

**THE CONSEQUENCES AND MANAGEMENT OF AMBIGUITY
FOR LONG-TERM INVESTORS**

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Abstract: This thesis responds to the question ‘how can sovereign wealth funds manage ambiguity in their decision-making so as to implement substantive long-term investment programmes?’ The rapid growth of sovereign wealth funds (SWFs) over the past decade, due largely to booming commodity prices, has inspired optimism among many for their potential to contribute to the sustainability goals of society. SWFs are unconstrained by many of the factors that have kept pension funds from realising their potential as long-term investors and so they are well placed to make significant investments in sustainable projects with positive externalities such as infrastructure and to act as effective monitors of corporate behaviour. But many obstacles stand in the way. At the institutional level, transparency has replaced tight financial market regulation, resulting in entrenched short-termism. At the organisational level, many problems facing long-term investors are too complex to fit into traditional models of decision-making. Decentralisation is necessary to respond to this complexity but it conflicts with the coordination necessary to achieve economies of scale and scope. There may not even be an ideal outcome to coerce or incentivise agents to achieve. Taken together, these problems are understood in this thesis as ambiguity, which results from differences in interpretation and irreconcilable conflict. In contrast, most governance frameworks focus on problems of uncertainty and risk, due to missing information.

This thesis has three aims. The first is to reframe the governance challenge for long-term investing in terms of managing ambiguity. Second, this thesis aims to reconcile ambiguity with legitimacy that depends on expert decision-making and provides one right answer to a clearly specified problem. Third, it provides specific examples of how ambiguity, if managed, can improve decision-making. That is, ambiguity forces us to engage with subjective reality but also provides us with a framework to do so. Ambiguity can act as a built-in adaptation mechanism to hold a coalition of diverse interests together in a rapidly changing environment, to identify synergies where others see only trade-offs and to overcome collective action problems. These constructive properties of ambiguity are explored in the four substantive chapters of this thesis, alongside specific recommendations for changes to SWF governance structures to transcend barriers to long-term investing.

The first half of the thesis focuses on the earlier stages of the investment process and draws on specific examples of two SWFs. Chapter III investigates ambiguity in the Alberta Heritage Fund’s inter-generational equity mandate. If managed in the form of self-reflexivity, ambiguity can contribute to overcoming the time inconsistency problem in the context of sub-national resource wealth funds. Chapter IV focuses on the irreconcilable conflict in the Norwegian Fund’s ethical investment policy. It argues that agents use their discretion to interpret the policy and, in doing so, are able to align it more closely to the Fund’s long-term investing mandate. The second half of the thesis extends consideration to long-term investors more broadly. Chapter V explores the delegation of shareholder engagement to portfolio managers to leverage synergies in an investment management firm. It finds that introducing ambiguity into incentive design can overcome the multi-task incentive problem. Chapter VI brings concepts explored in earlier chapters to bear on its analysis of a new market for public infrastructure assets. It argues that ambiguity provides the space necessary to bring diverse actors together to transcend collective action problems and create new institutional arrangements to support a more efficient market structure. Taken as a whole, this thesis is optimistic that, as those claiming to have the one right answer are increasingly proven wrong, ambiguity will earn its rightful place in the study and practice of finance.

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I. INTRODUCTION

The extraordinary rise of institutional investors beginning in the latter half of the twentieth century has set in motion a revolutionary shift in the economic and social relationships underpinning capitalism. Initially this transformation was narrated through Anglo-American pension funds.¹ As institutional investors, pension funds pool the savings of a large number of individuals and invest in global capital markets. Pension funds are often identified as ideal long-term investors given that their liabilities extend well into the future. As such, they have good reason to invest in opportunities that align broadly with the sustainability goals of society. Moreover, their portfolios reflect the economy as a whole, providing an incentive to use their rights as shareholders to bring pressure to bear on companies to internalise their externalities (Hawley and Williams 2000; Clark and Hebb 2005). As this narrative linking finance to broader societal interests developed, so too did a deep-seated critique of pension investments for undermining the interests of their beneficiaries (Langley 2004). If it had not been obvious before 2007-09, the global financial crisis brought these perversions to centre stage. Pension funds may have long-term horizons, but those responsible for managing their assets are often incentivised to invest in a way that reflects a complete disregard for the interests of beneficiaries.²

¹ See Pension Fund Capitalism, 2000, Clark, G.L. Oxford University Press.

² After the 2007-09 global financial crisis several lawsuits were launched by pension funds against their managers for the mismanagement of their assets. For example, Dutch pension fund Stichting Pensioenfondsen ABP filed a law suit against Goldman Sachs in connection with the fund's purchase of mortgage backed securities.

Around the same time that the global financial system seemed to be imploding, a new type of institutional investor was beginning to capture the attention of academics and policy makers. Sovereign wealth funds (SWFs) had grown to \$3 trillion by 2008 due in large part to the commodity super-cycle.³ In theory, SWFs are unrestrained by the problems that are often blamed for the perverse effects of pension fund capitalism. As pools of capital owned or controlled by the state with no liabilities outside of government, SWFs do not face the same pressure to maximise short-term returns (Engelen 2003). Moreover, SWFs are not formally subject to fiduciary duty, a legal principle whose conservative interpretation has kept pension funds from investing in opportunities that are perceived to advance broader societal objectives (see for example, Romano 1993; Woods 2011a). At a systemic level, it has been suggested that SWFs have the potential to promote stability in financial markets, invest in climate change mitigation and adaptation and address the global public infrastructure deficit (Bolton *et al.* 2012). That is, SWFs embody the next phase of ('quasi') fiduciary capitalism (Hawley *et al.* 2009; Clark *et al.* 2013).⁴ Given these unique characteristics, SWFs provide a valuable case for evaluating the potential for institutional investors to affect positive societal change through their participation in global financial markets and are the analytical focus of this thesis.

While SWFs represent a new type of long-term investor uninhibited by many of the obstacles that face pension funds, the context of investment decision-making has

³ Dubbed the 'super-cycle', the increasing volatility in commodities since the turn of the 21st century has been a key focus of financial and economic analysis in recent years. A recent McKinsey Global Institute report (2013) finds that since 2000, commodity prices on average have experienced volatility three times greater than that of the previous decade.

⁴ Fiduciary capitalism refers to the growing importance of institutional investors in global financial markets (Hawley and Williams 2000).

changed significantly over the past two decades. Global financial markets are more integrated and therefore more susceptible to contagion. At the same time, governments have shown their willingness to bail out the financial sector on more than one occasion. The depth of innovation in financial products and regulatory frameworks has also contributed to increasing complexity in financial markets. This complexity manifests itself in the form of systemic risk, which refers to an indeterminate relationship between cause and effect. As investors themselves grow in size, diseconomies of scale have prompted many to search for alternative investments to traditional assets (Adronov *et al.* 2011). New concepts that extend beyond conventional definitions of risk and uncertainty are desperately needed to guide decision-makers in this increasingly interdependent and complex environment (Goldin and Mariathasan 2014). At the broadest level of abstraction, this thesis is concerned with the internal governance frameworks of SWFs in an era of financial market volatility, declining investment opportunity in traditional asset classes and pervasive short-termism and moral hazard.

The conventional response in economic theory to decision problems under increased complexity and uncertainty is decentralisation. Indeed, specialisation associated with the division of labour has become the hallmark of sophisticated financial and economic systems. In addition to accessing more information and inducing the competition necessary for efficiency, it is widely held that decentralisation can lead to more accountable organisations and institutions. In the context of institutional investors, SWFs and pension funds are increasingly establishing local branch offices (Al- Kharusi *et al.* 2014). Moreover, institutional investors are issuing more management mandates across and within asset classes to benefit from more specialised knowledge (Blake *et al.*

2013).⁵ Governments too are increasingly delegating authority to tax and spend to states and municipalities (Peck 2014).

This ubiquitous decentralisation across the public and private sector presents a dilemma that has long been recognised in management studies: the trade-off between the benefits associated with increased flexibility to adapt to changes in the environment by virtue of locating decisions in an organisation closer to the facts and the costs of coordinating this action at the organisational level to achieve economies of scale and scope.⁶ In the context of investment management, decentralisation can lead to a loss of diversification and a fixation on the short-term (Sharpe 1981). Strong incentives have been proposed as the solution to the coordination challenge among financial firms, given the difficulty of observing effort and distinguishing skill from luck (Che and Yoo 2001). While high-powered incentives work well for achieving specific short-term results, they can encourage excessive risk taking in the long-term (Rajan 2006; Bénabou and Tirole 2013). In some cases there may not even be an ideal outcome which to incentivise an agent to achieve. Consider, for example, inter-generational equity mandates of many SWFs, which require balancing the interests of current and future generations with no way of knowing where on the spectrum of equality the current generation falls relative to

⁵ Of course there are other reasons for delegating, including human resource development, innovation, firm strategy, etc., but expertise is often held as the most important reason to delegate in organisational economics literature.

