sector by reducing personnel, reduce domestic demand by reducing domestic price subsidies, and free more petroleum products for export, particularly gasoil and low-sulphur fuel oil (*PIW*, 11 June, 1990). The August 1990 Gulf crisis saw Brazilian interest payments on its international debt delayed, and Petrobras subsidizing imported oil prices at a cost of $425 million per month (*PIW*, 22 October, 1990). Although smaller loans such as the $40 million from Chase Manhattan Bank in August were possible, the international financial community was generally hesitant to make more loans given that interest repayments on the $120 billion foreign debt had stopped in July 1989 (*Petroleum Economist*, October 1990). Starting in September, there was pressure on the government to raise domestic prices by 43 per cent. This was justified by the fact that for every barrel of oil imported at $28/bbl, Petrobras received the equivalent of only $13/bbl for its products (*Oil & Gas Journal*, 10 September, 1990). In an attempt to partially compensate for the difficult access to external financing, prices were finally raised in November by about 30 per cent. In January, at the beginning of the war, gasoline distribution was cut by 20 per cent, diesel by 10 per cent and alcohol by 5 per cent. This was in addition to other conservation measures taken to reduce consumption (*Platts*, 17 January, 1991). It was in fact the retail price hike of 46 per cent, effective from 1 February, that reduced domestic demand by 11.8 per cent to just over 1 mb/d, from month earlier levels (*PIW*, 25 March, 1991).

India

In India, the precarious financial position of the economy as well as the cutback in Soviet supplies before the Gulf crisis, had already necessitated the implementation of an austerity programme in July 1990. The aim was to reduce petroleum imports by restricting the domestic sale of gasoil and gasoline (*PIW*, 9 July, 1990) and by rationing the use of kerosene in specific areas (*Platts*, 9 August, 1990). At the end of August, foreign reserves were at $3.8 billion, and the distillate bill for September delivery alone estimated at $100 million (*Argus*, 27 August, 1990). The implementation of a 'gulf surcharge' of 25 per cent on domestic products and a 7 per cent surcharge on corporate income tax as of 14 October was deemed appropriate to reduce domestic demand by 15 per cent. The only exception was certain fuels for home-use, and apparently diesel supplies were fully resumed at the end of November (*Platts*, 28 November, 1990). Furthermore, by mid-October, the Indians had suspended the purchase of crude oil in order to relegate all resources to the purchase of products (*Platts*, 16 October, 1990). The offer to lease refinery space and buy back certain middle distillates did not meet with much response. By November, hard currency reserves had dropped to $2 billion and India, like the Philippines, was out of the Dubai market for lack of foreign exchange, and started negotiating extended credit terms of one to two years from suppliers and the release of pending loans from international agencies. Earlier in the crisis, India had withdrawn $352 million of its IMF reserves, and in December had asked for a $3 billion loan under the Compensatory and Contingency Financing Facility scheme of the IMF. Much in the same way as concessionary supply agreements, the release of a $1.8 billion five-year loan came only in January 1991 (*PIW*, 28 January, 1991), by which time the external debt of the country

exceeded $64 billion (*PIW*, 18 February, 1991). The loan, however, was conditional on the liberalization of certain Indian industries. A further $97 million syndicated loan was arranged in January, and in April of 1991, a $168 million loan from the Asian Development Bank was also arranged. The new $2 billion 'emergency' loan requested from the IMF in January was eventually refused. Supply cuts to transportation groups were implemented only in February 1991, with a 25 per cent cut in jetfuel supply to airlines and a 10—15 per cent cut in gasoline and diesel supply to railways (*PIW*, 4 February, 1991). These were apparently retained until mid-1991 (*The Asia-Pacific Petroleum Report*, July 1991).