⁶ As Alfred Sloan (1990 [1963]: 429), former President of General Motors comments: ‘it has been a thesis of this book that good management rests on a reconciliation of centralization and decentralization, or ‘decentralization with co-ordinated control.’ He goes on to emphasise that the task of administration in organisations is an on-going one that can never be resolved. Contract theories of the firm, in contrast, assume that contracts can resolve this tension and that decentralisation can be optimized (see for example Bolton and Dewatripont 2005).

the future.⁷ Similarly, engagement with companies on environmental, social and governance performance poses a dilemma for selecting targets and allocating resources when comparing *ex ante* the return to engagement effort is not possible. In new asset classes such as infrastructure, there are no contracting standards or benchmarks to measure performance over the lifecycle of the asset.

Taken together, these challenges are framed in this thesis as problems of ambiguity; that is, indeterminacy that cannot be clarified or resolved with more or better information. It is the interpretation of information that creates uncertainty, and not the lack of information. Ambiguity is a problem that has no right answer. It is context-dependent and requires decision-makers to use their discretion to interpret goals and objectives in the first instance. Moreover, some conflicts of interest can never be resolved in favour of one clear winner. This does not sit well with finance theory, which relies on there always being a single and indeed, optimal, decision outcome. While this works well for short-term and specific results, once we shift and expand the decision-making frame to accommodate long-term investing, we are forced to confront questions of ambiguity. This is because context no longer resolves ambiguity. Context itself becomes subject to interpretation and debate.

This thesis responds to the question ‘how can sovereign wealth funds manage ambiguity in their decision-making so as to implement substantive long-term investment programmes?’ It is broadly located within the field of organisational economics, which involves ‘the use of economic logic and methods to understand the existence, nature, design and performance of organisations’ (Gibbons and Roberts 2013). The

⁷ This ambiguity is referred to as the ‘veil of ignorance’ in John Rawls’s (2001 [1971]) work on inter-generational justice.

organisational level is the site where conflict is transformed into cooperation, resources are mobilised and effort is coordinated among individuals and groups with different preferences, information and incentives (March and Simon 1958). In contrast, the limited scholarship on ambiguity focuses on its manifestation in the institutional environment (Best 2005; Mahoney and Thelen 2010) and the individual level in the context of judicial and political decision-making. SWFs involve too many actors for a two-by-two matrix to merit game theoretic analysis and too few to apply the law of large numbers. They are too heterogeneous to constitute a field (Tsani 2010). To be sure, individual human behaviour and institutions shape SWFs and this thesis engages with these levels. But embeddedness must not be confused with reductionism, and individual decision-making is distinct from organisational decision-making.

The response to the research question is guided by three objectives. The first aim of the thesis is to reconceptualise the governance challenge for SWFs seeking to implement long-term investing programmes. The governance challenge is currently framed in terms of reducing uncertainty to risk, by means of more information, and maximising the areas where the decision-makers have some control over the outcome and minimising those areas where they have no control (Bernstein 1996: 197). This thesis seeks to reframe the governance challenge as the ongoing management of ambiguity, recognising that long-term investing requires engagement with those areas where we have little or no control. The second aim of the thesis is to reconcile the acknowledgement of indeterminacy with legitimacy that depends on rational, expert decision-making. The third aim is to provide practical examples of how ambiguity is managed within the governance frameworks of SWFs, drawing on specific cases to

illustrate the delicate act of translating conflict into cooperation (Chapters III, V and VI), the mobilisation of dispersed resources (Chapter V), and the coordination of effort among actors with different information, incentives and beliefs (Chapter IV, V and VI).

Through the four substantive chapters that constitute this thesis, it is argued that if effectively managed, ambiguity can be harnessed by organisations to take advantage of long-term investment opportunities and to better understand and mitigate risks. That is, ambiguity is both the cause of poor decision-making and its solution. Ambiguity can act as a built-in adaptation mechanism necessary to hold a coalition of diverse interests together under rapidly changing external conditions and to negotiate irreconcilable conflicts. Moreover, it can be used to design new institutions to make alternative investments more accessible to long-term investors, and to identify opportunities and synergies where others only see trade-offs. To be sure, there are costs associated with managing ambiguity. For long-term investors, this thesis suggests these costs are better conceived as investments (see Clark and Urwin 2008).

The next section explains the emergence of SWFs and considers their potential as long-term investors. This is followed by an explanation of the delegated portfolio management problem in the context of increasing decentralisation among asset owners and managers themselves. Having established the governance challenge facing SWFs seeking to implement a long-term investing programme, this chapter sets out to define ambiguity and distinguish it from both uncertainty and complexity to explain its significance for the problems with which this thesis is concerned. This is followed by consideration for the thesis approach, including explanation of its theoretical perspective

and an outline of its four substantive chapters. This chapter concludes with methodology and limits of the inquiry.

THE NEW FINANCIAL ARCHITECTURE AND SWFS

At the macro level, the New Financial Architecture (NFA) frames the problems addressed in this thesis. The NFA broadly refers to an institutional framework that replaced Keynesian policies, of tight financial market regulation and restrictions on capital flows, with deregulation and more open financial market policies. While the expression was not widely used until the late 1990s, these policies began to take hold beginning in the 1970s and 1980s (Crotty 2009). The term ‘architecture’ is misleading, as it suggests the NFA reflects something coherent and deliberate. As Eichengreen (2011) points out, the NFA is riddled with conflicts, contradictions and path dependencies (see also Best 2005). The problem arises when policy makers act as if these arrangements are coherent and deliberate solutions to clearly defined problems. Indeed, the idea that transparency could substitute market-based governance for government regulation is justified on the basis of the efficient market theory. While transparency is appealing for resource constrained governments and the financial industry alike, it ultimately failed to replace regulation. At the height of the global financial crisis, institutional investors, financial advisors, consultants and regulators had more information than ever before, but little incentive to change their behaviour based on this information.

While both proponents and critics of the ideology on which the NFA is based often invoke complexity to explain the failure of transparency, complexity is too often used as a scapegoat for more systemic problems endemic in financial markets

(Christophers 2009).⁸ For example, the complexity of financial products available to investors does not explain the perverse incentives that rationalised investors' excessive risk-taking during this period. Efforts to reform the NFA post-financial crisis have been based largely on the same ideology, which assumes there is one right set of rules and norms that work in the same way across all contexts. At the same time, the efforts to implement new global standards are decentralised and fragmented across regions, posing a significant challenge for coordination.⁹

Emergence and definition of SWFs

SWFs presented a dilemma for proponents of the ideology underpinning the NFA. Their lack of transparency in goals, investment mandates and governance is incongruent with open financial markets. On the other hand, their long-term and countercyclical investments were crucial to preserving the NFA after the global financial crisis when the traditional providers of liquidity were unable or unwilling to lend. Singapore's Fund bought a \$5 billion equity stake in Merrill Lynch and \$11 billion stake in UBS. Abu Dhabi's Fund made a significant investment in Citigroup.¹⁰ The rapid growth of SWFs from \$1 trillion in 2005 to over \$6.3 trillion by 2014 has confirmed their place in global

⁸ Indeed, there are several examples of complex systems that function well and have built-in systems to mitigate failure (e.g., back-up technology, stress testing, etc). The point Christophers is making is that focusing on complexity as an explanation for its failure leads to de-spatialising and de-historicising the financial system and overlooking important institutional and structural explanations for its failure.

⁹ Gillian Tett (2007) suggests: 'Welcome to one of the most pernicious problems now haunting [financial] markets – namely the utter inadequacy of modern regulatory structures to cope with the shape of 21st-century finance.' Goldin and Mariathasan (2014: 66) for example suggest: 'a major problem with the world's response to the [global financial] crisis was an inability to effectively agree on a single program.'

¹⁰ Public sentiment was mixed at the time regarding SWF investments in the US. Aizenman and Glick were quoted in the Economist (2008) advising SWFs 'if you want to invest in the US, be boring...Try to look like everyone else.'

financial markets.¹¹ This growth is a consequence of global capital imbalances. In particular, countries with SWFs have large amounts of capital from trade surpluses or burgeoning revenues from national resource development during the commodity super-cycle. In many cases, SWFs grew out of their government's stabilisation funds as a macro-economic necessity in response to these global imbalances (Balding 2012).