Pakistan

In Pakistan, for political reasons which included an upcoming general election, domestic prices were not increased until the end of November, at which point some product prices were increased by 50 per cent (*Energy Compass*, 30 November, 1990). This delay in passing through the increased price of oil imports to the consumer cost the economy about $50 million/month (*Energy Compass*, 14 September, 1990). The overall loss of overseas remittances and the delayed pass-through of oil price increases to consumers resulted in a dramatic decrease in foreign exchange reserves from $321 million in September to $67 million in October (*Argus*, 3 December, 1990). In September, commitments were made by Saudi Arabia, Kuwait, Germany, Japan, the IMF and the World Bank to help Pakistan meet the increased costs of oil imports. However some of these offers were held back until a new government was in place and the final tranche of the IMF structural adjustment loan of about $140 million was not released during the period of the crisis (ODI, *Impact of the Gulf Crisis on LDCs*, February 1991). Pakistan did, however, manage to secure a syndicated 12-month loan arranged by ANZ Merchant Bank and Citicorp Investment Bank of about $100 million and $50 million respectively, in the early part of 1991 to help pay for the costlier oil imports (*The Asia-Pacific Petroleum Report*, April 1991; *Platts*, 11 July, 1991).

Philippines

In the Philippines, higher international oil prices were passed through to consumers quite early in the crisis and again at the end of the year. This domestic demand management, the call to cut consumption by 50 per cent in the event of war and the implementation of conservation measures, were a result of foreign exchange difficulties rather than supply constraints.

The Philippines was the first country to implement oil price adjustment in domestically sold petroleum products. By the end of August, the government had already mandated a 10 per cent cut in electricity use and a 5 per cent drop in oil use, along with restrictions on theatre, supermarket and department store operations (*PIW*, 20 August, 1990). Domestic product prices were increased in late September by an average of 32 per cent in order to curb domestic consumption. The Oil Stabilization Fund at this time was already in deficit by $430 million (*Energy Compass*, 21 September, 1990). With the failure of this move to cut demand, a 10 per cent supply cut in the three refineries was mandated which reduced demand to 221,000 b/d (*PIW*, 3 December, 1990). A further price hike was implemented in December when retail prices increased by an average 33 per cent, with gasoline prices rising by 80 per

cent, kerosene and diesel by 24 per cent and fuel oil by 5 per cent (*Energy Compass*, 14 December, 1990), amidst public disapproval and IMF approval. In fact the December price reform was closely linked to the approval of $700 million in loans from the IMF (*Platts*, 12 December, 1990).[5] This partial removal of domestic subsidies was meant to alleviate the $2.2 billion deficit problem, to stretch out the 60—90 days stock coverage and to conserve the $2 billion foreign exchange reserves. In fact even after the end of the crisis, until spring 1991, higher product prices were retained despite the drop in international crude prices (*The Asia-Pacific Petroleum Report*, April 1991). This was largely because of the $535 million deficit incurred by the Oil Stabilization Fund during the crisis.

South Korea

The South Korean government was initially reluctant to pass through oil price increases to consumers and used the Petroleum Business Fund to subsidize domestic prices. At the end of 1989, the price buffer component of the fund stood at $600 million (*KERM*, September 1990). Although financing the oil imports was not a problem, per se, the higher price of imports implied a widened current account deficit and increasing domestic inflationary pressures. Therefore, the problem was of easing some of the pressure on the exchequer, in particular that which was incurred via the Petroleum Business Fund and the subsidization of domestic product prices. Prices were, therefore, increased effective from 25 November, a month earlier than planned, and by 28 per cent, which for gasoline at least was higher than the 22 per cent initially planned (*Energy Compass*, 30 November, 1990). These higher prices apparently prevailed till July 1991, when prices for kerosene and gasoil were reduced by amounts ranging from 5—9 per cent (*Energy Compass*, 2 July, 1991). Along with domestic price reform, South Korea also borrowed about $4 billion from international banks in the fourth quarter of 1990 to defray the costlier oil imports (*Financial Times*, 16 May, 1991).

Thailand

Thailand's Oil Stabilization Fund stood at about $100—130 million at the end of August 1990. This was due to be in deficit by October (*Energy Compass*, 28 September, 1990). However, the country was able to borrow a net $2.7 billion from international banks in the fourth quarter of 1990. By the time the war started in January 1991, financial problems did not appear to be overwhelming and there was even an over-supply of some products (*Energy Compass*, 8 February, 1991).

Turkey

The impact of the Gulf crisis on Turkey was very large, with losses amounting to $3.4 billion, about 4.5 per cent of its GNP. However, as a front-line state, the country benefited from generous assistance from the Gulf Financial Co-ordination Group, Japan alone commited $300 million, and Saudi Arabia offered about $2 billion worth of crude oil over the two years.