The emergence and consequences of SWFs invoke a more complex narrative than the debates during the original Bretton Woods negotiations over debtor and surplus countries (see Steil 2013). In the first instance, the relationship is reversed. Core economies have become debtors and periphery economies have become creditors. As capital continues to pool in these periphery regions, some predict that new locations of financial services may emerge outside the London-New York axis (Faulconbridge 2010). Second, these new surplus peripheries invest in global financial markets through their SWFs, thereby reproducing their influence on the global economy through financial market transactions and ownership of foreign companies and assets such as infrastructure and real estate.

While the narrative explaining the emergence of new pools of wealth in periphery regions is by now well rehearsed, there is much less consensus on their definition. SWFs were first defined in 2005 through negative analogy as 'neither traditional public pension funds nor reserve assets supporting national currencies' (Rozanov). They have since been characterised in many different ways, including on the basis of their sponsor (sub-national vs. national), source of capital (commodities, surplus capital account), objective functions (economic development, inter-generational equity) and liability profiles (future

¹¹ SWF Institute 2014. In a review of literature on SWFs, Megginson and Fotak (2014) find SWFs invest largely in western financial markets. Since 2008, they find at least 25 countries have established a new SWF.

generations, pensions, private dividends, etc.). Sovereign wealth funds themselves have sought to define what it means to be a SWF. The Santiago Principles (2008) define SWFs as ‘special purpose investment funds or arrangements owned by the general government. Created by the general government for macroeconomic purposes, SWFs hold, manage or administer assets to achieve financial objectives and employ a set of investment strategies which include investing in foreign financial assets.’ As Anna Gelpern (2011: 294) points out, reading between the lines of this definition invokes contradictions – ‘public money, pledged to act private, vast pools of capital that promised not to move markets, non-controlling investors that managed centrally controlled economies, and public fiduciaries that balked at corporate governance of their investment targets.’

This thesis acknowledges existing debates over the definition of SWFs but avoids engaging in them, opting instead to focus on funds (including social security reserve funds and pension reserve funds) that share common features of 1) government ownership or control, with no liabilities *outside* government and beneficiaries as citizenry in the abstract and; 2) invested in global financial markets to earn a rate of return above the national rate of growth. This is the definition given by Monk (2009), and is increasingly used among academics and the policy community. It gives scope for capturing a heterogeneous group of institutions, while remaining rigid enough to provide a basis for clearly distinguishing from non-SWFs. For example, pension funds do not fit this definition as they have liabilities outside of government. Similarly, stabilisation funds are generally not invested in global capital markets. The thesis includes sub-national funds in its definition of SWFs. Sub-national funds share similar challenges as national sponsored funds and ultimately derive their authority from the sovereign

(federal) level of government.

Interests of SWFs

Two different debates have emerged about the interests that motivate the investment behaviour of SWFs. The first casts SWFs as either a threat or a salvation, depending on whether SWFs are motivated by political or financial interests (Truman 2009; 2010). On the threat side, these government-owned or -sponsored funds are believed to represent the strategic interests of the political elite. As such, they require discipline by limiting ownership rights to mute their influence in global financial markets (Gilson and Milhaupt 2007). Those that see SWFs as ‘salvation’ draw on evidence to suggest that SWFs invest like other private institutional investors such as mutual funds (Avendaño and Santiso 2009). Through investing in global financial markets, it is believed that SWFs will restore global imbalances and promote long-term stable and open markets. On both sides of the debate, emphasis is placed on transparency of investment decision-making to earn legitimacy to participate in western financial markets.

The second strand of literature is much less a debate than a heterodox collection of perspectives that provide a more nuanced understanding of the interests of SWFs. This literature constitutes a deeper commentary on diversity in global financial markets and the expression of sovereign power through new spatial scales (see Agnew 2009). SWFs engage with new spatial forms arising from increasingly integrated global financial markets, but also resist them (Dixon and Monk 2012). For example, in a series of case studies, Clark *et al.* (2013) demonstrate the role SWFs play in buffering the state from volatility in global financial markets. Some SWFs are motivated by a desire to express

national ethics in global financial markets alongside long-term wealth management (Backer 2009; Clark and Monk 2010). SWFs may also be motivated by domestic objectives such as economic development (Bernstein *et al.* 2013; Gelb *et al.* 2014). In these ways, SWF investment decision-making cannot be understood in terms of the dualism between the strategic and coherent interest of political elite *or* the maximisation of financial returns. SWFs themselves are a coalition of interests that are negotiated among a diverse group of actors (Pekkanen and Tsai 2011) and across different spatial scales, with no clear hierarchy for ordering their diverse accountabilities (Gelpern 2011).

SWFs as Long-term Investors?

Understanding the consequences of SWF investment decision-making on global financial markets depends on the debate in which they are located. If the choice is threat or salvation, SWFs can only ever reinforce existing relationships consistent with norms and conventions that shape the behaviour of other institutional investors. Only those extra-financial considerations that can be isolated from their context and condensed into corporate quarterly reports will be integrated into investment decision-making and ownership strategies. Long-term and complex issues such as climate change will continue to be left out of the investment decision-making process since they risk politicising the funds and undermining their legitimacy to participate in western financial markets. The belief entrenched in the NFA that positive short-term results add up to long-term wealth preservation will continue to focus investors' attention on questions of diversification on the basis of Modern Portfolio Theory.

If the interests of SWFs are located in the heterodox approaches, then SWFs can take on a more substantive role in global financial markets that has the potential to change the way capital is allocated. That is, SWFs can live up to the expectations that many have set out for them, such as engaging in long-term, countercyclical investment strategies, financing climate change adaptation and the growing public infrastructure deficit, and participating in dialogue with corporations to change their behaviour to enhance long-term financial returns (see for example, Hawley *et al.* 2009; Bolton *et al.* 2012; Richardson 2013). Integrating consideration for climate change no longer needs to be understood as the politicisation of SWF investment decision-making and instead can be understood as part of a fund's long-term investment strategy. This thesis conceptualises long-term investing as an idea or perspective that shapes the interests of the fund. While long-term investing is often associated with the act of investing in illiquid assets, it is important to emphasise the intention of the investor to take a long-term position. Moreover, long-term investing requires the investor actually to deliver on its commitment,¹² which requires shielding the fund from public and political pressure to focus on short-term asset prices, as well as sophistication, to execute its long-term investment strategy (Clark and Monk 2011).

This thesis is located in this second strand of literature that perceives the interests of sovereign funds as negotiated among a competing and diverse group of principals and agents, including asset owners, political sponsors, asset managers and their advisors. Locating in this literature requires engagement with a puzzle: how can SWFs work away from the rules, norms, and social conventions entrenched in the NFA when they depend on relationships embedded in these same institutions to establish and maintain

¹² This point is highlighted in the World Economic Forum's (2011) report on long-term investing.

legitimacy? Answering this question requires a closer look at the relationships between the various principals and agents that constitute these funds, which is explored below in the context of the delegated portfolio management problem.

DELEGATED PORTFOLIO MANAGEMENT

Sponsors of SWFs delegate authority to their investment managers for decisions related to day-to-day management of their assets. In some instances, these investment managers are professional organisations that operate at arm's length from the government. Performance benchmarks are aligned with the private sector and these firms may also manage other public sector funds. This is generally the model used by Canadian public funds. Other SWFs delegate management to central banks or the ministry of finance, raising challenges related to political interference and 'bureaucratic encroachment' (Clark and Monk 2011). Traditionally, sponsors chose the strategic asset allocation and the investment manager had limited scope of authority over investment decisions, often requiring them to seek approval from the board. But, as global financial markets become increasingly complex, some sponsors are beginning to grant more discretion to investment managers to allow them to keep pace with financial markets without having to defer to the board. For example, New Zealand grants authority to the investment manager of the Superannuation Fund to set asset allocation, which has allowed the Fund to reframe strategic investment on the basis of diversification of risks as opposed to asset allocation. In contrast, the Norwegian Ministry of Finance maintains significant control over the SWF's asset allocation decisions and imposes a strict tracking error.

While granting greater discretion to investment managers has brought about more sophisticated investment strategies, there are also challenges with delegating authority to investment managers when they are compensated commensurately with the private sector on the basis of performance pay. These challenges have long been recognised as the delegated portfolio management problem. Portfolio management requires the agent (asset manager) to acquire relevant information and exert an unobservable level of effort. The agent has the ability to decide their level of effort and their scale in responding to information signals, within some bounds, such that they are choosing both the risk (variance of returns) and their effort level (return). In a typical agency problem, the agent controls only one of these, that is, either the return or the variance (Bhattacharya and Pfleiderer 1985). Given these unique challenges, performance evaluation of managers is benchmarked against indices or relative to the performance of other investors. This provides a strong incentive to focus on short-term returns and promotes excessive risk taking (Admati and Pfleiderer 1997; Langley 2004; Rajan 2006).¹³

Compounding the delegated portfolio management problem is the increasing trend of decentralisation among asset managers and asset owners. Decentralisation can be understood as a consequence of the NFA. In particular, the emphasis on transparency as a mechanism for accountability and legitimacy in both public and private finance increases the importance of specialised, local information and knowledge necessary to adapt to new realities. On the one hand, decentralisation can enhance an organisation's ability to adapt to changes and unforeseen events in the environment and respond quickly. But, conversely, localised decision-making introduces cognitive biases in the form of myopia,

¹³ Delegation also has implications for asset prices, which are generally under-researched (see Cornell and Roll 2005).

making it more difficult to coordinate decisions within organisations and across multiple organisations (see Clark 2011a). This trade-off between enhanced accountability and efficiency associated with decentralisation and the problems it creates for coordinated action at the global level and across longer time horizons has unique implications for asset owners and asset managers to be explored in this thesis.