[5] As we saw in Table 1.5, both long-term and short-term loans to the Philippines increased in 1990.

Although not much is known of the extent of pass-through of the higher oil prices to consumers, there is evidence that retail prices for petroleum gas were increased almost consistently for a few months starting in August, and then again in March/April. This appears to be true of most of the major cities — Ankara, Istanbul and Izmir (*Monthly Bulletin of Statistics*, 1991, VI—VII).

Other Countries

The ODI estimate total loss in Bangladesh to be about $240 million, of which $100 million was due to the loss of overseas remittances. Access to external financing is not known of, but in August 1990, Bangladesh negotiated an Enhanced Structural Adjustment Facility loan with the IMF. The conditionality of this loan was not relaxed despite the crisis and the increase in domestic petroleum retail prices by almost 85 per cent (over September and October 1990). In Sri Lanka, the crisis was in fact an economic exacerbation of an already unstable political situation. Losses are estimated at $265 million of which $100 million was due to the loss of remittances. The only known instance of external financing was in February of 1991 when Sri Lanka sought a $450 million loan from the IMF (ODI, *Impact of the Gulf Crisis on LDCs*, February 1991). Domestic product price revisions occurred on 15 August and on 6 November. Petrol prices were increased by 74 per cent, furnace oil prices by 30—34 per cent, and kerosene by 34 per cent, the first price change after 1983. With the stabilization of international oil prices, domestic prices were revised downwards on 27 December, 1990 (Central Bank of Sri Lanka, *Annual Report*, 1990).

It is important to point out here that although domestic demand management and price pass-through is good in that it relieves the pressure on the national exchequer, it has also meant that for some countries, the Gulf crisis has impacted on more than just the balance of payments. The pass-through of higher oil prices has implications on inflation, growth rates, and ultimately on living standards. The implications of higher product prices domestically are both serious and wide-ranging and their effect on the economy will take a longer time to emerge.

Table 6.3 shows the increased inflation rates in our sample countries over the years 1989 and 1990 (financial years 1990 and 1991 for Bangladesh and Pakistan). For most of these economies, the inflation rate in 1990 would have been even higher if the domestic pass-through of higher international oil prices had been more immediate. Pakistan, for instance, delayed the price pass-through till end-November, and Korea continued subsidizing domestic oil prices through the oil price stabilization fund until December of 1990.

For some economies, the impact of higher oil prices on inflation was exacerbated by the further depreciation of national currencies. In Kenya, the shilling depreciated by 18 per cent against the US dollar in 1989 and by 19 per cent in 1990. Domestic prices increased by 30—49 per cent in September 1990, the effects of which further fuelled inflation particularly in the transport and manufacturing sectors. The Philippines depreciated the peso by about 9 per cent at the end of 1990, which resulted in even costlier imports. In Sri Lanka, the inflation rate was significantly higher than in 1989 due mainly to the devaluation of the rupee in September 1989. Higher oil prices in 1990, of course, probably just accelerated this trend. The significantly higher inflation rate in Yugoslavia in 1989 was probably due to currency

devaluation as well.

Table 6.3: Inflation Rates in Sample Countries. 1988—90.
Percentage Change in Consumer Price Index.

	1988	1989	1990
BANGLADESH	8	9	15
BRAZIL	682	1,287	2,928
INDIA	9	7	10
KENYA	8	10	12
PAKISTAN	10	6	13
PHILIPPINES	9	11	15
SOUTH KOREA	7	6	9
SRI LANKA	14	12	21
THAILAND	4	5	6
TURKEY	75	63	60
YUGOSLAVIA	194	1,240	583

Sources and Notes:
Data on all Asian Economies from *Asian Development Outlook*, 1991, ADB. Inflation rates for Bangladesh, India and Pakistan correspond to the relevant fiscal year. Data on Brazil, Kenya, Turkey and Yugoslavia based on Consumer Price Index from IMF, *International Financial Statistics*, March 1992.