Decentralisation of asset owners

Since the 1980s there has been a strong trend toward fiscal decentralisation across governments in the developed and developing world. Local politicians are better able to match heterogeneous preferences of citizens to policies thereby making them more accountable (Tiebout 1956; Oates 1972). Furthermore, fiscal decentralisation is widely believed to introduce efficiency into the provision of public goods and services, as competition between jurisdictions within a federation is believed to mitigate rent-seeking (Buchanan and Brennan 1980; Qian and Weingast 1997) and encourage innovation (Donahue 1997).

But local politicians are often biased toward short-term and local interests that can undermine the interests of future generations and global contemporaries (Prud'homme 1995; Enrich 1996; Bardhan and Mookherjee 2000; Ahmad and Brosio 2006; Rodriguez Pose and Ezcurra 2010). In the context of austerity in the US, decentralisation has been described as a top-down process that seeks to shift the blame and responsibility onto local governments (Peck 2014). Moreover, local governments are encouraged to engage in fiscal entrepreneurship to compete with other regions to attract business investment (*ibid* 2014). Competition between states can lead to a race to the bottom (Enrich 1996).

While sub-national SWFs are themselves a product of decentralised fiscal systems, the literature is largely silent on these funds. Of the 74 SWFs listed in the SWF Institute website as of 2014, 10 are sub-national funds (16 including United Arab Emirates funds), sponsored by a state, province, or region (see appendix A). Moreover, four Canadian provinces/territories have recently announced their intention to establish a new fund to manage resource wealth. This thesis draws attention to these funds and the unique incentive challenges they face relative to nationally sponsored funds. In particular, Chapter III elucidates the ideas that shape interests of political agents responsible for managing the Alberta Heritage Fund and demonstrates its value as a cautionary tale for other sub-national governments.

Decentralisation of asset managers

Analogous to recent trends among large corporations to adopt flattened hierarchies (Bloom *et al.* 2012), institutional investment management firms are adopting more horizontal and decentralised organisational structures to address the new complexities associated with their increasing geographic scope and size, relative to capital markets. Witness the increase in specialised investment mandates both within and across asset classes (Blake *et al.* 2013). Pension sponsors, in particular, have shifted from using a single balanced manager to several specialised managers. Diseconomies of scale in traditional asset classes have prompted many large funds to search for alternative investments (Andonov *et al.* 2011). Competition between specialised managers is believed to enhance overall returns for the pension sponsor. Moreover, pension and sovereign wealth funds are increasingly establishing branch offices to get closer to local

information (Al-Kharusi *et al.* 2014). This raises new problems addressed elsewhere in literature on the firm, related to the dispersal of specialised information (Jensen and Meckling 1992), creating a trade-off between better (local) information and bias in subordinate agents' decision making associated with decentralisation, and the loss of information in the case of centralisation (Crawford and Sobel 1982; Dessein 2002).

AMBIGUITY, UNCERTAINTY AND COMPLEXITY

Taken together, these themes (the New Financial Architecture, delegated portfolio management and decentralisation) shape the challenges facing institutional investors implementing a long-term investing strategy explored in this thesis. The institutional framework in which institutional investors participate emphasises a certain type of transparency that encourages a focus on short-term and measurable results (see Dixon and Monk 2013). Delegation to portfolio managers of tasks that cannot easily be observed requires strong incentives based on short-term results. Asset owners and their managers are becoming more decentralised and specialised to deal with increasing complexity in their external environment, posing significant challenges to reconciling context-specific information with global imperatives and long-term horizons.

Put another way, the problem of long-term investing extends well beyond the lack of good quality information. Institutional investors have more information than ever before. Third parties and investors themselves are investing a great deal of effort to collecting information once believed to be 'extra-financial', such as corporate water risks, carbon emissions and respect for labour rights. Private exchange platforms have introduced new requirements for integrated reporting to help standardise this information.

These are all promising developments in the shift to long-term investing. But this thesis is concerned with the fact that much less attention is dedicated to understanding how decision-makers can make sense of this new information and translate it into useful knowledge. Plugging new information into existing models that are designed to output specific and unambiguous right answers is like putting premium gasoline in a diesel engine. Without changing beliefs, incentives, reporting and communication structures and evaluation systems, more information can only ever be a symbolic action to justify decisions after the fact (see Feldman and March 1988) and not part of an enlightened form of decision-making that takes seriously the broader and longer-term context of decisions.

For example, disclosure is often an important first step in engagement with firms on their environmental, social and governance performance (Hebb 2006). But this information is not enough upon which to base a decision about which companies to target within a limited set of resources. A mandate to manage wealth for current and future generations says nothing of the appropriate discount rate. Decision-making frameworks that rely on conventional risk require exact inputs. It is necessary to cut out information that does not fit these models. There is no room for conceptual discussions such as what it means to maximise risk-adjusted financial returns, manage the assets in the best interest of beneficiaries or manage wealth for current and future generations. The answer to all of these questions is that it depends. What is the organisation trying to achieve and for whom? What time horizon and benchmark is relevant for evaluating risk-adjusted returns? Indeed, what constitutes a risk in the first instance?

These questions have no right answers. They are problems of interpretation and not problems of missing information. The world of finance says that these questions are not relevant and, as such, they should not even be asked in the first place (Fraser-Sampson 2014). Rational choice relies on isolating the parts of these problems that can be solved and discarding the rest. Finance has a very specific definition of risk that allows for it to be measured against clearly defined scenarios and time horizons. In law, interpretations are based on unambiguous principles, conventions or norms and precedents in common law regimes. In organisations, authority and incentives are assumed to absorb residual interests and ensure that employees all adopt the same goal. But interests are shaped by ideas and as such there is no direct path from interests to outcomes (Rodrik 2014). Norms and principles are themselves not independent from interests and ideas. Conflicts are often not resolved in favour of one unambiguous winner. This thesis refers to these collectively as problems of ambiguity. Ambiguity is indeterminacy that results from interpretation and irreconcilable conflict when all information that could be known is revealed.

But ambiguity is not only a problem. It is also part of the way forward for overcoming poor decision-making. It provides the space for decision-makers to take more into consideration than what can be codified and communicated in formal reports. It allows for negotiation among conflicting interests and flexibility to adapt to a complex and rapidly changing environment. These constructive properties are overlooked in the literature and in practice, largely because ambiguity is often conflated with uncertainty or complexity and therefore perceived as something to be reduced or eliminated over time.

This thesis contends that once ambiguity is understood as distinct from these other concepts, it can no longer be reduced or eliminated; it can only be managed.¹⁴

Ambiguity and uncertainty

Ambiguity is often defined in finance and economics literature as second order uncertainty, where probabilities are unknown. This distinction is often attributed to Frank Knight (1921) and has been adopted in the literature on ambiguity aversion (see for example, Camerer and Weber 1992; Epstein and Wang 1994; Epstein and Schneider 2010). The idea is that missing probabilities require agents to update beliefs when more information becomes available. But it poses a distinct problem since individuals hold multiple priors (rough approximations of beliefs) under ambiguity (Gilboa and Schleimder 1989). Ambiguity is understood as a short-term phenomenon. In the long-term, decision makers are assumed to change their beliefs to reconcile them with new information as it becomes available (Al-Najjar and Weinstein 2009). That is, the problem of ambiguity is resolved in the long-term with more information. Interpretation is not a problem.

The definition of ambiguity used in this thesis is closer to Keynesian uncertainty. In particular, Keynes was concerned not only with missing probabilities (degrees of belief and vague probabilities) but also with the possibility that some things we cannot ever know. That is, in contrast to Knight who implicitly assumed there was a right answer out there to be discovered, Keynes recognised a much deeper source of uncertainty arising

¹⁴ To illustrate the relative frequency of use of terms risk, uncertainty, ambiguity and complexity in finance, a search on the Financial Times website (www.ft.com) on 5 November 2014 (articles only) yielded 128,016 hits for 'risk' 1,554 (1,782) hits for ambiguity (ambiguous), 13,590 (30,965) hits for uncertain (uncertainty) and 9,155 (39,736) hits for complexity (complex).

from the social and interpretive nature of information itself, which gives rise to a permanent source of indeterminacy. The distinctions between Knight and Keynes' versions of uncertainty are distilled in more detail in Chapter II.

The idea of permanent indeterminacy is unsettling to proponents of rational choice theories across the social sciences. Rational choice theories are based on three axioms. Interests are transitive and can be ordered (complete and independent). Beliefs can substitute for missing probabilities. Constraints on choice are exogenously given. In the rational choice paradigm, ambiguity is denied or assumed to be reducible to risk and uncertainty that can be reduced to risk as more information becomes available (Best 2008). More information always leads to better decisions. But the direct translation of information into knowledge is an incomplete account of what investment professionals, trustees and service providers actually do. Ideas, norms, conflicts and interpretations matter in addition to technical accounts of the state of affairs (Best 2005). Moreover, seeking to deny or reduce ambiguity can contribute to perverse outcomes. For example, conventions such as the belief in the safety of asset-backed securities used by investors to promote stability and reduce uncertainty ultimately undermined longer-term economic stability (Crotty 1994). Similarly, denying indeterminacy in law by assuming that agents unambiguously appeal to underlying norms and principles ignores the ambiguity that manifests in the form of irreducible conflict between preferences and can promote significant distortions in legal and political systems.

This thesis does not share the view of the most ardent critics of rational choice theories. The contributions of rational choice on the whole add more value than they subtract. This thesis aims to contribute to an inter-disciplinary understanding of the

psychological and interpretative forces that work both in tangent and against prevailing economic models that inform the design and implementation of long-term investment programmes and their governance. Acknowledging the permanence of ambiguity does not require abandoning the assumption of rational agents. But it does require relinquishing the idea that there is one right solution for every problem.

Ambiguity and complexity

At this point, it is possible to mistake this thesis' concern with ambiguity for a concern with complexity. Indeed, ambiguity shares some properties with complexity; most importantly, non-linearity, endogeneity and irreducibility (see Page 2008). But ambiguity is different from complexity as it is applied to economic decisions in at least four important ways that make the problems and opportunities raised by ambiguity distinct from those of complexity. These four differences relate both to the causes and consequences of ambiguity and are elaborated on below.

Mechanism vs. state: Ambiguity is not strictly self-evolving, unlike complexity. There are several examples of using ambiguity intentionally to achieve a strategic objective. For example, to transcend the time inconsistency problem in monetary policy, politicians often delegate significant discretion to independent agents (central banks) (see Barro and Gordon 1983). Central banks use ambiguity in announcements to avoid self-fulfilling outcomes. While ambiguity reflects a decision state like complexity, it is also a mechanism for coping with complexity.

Relational proximity vs. spatial proximity: Complexity explains innovation and economic growth as a process whereby components close by are more likely to interact,

such that there is distance decay (Martin and Sunley 2007). Ambiguity, in contrast, does not depend on spatial proximity. Ambiguity can be used to explain economic growth and innovation as a process of combining information and knowledge from distant sources with local knowledge to produce new knowledge (Bathelt and Glückler 2011).

Reflexive vs. local thinking: Complexity economics assumes that micro-level processes in aggregate produce macro-level processes, such that institutions *self-emerge* (Martin and Sunley 2007). Agents are local thinkers: complexity economics often draws on the analogy of birds in flight, where birds can produce complex flight patterns by focusing only on not running into the bird next to them. Ambiguity in contrast, invokes a dyadic relationship between micro- and macro-level processes. Interaction of micro-level actors shapes the macro-level. That said, the interaction patterns of micro-level actors are shaped by their (self-) reflexive interaction with institutions such that agents seek to exploit structures as part of their own competitive strategy (see Tracey and Clark 2003). This does not preclude agents from myopic thinking, but does require a more nuanced understanding of agent behaviour that is context-specific (see Yeung 2005).

Institutional stability vs. resilience: Unlike complexity, which is a source of constant novelty that ‘imbues the economy with its evolutionary momentum’ (Martin and Sunley 2007), ambiguity can also be a source of stability. Ambiguity creates space for conflicting individuals and groups to hold heterogeneous beliefs and expectations about outcomes. This is different to the concept of resilience, which is often applied to complex adaptive systems. Resilience implies regeneration of existing institutions after major disturbances. Ambiguity provides stability that paradoxically allows for new institutions to emerge. For example, Mahoney and Thelen (2010) suggest that ambiguity provides

the space for interpreting existing rules in new ways and thereby providing an (endogenous) impetus for institutional change.

THESIS APPROACH, THEORY AND CHAPTER CONTENTS

Approach

This thesis is comprised of four research papers. Although each contributes in its own right to the literature, together they form a complementary response to the research question of how SWFs manage the ambiguity inherent in a long-term investment programme. Investigating the research topic through four chapters allows the scope necessary to demonstrate the pervasiveness of ambiguity in different relationships across the asset management process, making its relevance all the more striking. While depth from drilling down into a specific relationship - such as that between the political sponsor and an independent investment management firm, or a specific long-term investing strategy such as active ownership - is sacrificed, depth is gained by understanding the conflicts and complementarities between different stages of the investment process and relationships that collectively make up the organisation. The thesis can be divided into two interdependent strands of inquiry.

First, the four substantive chapters work across different stages of the investment process. The thesis begins with the process of defining liabilities and setting the investment policy, finding that liability management is intricately linked to asset management (Chapter III). It then shifts to consider shareholder engagement with portfolio companies, a strategy that seeks to induce change in corporate environmental,

social and governance performance through exercising ownership rights and engaging in private dialogue to preserve long-term value and enhance financial returns (Chapter IV and Chapter V). The final substantive chapter considers investment in a new asset class that draws together insights on the various stages of the investment management process from the previous three chapters to consider how SWFs interact with each other and the asset management industry and can contribute to changing their institutional context (Chapter VI).

The second way to engage with this thesis is to trace the agency relationships along the nexus of individuals and groups that constitute a sovereign wealth fund. The thesis begins at the most fundamental relationship, which is the delegation of authority from citizens to politicians to manage public wealth for current and future generations (Chapter III). Chapter IV treats politicians as benevolent and considers their relationship with investment managers who are delegated authority for implementing an ethical investment policy. The thesis then opens up the ‘black box’ of the investment management institution in Chapter V to explore inter-agency relationships and consider how a corporate engagement strategy can be implemented more efficiently by inducing complementarities between tasks and functions. The final substantive chapter (Chapter VI) focuses on cooperation and collaboration among diverse actors to overcome a collective action problem.

Breaking the SWF down into a nexus of contracts to isolate specific relationships relies on some strong assumptions (e.g., alignment of interests among bureaucrats and politicians in Chapter III, benevolent political actors in Chapter IV). Throughout the thesis, assumptions are made clear and justified against the analytical clarity that is

gained from isolating particular agency relationships. Suggestions for future research are provided in each chapter and elaborated on in the conclusion of this thesis.

Theoretical perspective

This thesis draws on a number of perspectives from organisational economics to interrogate questions such as where decisions are made in an organisation, how power is achieved and exercised, how performance is measured, and how agents are incentivised and monitored. Contractual theories of the firm provide useful starting points to address these questions. In particular, the convention of the principal-agent relationship avoids the need for constructing an account of relationships from scratch. Similarly, transaction cost economics, following the tradition of Ronald Coase (1937), provides a parsimonious framework for distinguishing activities that are coordinated in the market from those that are internal. While contractual theories are useful starting points, the thesis is a philosophical inquiry into the role that ambiguity plays in organisational decision-making. As such, it is necessary to move beyond contractual theories, including incomplete and relational contracting, to interrogate the issues that are of interest here. For example, in some cases, parties may not even know the underlying promise of a relational contract *ex ante* (Gibbons and Henderson 2013). Contractual theories do a poor job of accounting for the many hands and many eyes that constitute agents and principals, respectively and for the conflicts that arise between them (Bovens 2005). Moreover, these frameworks neglect non-contractual relationships such as trust and they fail to account for processes such as organisational learning and knowledge that arise from informal and non-scripted interactions (Hodgson 1998).