Although access to external financing, concessionary or not, is a valuable cushioning factor during the crisis when and if available, in the long term this access, in fact, just exacerbates the already serious debt position of most developing countries. Availing itself of such short-term financing facilities has important implications for the economy both in the present and in the future. How each economy will deal with these domestic problems both now and later will determine more precisely the long-term impact of the Gulf crisis. Table 6.4 shows the total external debt of selected countries in 1989 and 1990, as well as the share of this debt in GNP. In all of the selected economies, total external debt, in absolute terms, increased in 1990. With the exceptions of Sri Lanka, South Korea, Thailand, Turkey and Yugoslavia, the share of total external debt in GNP also increased. The most significant increase occurred in Kenya, where the share of total external debt in GNP increased from 71.7 per cent to 81.2 per cent in 1990. In the countries noted above as exceptions, the rate of increase in external debt was evidently lower than the rate of increase in GNP. The share of debt in GNP therefore decreased from 1989 to 1990 in these countries.

Table 6.4: Total External Debt and Share of Total External Debt in GNP. 1989—90. Million Dollars and Percentages.

	Total External Debt (Share of Debt in GNP) 1989	Total External Debt (Share of Debt in GNP) 1990
BANGLADESH	10,712 (53.3)	12,245 (53.8)
BRAZIL	111,290 (24.1)	116,173 (25.1)
INDIA	62,509 (24.0)	70,115 (25.0)
KENYA	5,690 (71.7)	6,840 (81.2)
PAKISTAN	18,509 (46.9)	20,683 (52.1)
PHILIPPINES	28,902 (65.3)	30,456 (69.3)
SOUTH KOREA	33,111 (15.8)	34,014 (14.4)
SRI LANKA	5,101 (73.5)	5,851 (73.2)
THAILAND	23,466 (34.1)	25,868 (32.6)
TURKEY	41,600 (53.8)	49,149 (46.1)
YUGOSLAVIA	19,651 (26.2)	20,690 (23.7)

Source: World Bank, *World Development Report*, 1992.

7. CONCLUSION

It is now more than two years since the Gulf crisis of August 1990, and with hindsight it is clear that there has been a tendency in the west to ignore the impact of the crisis on developing countries. Apart from an Overseas Development Institute report on this subject published in February 1991, there has been little discussion on the long-term implications. This is because the developed world itself managed to more or less contain the economic impact of the crisis. This impact stemmed largely from fears of international terrorism which primarily affected the services sectors, in particular tourism and travel. There was perhaps some decline in aggregate demand which may have prolonged the recession. Given these possible repercussions, it can be said that the economic effects of the crisis were not very significant for the developed world.

The most important point to emerge from this study is that while the Gulf crisis was responsible for only a short period of high oil prices, the implications for a developing economy were neither insignificant nor short term. The argument that reduces the impact of the crisis to the effect on the services sector and the recession, may be relevant for most developed economies but cannot be extended to developing countries. Indeed, there have been long-term economic effects on developing countries, and the crisis exacerbated a generally weak economic situation. The resolution of these problems through appropriate policy formulation is in itself far more complex than is commonly granted.

This study has shown that the impact of the Gulf crisis has differed widely amongst developing countries, depending on both their economic condition and their particular policy responses. Most developing economies faced increased oil import bills. Whether the response to higher oil prices took the form of reducing volume imports or financing the costlier imports, either through external help or internal means, the impact on the economy was significant. The reduction of imports often entails a certain suppression of domestic demand with its attendant consequences on economic growth. The lack of a volume response to higher oil prices may mean increasing balance of payments deficits, an exacerbation of the debt situation of the economy and a secondary impact on its long-term growth. The burden of additional borrowing abroad is not negligible and nor are the inflationary consequences of passing through higher international oil prices domestically.

In principle it is possible to produce policy recommendations for all crises, and the Gulf oil crisis is therefore no exception. The successful implementation of policy recommendations however, particularly in developing economies, is more problematic. The two main aspects of the 1990 crisis pertinent to these economies were the 'product crunch' and the cut-off from two large sources of supply, Iraq and Kuwait. Given these particularities of the crisis, it would seem that general policy recommendations on how to reduce exposure to an oil price shock should include a call for developing countries to hold stocks, have adequate excess and upgraded refining capacity, and diversify sources of supply. Such measures, however, may

prove to be costly.

The expansion of refining capacity for the purpose of keeping some spare capacity idle as a cushion would probably involve more costs than benefits. First, the capital costs of both capacity expansion and refinery upgrading are high and secondly, the possibility of the next oil crisis constraining crude oil supply rather than product supply may not justify this capital outlay in refineries.

Policy recommendations concerning the building of stock levels and the diversification of sources of oil supply are, however, more general 'cushioning' measures in the event of an oil shock. As regards stock levels, it appears from this study that this cushioning measure is one that less developed economies can ill afford. Even if the energy sector gets priority in a country's economic agenda, it is less than likely that adequate stock levels will be given high priority. The study has shown that only the more developed of the developing countries (such as Korea) could avail themselves of stocks at par with those decreed for developed economies, and countries such as Pakistan floundered with barely a week's worth of stocks.

Diversification of trade partners is of course extremely useful when a crisis cuts off supplies from one or two major sources. However, similar to other policy recommendations, it is not easily fulfilled. At issue here is the particular economic condition of developing countries which does not allow them to diversify sources of supply. The diversification of supply sources is only an option for countries where the volume of oil imported is large. Korea, for instance, importing about 50 million tonnes of oil a year had the least exposure to the loss of Iraq and Kuwait as sources of supply. Pakistan, importing about 10 million tonnes of oil, lost 88 per cent of its product imports as a result of the loss of Iraq and Kuwait as sources of supply.

Another factor influencing the availability of diversified sources of supply relates to the ability of certain countries to trade for hard currency; those that suffer from foreign exchange constraints are inclined to secure barter arrangements. The predicament that most eastern European countries found themselves in during and after the Gulf crisis reveals this difficulty. Perhaps more so than others, the countries in eastern Europe had to contend with both a price shock and a supply shock. In other words, eastern Europe faced the impact of both the Gulf crisis and the collapse of the Soviet Union. The relationship of these countries with the Soviet Union had already started to change before the Gulf crisis. Exports from the Soviet Union were being reduced, and there was an increasing tendency toward hard currency terms for supply contracts. These two trends had affected these economies already, in the sense that alternative suppliers had been found, in most cases, in Iraq, and mostly in barter arrangements. Other countries were affected only by the Gulf crisis, but the dependency of some on barter relationships greatly reduced their flexibility in diversifying sources of supply. The Brazilians lost a multi-billion dollar barter relationship with Iraq for which alternative sources of supply could not fully compensate, despite favourably termed contracts. And finally, India too had to contend with a Soviet Union increasingly clamouring for hard currency for its exports, a situation only exacerbated by the loss of Iraqi supplies to the Soviet Union.

It is clear that to secure diversified sources of supply and find oil-exporting countries willing to negotiate the contract terms commensurate with the economic and financial standing of a

particular developing country is perhaps more easily recommended than achieved. In successfully diversifying supply sources, as in successfully implementing other policy recommendations, one keeps returning to the problem of a country being able to afford cushioning mechanisms against shocks. An economy strapped for cash has very few options in the event of a crisis. Although this study acknowledges the benefits of certain policy recommendations, if one is to understand the complex predicament that developing countries find themselves in, the limitations of such proposals must also be emphasized.

The purpose of this study, and more specifically its conclusion, is not to stress that there is very little recourse for a developing country during a crisis. Rather, it is to draw attention to the fact that the impact of an oil crisis on developing economies is wide ranging and can neither be restricted to one or a few economic sectors, nor limited to any specific period of time. The complexity of the problems beseiging such countries, as well as the complexity in responses to the crisis do not allow for that.

APPENDIX

Table A.1: Volume Imports of Crude Oil and Petroleum Products, 1987—1991. Thousand Tonnes.

		Crude Oil	Aviation Gasoline	Motor Gasoline	Kerosene	Jetfuels	Gas Diesel Oil	Residual Fuel Oil	Total Imports
BANGLADESH	1988	1,212	1	1	140	72	505	21	1,952
	1989	1,280	1	1	150	75	520	22	2,049
	1990	1,000				1,000			2,000
	1991	1,200				788			1,988
BRAZIL	1987	30,643	7	1	0	0	501	853	32,005
	1988	31,739	4	1	0	28	477	1,678	33,927
	1989	29,238	2	0	0	28	847	1,011	31,126
	1990	28,331	186			583		615	29,715
KENYA	1987	2,130	5	7	5	6	63	0	2,216
	1988	2,041	9	14	6	0	62	0	2,132
	1989	2,101				45			2,146
	1990	2,178				133			2,311
INDIA	1987	18,043	0	16	2,215	29	1,102	0	21,405
	1988	17,712	0	0	2,407	82	2,066	465	22,732
	1989	19,490	0	0	2,596	268	3,048	0	25,402
	1990	20,700	0	0	3,340	27	4,860	0	28,927
PAKISTAN	1988	3,802	2	124	576	0	2,330	727	7,561
	1989	3,671	2	140	649	0	2,842	750	8,054
	1990	3,500				5,100			8,600
	1991	5,403	0	120	417		2,631	1,138	9,709

Table A.1 Continued.