Given these limitations, this thesis also draws on competency theories of the firm to account for processes such as learning, routine, legitimacy and adaptation. Competency theories of the firm draw attention to the dynamic relationships inside the firm. Interpretation and human judgment play a much larger role than most economic theories allow. But the roles and structures of organisations and institutional arrangements are still important. That is, we cannot ignore the fact that many relationships are scripted and hierarchy and roles have a bearing on social and economic interactions. As such, this thesis seeks a synthesis between contract theories and competency theories of the firm, extended to explain institutional investors.¹⁵

To achieve this synthesis, the thesis places contractual theories in a relational view of the economy. A relational view draws on several disciplines, including economic geography and sociology, to elucidate how social relationships contribute to shaping economic outcomes. Emphasis is placed on institutions and networks.¹⁶ More specifically, the relational view is concerned with the social and spatial division and integration of labour (organisation); the impact of historical structures and processes on the present (evolution); the processes involved in producing and disseminating knowledge (innovation); and the interactions between economic agents and the formal

¹⁵ One possible framework is the synthesis advanced in the dynamic capabilities literature. Dynamic capabilities are ‘higher-level competences that determine the firm’s ability to integrate, build, and reconfigure internal and external resources/competences to address, and possibly shape, rapidly changing business environments’ (Teece 2000). The dynamic capabilities approach lacks consideration for the micro-level processes that explain how competencies such as knowledge are procured or produced in the first instance. Given the concern with ambiguity in this thesis and in particular the context specificity of decisions, dynamic capabilities do not inform the analysis and I seek an alternative synthesis to frame the research.

¹⁶ Institutions are ‘correlated and relatively stable social interactions between economic agents that develop upon rules and regulations in rather contingent ways’ (see Bathelt and Glückler 2014: 356). This understanding of institutions is carried throughout this thesis. Note that it differs from conventional definitions of institutions in economics that are often framed as only constraining action (e.g., North 1990) or that institutions are one in the same as rules or routines, for example.

and informal institutions that both enable and constrain them (interaction) (Bathelt & Glückler, 2003, 2011). While the relational view is not a theory in its own right (see, for example, Yeung 2005; Sunley 2008), it provides a flexible and productive starting framework for exploring the causes and consequences of ambiguity in the context of SWFs. All chapters are concerned with the organisational level and, in particular, the division and integration of labour. In the section below, I elaborate on the ways in which the other three aspects of the relational view (evolution, interaction and innovation) are useful in the context of the four substantive chapters of this thesis.

CHAPTER CONTENTS

Chapter III sets the scene for the thesis by exploring the fundamental relationship between citizens and their governments, which manage natural resource wealth on their behalf. It focuses on an inter-generational equity mandate of a sub-national SWF. The main argument underpinning this chapter is that decentralised fiscal systems create incentives for sub-national political agents to dip into or borrow against their SWF rather than save for future generations and that ambiguity in the form of self-reflexivity can be used to transcend this tension. In particular, the chapter suggests self-reflexive political agents can reconcile their own interests with the interests of current and future generations by adopting a long-term investing policy. While the chapter might seem out of place in a thesis that is concerned with how SWFs can extend and expand their investment decision-making frames, beginning with an exposition of SWF liabilities and their proneness to political interference is fundamental to an integrated asset-liability management framework.

Ambiguity manifests in the form of an irreconcilable conflict between the short-term interests of political agents, who are motivated by short-term election cycles and rewards, and the long-term interests of current and future generations. Inter-generational equity is an ambiguous goal because there is no way of knowing where on a spectrum of equality the current generation falls relative to future generations. This ambiguous mandate provides the space for political agents to pursue their own self-interest since there is no way of measuring their performance on this ambiguous task. Elsewhere, it is suggested that short-term temptations can be internalised by appealing to the *principle* of inter-generational equity (Clark and Knight 2011). In the case of the Australian Future Fund, trustees are understood as guardians for the future. Implicit in this argument is the idea that political and private interests underlying interpretations of the inter-generational equity principle can be internalised in the social contract.

While this is a compelling solution for dampening the short-term temptations that conflict with inter-generational equity among national SWFs, it is less applicable for sub-national SWFs. In particular, sub-national SWFs lack the ability to absorb the potential conflict inherent in the principle of inter-generational equity because they do not have a social contract, understood as a reciprocal relationship that cannot be broken into its parts, based on the tradition set by Rousseau (1762) that has come to underpin modern democratic systems. Fiscal decentralisation is often extolled for its contribution to enhanced political accountability and economic efficiency. Less attention is given to the relationship between decentralisation and effective governance of natural resource wealth. The chapter finds that the decentralisation of authority over the management of natural resource wealth amplifies short-term and local interests at the expense of future

generations and global imperatives. Interests themselves are shaped by ideas that are formed by an agent's relational structure. Ideas of autonomy from national government, regional equality and competition with other sub-national governments to attract business investment shape the incentives to spend rather than save in the context of a decentralised fiscal system.

These arguments are demonstrated through a case study of the Alberta Heritage Fund, a provincial sponsored fund in Canada that was established in 1976. The AHF is often criticised for squandering royalties from development of the Canadian province's oil sands on budget deficits and for subsidising personal and corporate taxes. The case study draws on interviews with representatives of the Fund's professional investment manager, senior level bureaucrats within the Alberta Finance Division and politicians involved in the decision-making of the fund. Interviews are complemented with an extensive review of documents, including annual reports, financial statements, transcripts from standing committee meetings and third party reports. The AHF serves as a cautionary tale for other sub-national funds. More broadly, the theoretical framework should stimulate further investigation into the increasing trend among US state politicians to borrow against their state-sponsored public pension funds to gain access to private capital for financing public infrastructure and, in some cases, misrepresent the funding levels of local pension funds to maintain strong credit ratings.

Chapter IV moves along the investment management process to focus on the relationship between the political sponsor (principal) that establishes the investment policies for the fund and the investment manager (agent) that implements the policy. The chapter begins by noting that investment policies are often negotiated among several

conflicting interests and cannot be clearly formulated to reflect a single unambiguous goal. The chapter asks what does it mean to delegate authority for implementing an ambiguous policy? It argues that agents exercise discretion as a form of interpretation in instances where guidelines and policies are ambiguous, that is, where there is no ideal outcome – and, in doing so, adapt a policy to reflect changes in the external environment.

By drawing attention to the idea that their investment policies themselves are the consequence of negotiation among various domestic interests, the chapter challenges the view held by many that SWFs reflect the coherent and strategic interests of the political elite. These issues are explored in the context of the Norwegian Government Pension Fund-Global's ethical investment policy. Legitimacy in the Fund's domestic context requires agents to represent decisions as rational based on expertise. In the absence of any way to directly measure the outcomes of ambiguous goals, procedural legitimacy becomes particularly important to justify decision-making under discretion. Procedural legitimacy requires resources and a high degree of transparency. Paradoxically, the discretion to adapt to increasing complexity in the external environment creates increasing complexity in the internal (administrative) environment (Baier *et al.* 1986). The resources required to maintain legitimacy under ambiguity hollow out the capacity of the organisation such that the policy becomes deeply entrenched but at the same time increasingly difficult to implement.

Recognising the perverse consequences of ambiguity as an adaptation mechanism, the chapter considers alternative ways to reconcile legitimacy with discretion granted to agents for a policy that is untethered to any ideal outcome. The chapter suggests that ambiguity in the form of discretion can be used to reconcile the ethical investment policy

with the Fund's long-term investing mandate. In particular, it suggests that organisational evaluation, and communication systems that allow for subjective forms of measurement and reporting allow for such evolution. The chapter has implications for ensuring that responsible and ethical investment policies remain meaningful in the context of an increasingly complex external environment. The chapter concludes noting that discretion as interpretive has limits and that at some point structural change is required.

Chapter V opens the investment management 'black box' to explore the ambiguity that arises in the coordination of a fund's corporate engagement programme. The chapter argues that ambiguity can be managed by introducing new incentive structures that induce complementarity between the engagement task and the traditional investment task. The chapter focuses on an inter-agency problem within a large and decentralised investment management organisation that delegates engagement tasks to portfolio managers and a specialised engagement unit. Ambiguity manifests as an irreconcilable conflict between the incentives necessary to induce agents to compete on a specialised task (investment) and incentives necessary to induce agents to cooperate on the (new) engagement task.

The chapter begins with assuming home bias in the selection of companies targeted for engagement by an investment management institution (Bauer *et al.* 2013). Home bias is explained in reference to the resource intensity of establishing strong relational ties (private dialogue) with target firms in distant markets necessary for successful engagement outcomes. To transcend home bias in engagement, the chapter shows how inducing cooperation between an engagement unit and internal specialised portfolio managers can lead to more effective engagement outcomes due to synergies

from sharing resources (relationships with targeted engagement firms) and combining resources (information) to create new resources (knowledge) necessary for effective private engagements. But cooperation between portfolio managers and engagement teams raises new problems. In particular, it creates a multi-task incentive problem in teams. The principal must weaken individual incentives for specialised tasks to prevent portfolio managers from shirking on the less measurable engagement task (see Dessein *et al.* 2010). But weakened incentives under conditions of uncertainty and complexity can cause the agent to exert less effort and undermine performance (Prendergast 1999). Through a modeling dialogue (Myerson 1992), the chapter shows how this irreconcilable conflict can be transcended by inducing complementarity between the cost of effort for the engagement tasks and the specialised investment task.