		Crude Oil	Aviation Gasoline	Motor Gasoline	Kerosene	Jetfuels	Gas Diesel Oil	Residual Fuel Oil	Total Imports
PHILIPPINES	1987	8,681	8	0	0	15	134	832	9,670
	1988	10,049	4	0	0	0	144	631	10,828
	1989	10,064	3	5	28	28	169	1,200	11,497
	1990	10,893	----------	----------	----------	1,344	----------	----------	12,237
SOUTH KOREA	1987	29,530	0	0	331	0	1,412	2,263	33,538
	1988	35,667	0	0	61	0	1,087	1,644	38,459
	1989	40,312	0	0	532	0	924	1,698	43,466
	1990	41,297	7	0	2,194	0	1,830	4,143	49,471
SRI LANKA	1987	1,706	0	0	5	39	210	0	1,960
	1988	1,772	0	0	2	13	129	0	1,916
	1989	1,793	0	0	2	13	125	0	1,933
	1990	1,779	0	0	----------	125	----------	0	1,904
THAILAND	1987	7,860	10	165	0	308	2,320	319	10,982
	1988	7,502	10	260	0	439	3,192	271	11,674
	1989	10,132	10	460	0	384	3,755	235	14,976
	1990	10,423	7	484	0	414	4,675	1,666	17,669
TURKEY	1987	20,102	0	8	0	0	616	0	20,726
	1988	21,673	0	8	0	0	610	0	22,291
	1989	18,615	0	27	0	0	939	28	19,586
	1990	22,825	0	154	0	0	964	22	24,202

Table A.1 Continued.

		Crude Oil	Aviation Gasoline	Motor Gasoline	Kerosene	Jetfuels	Gas Diesel Oil	Residual Fuel Oil	Total Imports
YUGOSLAVIA	1987	10,833	----------102----------		----------70----------		0	921	11,926
	1988	12,061	----------103----------		----------133----------		30	900	13,227
	1989	11,689	----------201----------		----------100----------		112	384	12,486
	1990	11996	----------379----------		----------132----------		147	396	13,050

Sources and Notes:

1987—89 data mainly from *UN Energy Statistics Yearbook*, 1989.
1989 Brazil data from *Energy Compass*, December 7, 1990; 1990 data from Petrobras.
1989, 1990 Kenya data from *Kenyan Economic Survey*, 1991.
1989, 1990 India data from Oil India Library.
1990 South Korea data from *Statistical Yearbook of Foreign Trade*, 1990.
FY 1990 Pakistan data from ADB, *Asian Development Outlook*, 1991; FY 1991 data from Ministry of Finance.
1990 Philippines crude oil data from *Philippines Statistical Yearbook*, 1991; product data from BP Movement Matrix.
1990 Turkey crude oil data from *Main Economic Indicators*, March 1991, SIS; Product data from OECD *Quarterly Oil Statistics and Energy Balance*, 2nd Quarter, 1991.
1989, 1990 Yugoslavia data from Statistical Papers, Series D, *Commodity Trade Statistics*, United Nations, NY 1990, 1991, various volumes.

Data for Bangladesh, India and Pakistan are by Fiscal Year: See Table 5.1 in text.

Pakistan: volume imports of crude oil in FY 1991 include 600,000 mt of free oil from Saudi Arabia;
Turkey: volume imports of crude oil in 1990 include 3 million mt of free oil from Saudi Arabia.

In all cases, if product imports are aggregated, they may not match listed product categories identically.

Table A.2: Oil Imports in Value Terms. 1987—1991. Thousand Dollars.