The chapter was conceived against the backdrop of increasing recognition of the importance of private dialogue and relationship building with target firms for effective engagement outcomes. The literature is silent on how investment managers coordinate their engagements. Implications are drawn for large active managers that coordinate the bulk of engagement activities internally. As institutional investors continue to increase investment in international capital markets to benefit from information asymmetries (Dyck *et al.* 2013), home bias in engagement will become increasingly problematic for ensuring long-term financial returns that take into account the risks not just of local firms but the portfolio as a whole. While collaboration between investors to achieve engagement in distant markets is one possible solution, there remain several obstacles to effective collaboration between investors due in part to legal impediments but also to the practical challenges of coordination (see MacNeil 2010). The most significant

contribution of this chapter is to reconceptualise the role of portfolio managers in the investment management firm and call into question the widely accepted belief that agents must be provided strong incentives to perform tasks that create value for the investment organisation.

Chapter VI shifts to consider the relationships between institutional investors to understand how new institutional arrangements are created to support an efficient market for public infrastructure assets. The chapter argues that the market for unlisted equity in infrastructure must be invented before institutional investors such as pension funds and sovereign wealth funds can participate in it, challenging the conventional view that market forces (e.g. supply and demand) shape institutional arrangements in an evolutionary fashion. Ambiguity inherent in the infrastructure asset prevents it from becoming a transparent asset class. But, at the same time, ambiguity provides the space for inventing the market as it allows diverse actors to come together and discover their shared preferences necessary for collective action. Indeed, matching the growing deficit in public infrastructure with private long-term capital held by pension and sovereign wealth funds ranks high on policy agendas around the world.

By focusing on the micro-level patterns that give rise to new institutional arrangements, the chapter engages with a puzzle: in the absence of resources such as social capital (legitimacy) and knowledge, how can organisations that depend on their environment change their internal processes (Pfeffer and Salancik 1978)? Most research on innovation begins with an exogenous event, thereby side-stepping this puzzle. At the institutional level, a top-down change in rules or norms explains why organisations and individuals adopt new practices. At the individual level, new information is used to

update beliefs. In aggregate, micro-level changes provide the evolutionary momentum to induce change at the institutional level in a Schumpeterian fashion. Innovation is reduced to independent problem solving. In contrast, a relational view has it that innovation cannot be understood as a result of internal organisational processes alone, because their resources (e.g., knowledge, social capital, power) can be neither produced nor used in isolation of their institutional context. In this way, ‘innovations must be viewed as a result of social relations and knowledge circulation between firms rather than simply a product of individual endeavors’ (Bathelt and Glückler 2011: 89).

The chapter draws together three theoretical building blocks to explain the formation of new markets, using as an illustrative case the West Coast Infrastructure Exchange (WCX), a regional initiative in the US to attract private investors to public infrastructure. First, it explains how market structure and an institutional investor’s vertical integration decision co-evolve. Second, it explains why it is possible for a new market in a periphery region to emerge in the financial industry that is characterised by a high degree of centralisation and power asymmetries that favour incumbent institutional arrangements. Third, the chapter provides a look at the internal dynamics of the exchange platform to demonstrate the importance of social relations for the exchange, emphasising the point that the market is much more than a price mechanism (Berndt and Boetlecker 2009).

The chapter concludes by making suggestions for governance of the WCX and the opportunities that such initiatives present for asset owners to re-engage with the financial industry on more favorable terms. The analysis of the WCX also suggests one way that the challenges raised in Chapter III related to fiscal decentralisation and the perverse race

to the bottom that is induced in competition between states can be addressed. That is, the WCX demonstrates how cooperation between states can be used to attract business investment, rather than competition between states in the context of fiscal federalism. The chapter is less concerned with the geopolitical consequences of SWF investment in public infrastructure. In the event that opportunities for generating long-term financial returns from traditional assets and from western financial markets decline, Clark and Monk (2012) have suggested that SWFs may seek to ‘make their own way in the world’. The WCX is one such example how these funds can contribute to the creation of new institutions to transcend collective action problems and access new assets and circumvent the asset management industry.

METHODOLOGY

The choice of empirical research methods is motivated by the objectives of this thesis. Given the primary goal of understanding how economic and social relationships are interpreted, experienced and (re-) produced by those involved in the nexus of relationships that constitute sovereign sponsored funds, empirical research was conducted using qualitative methods of analysis. Qualitative methods allow the flexibility necessary to investigate the ambiguity that manifests in the absence of clear and distinguishable boundaries on time and space. It is the path dependency and structure of these economic and social relations (e.g., democracy, fiscal federalism, contracts) that allows them to be drawn into the analysis (Bathelt and Glückler 2011). Consistent with a relational view, the epistemology underpinning this thesis is critical realism (Sayer 2000). In other words, there are bounds to the range of acceptable interpretations that are legitimate as a basis

for knowledge. At the same time, this research is motivated by an acute awareness that the best we can hope for is approximation of reality, not only as it is manifest in the various relations examined in this thesis, but in how we study and make sense of them.

Each of the four substantive chapters of this thesis can be located on a spectrum where induction and deduction in their purest forms are unreachable (Kuhn 1977). While at risk of striking an idealistic balance between the inductive and deductive dualism in social science methodological debates, this compromise is defensible in reference to the goals of the thesis. In particular, it is not the intention of the research to discover or test and prove facts or discover truth.

On the induction end of the spectrum are the Alberta Heritage Fund (Chapter III), Norwegian Government Pension Fund Global (Chapter IV), and the West Coast Infrastructure Exchange (Chapter VI). Chapter III is a critical case, selected for being least likely to exhibit a positive relationship between fiscal decentralisation and the resource curse (see Flyvbjerg 2006). If a positive relationship exists for the Alberta Heritage Fund, then it is also likely to be present in cases where legal and political institutions are weaker and corruption is high. Chapter VI reflects an extreme case (*ibid* 2006). The West Coast Infrastructure Exchange is the first multi-state initiative that seeks to attract private investment in public infrastructure. Getting context right is important for both cases (Goodin and Tilly 2008). Chapter IV is an illustrative case that demonstrates the ambiguity inherent in policy goals. It is a useful case for illustrating the challenges facing public funds to implement a long-term investing policy. At the time of concluding this thesis the Norwegian Fund convened a committee to review the possibility of

divestment from fossil fuels. Decisions taken by the Norwegian Fund are sure to resonate around the world.

Chapter V begins closer to the deduction side of the spectrum. The point of departure is stylised facts. The chapter then seeks to add empirical observation back in to develop a model that is closer to the reality it is seeking to describe. To achieve this goal, Chapter V relies on a modelling dialogue (Myerson 1992) whereby theory is interrogated against a variety of empirically observed challenges drawn from the literature and from close dialogue with practitioners. In contrast to the case studies, the specification and hypothesis formation takes place in the modelling realm. The research draws on empirical observations gained from close dialogue and a literature review not only to scrutinise its own model, but also to interact with it, such that empirical observation and theory co-evolve to produce new knowledge.

All four substantive chapters draw on information gained from a series of semi-structured interviews with a variety of representatives from six different investment institutions, including politicians, investment professionals, engagement/RI analysts, portfolio managers and senior bureaucrats. Selecting interviewees occupying different positions within the organisation and across different organisations was intentional to identify bias in the accounts of interviewees. Different perspectives allow for accounts to be interpreted against alternative accounts of the same processes and organisational contexts necessary to filter out biases (Miles and Huberman 1984). Indeed, most interviewees were not willing to admit the ambiguity they faced themselves, often seeking to represent themselves and their organisation as rational and carefully exercising expert decision-making. That said, some were willing to identify the ambiguity shrouding

the decision-making behaviour of others within the organisation, or the conflict that arose with others outside of their division within the organisation. Most interviews took place in person, lasting on average one hour. Interviews followed the close dialogue method (Clark 1998). Interviews focused on the perspectives of those involved in making decisions and who had experienced first hand the challenges of implementing a long-term investment strategy.

The approach underlying all four substantive chapters can best be understood as problem driven research (Somers 1997). Problem driven research can be summarised as the following: ‘a willingness to make strong use of substantive knowledge to guide assumptions b) admission of the heterogeneous sources of uncertainty associated with all data, c) building models to fit our substantive problems’ (Western, 1996, quoted in Somers 1997: 40). The assumptions underpinning this thesis are guided by knowledge gained from interviews and reviews of governance documents, news articles, meeting transcripts and financial statements, complemented by a body of literature of the firm that addresses parallel problems explored in the investment institution context, following the example set by Clark and Monk (2013). I am cognisant of the inherent uncertainty in the data. Public documents such as annual reports and public budgets were laden with slogans of public accountability and good performance, requiring a deeper engagement with other sources of data such as news articles and meeting transcripts. Similarly, interviewees were at times seeking to educate me, defend their own actions or vent frustrations.