		Crude Oil	Aviation Gasoline	Motor Gasoline	Kerosene	Jetfuels	Gas Diesel Oil	Residual Fuel Oil	Total Imports
BANGLADESH	1988	92,875	170	170	21,778	11,200	67,291	1,549	195,033
	1989	123,952	228	228	29,243	14,621	85,608	2,192	256,072
	1990	138,000	----------200,000----------						338,000
	1991	228,400	----------217,200----------						445,600
BRAZIL	1987	4,095,743	1,274	182	0	0	76,152	99,204	4,272,556
	1988	3,473,199	699	175	0	4,235	62,978	151,540	3,692,826
	1989	3,400,000	405	0	0	5,071	134,639	114,435	3,654,550
	1990	4,839,599	----------186,300----------					83,744	5,109,643
KENYA	1987	286,860	806	1,128	835	1,002	9,460	0	300,091
	1988	227,531	1,296	2,016	880	0	8,022	0	239,746
	1989	290,784	----------10,850----------						301,634
	1990	368,274	----------34,177----------						402,391
INDIA	1987	2,225,604	0	3,157	380,360	4,980	167,240	0	2,781,341
	1988	1,758,093	0	0	374,433	12,756	275,295	34,289	2,454,866
	1989	2,520,030	0	0	547,886	54,234	594,108	0	3,716,258
	1990	3,385,713	0	0	1,086,151	4,426	1,262,657	0	5,738,947
PAKISTAN	1988	510,673	340	21,080	89,603	0	310,473	53,609	985,778
	1989	365,833	456	31,905	126,523	0	467,878	74,715	1,067,310
	1990	423,516	----------760,000----------						1,183,516
	1991	633,499	0	39,978	160,214	0	750,940	133,804	1,718,435

Table A.2 Continued.

		Crude Oil	Aviation Gasoline	Motor Gasoline	Kerosene	Jetfuels	Gas Diesel Oil	Residual Fuel Oil	Total Imports
PHILIPPINES	1987	1,061,503	1,578	0	0	2,576	20,336	84,165	1,170,158
	1988	919,317	680	0	0	0	19,188	46,530	985,715
	1989	1,021,162	684	1,139	5,459	5,459	27,822	119,544	1,181,269
	1990	1,724,930	----------205,070----------						1,930,000
SOUTH KOREA	1987	3,701,813	0	0	57,183	0	214,285	228,925	4,202,206
	1988	3,688,463	0	0	9,489	0	144,843	121,229	3,964,023
	1989	4,932,535	0	0	103,713	0	152,118	174,600	5,362,967
	1990	6,385,928	1,985	24	695,451	2	516,154	553,014	8,152,558
SRI LANKA	1987	228,024	0	0	859	6,697	31,870	0	267,449
	1988	193,910	0	0	311	2,022	17,189	0	213,433
	1989	228,715	0	0	390	2,534	20,579	0	252,218
	1990	307,762	----------50,845----------						358,607
THAILAND	1987	1,020,410	1,973	32,553	0	52,890	352,083	32,270	1,492,179
	1988	865,383	1,700	44,200	0	68,291	425,334	19,984	1,424,891
	1989	1,291,261	2,279	85,285	0	74,861	618,186	23,411	2,095,282
	1990	1,640,532	----------111,472----------			----------1,074,458----------			2,826,462
TURKEY	1987	2,711,100	0	1,289	0	0	92,499	0	2,780,621
	1988	2,434,300	0	1,152	0	0	78,928	0	2,451,756
	1989	2,455,600	0	4,768	0	0	147,601	2,902	2,610,871
	1990	3,494,781	----------552,846----------						4,047,627

Table A.2 Continued.

		Crude Oil	Aviation Gasoline	Motor Gasoline	Kerosene	Jetfuels	Gas Diesel Oil	Residual Fuel Oil	Total Imports
YUGOSLAVIA	1987	1,447,939	322	16,117	11,687	0	0	98,501	1,574,566
	1988	1,319,835	432	14,401	19,516	0	3,882	71,748	1,429,814
	1989	1,907,678	----------48,763----------		---------24,398-------		41,144	35,142	2,057,125
	1990	2,176,121	----------95,166----------		---------35,762-------		37,271	45,970	2,390,290

Sources and Notes:

1987—9 Product bills computed from *UN Energy Statistics Yearbook*, 1989 and yearly average spot prices in different regional markets from *Platts Oil Price Handbook*, 1990.
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