Positionality of the researcher is also an important consideration in the context of qualitative research (McDowell 1992). As a Canadian researching Canadian funds, I felt

like an insider in some respects, given common citizenship and heritage. That said, insider status did not necessarily lead to greater proximity, given other dimensions of the relationship with interviewees. For example, being a young female interviewing older and predominantly male executives in senior level positions about issues related to responsible investment required me to shift the discourse I typically use. For example, re-framing sustainability as issues of long-term investing was necessary to bridge generational distances. In other instances, the researcher's identity as a resident of the Province of Ontario contributed to being perceived as an outsider, particularly in the context of interviews with the political and public representatives of the Alberta Heritage Fund (though not in the case of the professional asset manager).

Throughout the research process, I kept a journal to reflect on potential latent interests of interviewees, the position of the researcher and biases in interviews. While 'at odds with qualitative methods' that often emphasise the importance of reporting the facts as expressed by informants, as Clark (1998) argues, the task at hand is to be committed to the relationship essential to the close dialogue, but 'willing to betray informants' through edging back towards stylised facts. Moreover, stylised facts contribute to disciplining the research and identifying counterfactuals (Tilly 2008). But at the same time, I am not suggesting that by virtue of being transparently self-reflexive I have resolved the ambiguities in the research process and indeed I am well aware that I may never know the influence my own identity had on the interviews and my interpretations of facts (see Rose 1997). The reflexivity was less an attempt to resolve uncertainties than it was to manage the ambiguity inherent in my own research process. Finally, the order in which the thesis was developed reflects the intention to build models to fit problems. Interviews and

extensive review of documents were conducted in an iterative fashion with the development of the four substantive chapters.

LIMITATIONS OF INQUIRY

This thesis draws on concepts from law, political economy, organisational economics, relational economic geography and public and private finance. The inter-disciplinary nature of this thesis is a limitation in that it spreads the substantive chapters across a wide range of disciplines and as a whole does not make a significant contribution to a debate within a single discipline. While at the broadest level this thesis can be understood as making a contribution to heterodox economic theory, the research also cuts across several debates in other disciplines. Navigating these various disciplines has required at times a superficial level of attention to each. That said, inter-disciplinary research is necessary to study the manifestation of ambiguity. This is because the ‘solution’ to ambiguity in one discipline leads to its manifestation in another discipline. For example, the solution to ambiguity in finance and economics is more information. But, by only focusing on economic theories, the thesis risks missing the manifestation of ambiguity in other disciplines, such as conflict over the meaning and relevance of the information itself, a challenge more familiar in studies of geography and history. Similarly, in law, ambiguity of interpretation is resolved through appealing to the underlying principles and norms of society or is absorbed by institutions. But focusing only on the law risks missing the manifestation of ambiguity in the form of economic interests. Each discipline has its own solution to ambiguity. Only an inter-disciplinary approach can corner ambiguity for long enough to interrogate it.

A second limitation is that the four substantive chapters draw on the researcher's knowledge and familiarity with the Canadian model of the governance of public institutional investors. Most interviews were conducted with representatives from Canadian funds. The empirical focus on Canadian funds was a consequence of practicality and access for a Canadian living between the UK and Canada. Emphasis is placed on broad principles for managing ambiguity for abstractions to other sovereign funds, rather than specific governance arrangements or processes. On a more substantive level, Canadian funds are a good choice because they represent a special organisational structure that is revered globally. *The Economist* has dubbed these funds 'maple revolutionaries'. They are also among the leading investors in unlisted infrastructure equity, a long-term asset class in its own right. Canadian funds have recently been recognised as global leaders for their 'professional active management of diverse assets and a low cost structure' (BCG 2013). If ambiguity can be shown to be problematic for these funds then it is likely to exist in other funds in more challenging legal and political institutional environments and with weaker governance.

Third, the thesis is limited by its lack of empirical evidence. While interviews and case studies provide context and detail rich accounts of two SWFs and an exchange platform to facilitate investment in public infrastructure, the empirical evidence is not testing a specific set of hypotheses. Rather, the cases are narratives. While quantitative data would have added significantly to the research and strengthened its claims related to the persistence of ambiguity, the thesis has struggled to find a parsimonious way to study ambiguity systematically, leaving this for future research. That said, this thesis defends its choice to pursue narratives that illustrate ambiguity in the context of institutional

investment governance on the basis that all that is measured is not valuable and what is valuable often cannot be measured. Finally, while the thesis has set out to interrogate the various relationships that constitute the SWF, some key relationships are missing. In particular, the thesis does not consider investment consultants and advisors. Given the focus on large funds, consultants are not central to their formulation of long-term investing strategy.

II. LITERATURE REVIEW

INTRODUCTION

Ambiguity is pervasive in social and economic interaction. It is embedded in institutional frameworks, the gaps between rules, their implementation and enforcement, the moral and psychological character of decision-makers, and the mosaic of interpretations of discourses that govern relationships between individuals and groups. When left unmanaged, ambiguity impairs the ability of organisations to make effective decisions. Irreconcilable conflict can lead to inertia. Intersubjective interpretation of rules and norms can introduce distortionary biases and failure to effectively communicate and achieve intended outcomes. Moreover, ambiguity can inhibit the collective action needed to shift towards new institutional arrangements that promote new behaviour. As the nexus of public and private organisations and individuals that constitute sovereign wealth funds become increasingly decentralised to cope with the global interdependencies and increasing complexity in financial, economic and social systems, the scope for interpretation and conflict is expanding. As such, ambiguity is a crucial topic for institutional investment decision-making.

The aim of this chapter is to show how ambiguity is narrowly defined in most scholarship on individual and organisational decision-making and, as a result, denied or assumed to dissipate over time. More information always leads to better decisions by increasing the knowledge of the decision-maker. But the translation of information into knowledge is an incomplete account of what investment professionals, trustees and their advisors do. Managers do not simply gather and process information. Managers must also

interpret information and construct narratives around it, manage conflicts through negotiation, establish new relationships and maintain existing relationships both inside and outside the organisation. Ideas, norms, conflicts and interpretations matter in addition to technical accounts of the state of affairs (Best 2005). Ambiguity can never be eliminated because preferences and goals are endogenous and inconsistent over time (Cyert and March 1963); information is often divorced from its context in which it is engineered (March 1978); and politics cannot be separated from economics (Roe 2006).

I argue that this widespread aversion to, or denial of, ambiguity in the literature has resulted in an impoverished understanding of organisational decision-making processes. Moreover, seeking to deny or reduce ambiguity can contribute to perverse outcomes. Social conventions such as the widespread belief in the safety of asset-backed securities ultimately undermine longer-term economic stability (Crotty 1994). Without ambiguity, organisations become rigid and unable to cope with complexity. Absolute conflict resolution divides and conquers our collective capacity to respond to complex problems. Norms and principles that we use to overcome differences in interpretation become entrenched and impenetrable to new ideas.

More than adding to our understanding of organisational decision-making, ambiguity can contribute to improving the process of decision-making in organisations. If effectively managed, ambiguity can be harnessed to create flexible organisations capable of negotiating conflict and effectively adapting to complex and changing environments. But, as the classic literary analyst William Empson cautions, ‘ambiguity is not satisfying in itself, nor is it considered as a device on its own, a thing to be attempted. It must in

each case arise from and be justified by the peculiar requirements of the situation' (1947: 235).¹⁷

The chapter reviews the way that ambiguity is understood in a wide variety of contexts relevant to decision-making among institutional investors. It is divided into three sections. The first section reviews the ways in which the rational choice literature seeks to deny or eliminate ambiguity. The traditional theoretical literature (i.e. rational choice paradigm) in finance, economics and law each has a solution to ambiguity, which relies on its narrow definition in the first place. I show that, once we allow for a broader definition of ambiguity that does not equate it with uncertainty in the technical sense of the lack of relevant information (either about probabilities or outcomes), ambiguity cannot be resolved or eliminated. The next section considers the limited heterodox scholarship that accepts ambiguity in the long-term and seeks to harness its constructive properties. The chapter concludes with reflections on what explains our preference for problem resolution in financial decision-making and more broadly, across the social sciences.

AMBIGUITY IN FINANCE AND ECONOMICS

In finance and economics, ambiguity is commonly used to refer to second-order uncertainty where information is missing about the probability of a future event. This is different to risk, where the probability distribution is known. This distinction is often

¹⁷ William Empson wrote a book first published in 1930 called 'The 7 Types of Ambiguity', which was widely acclaimed. The book details seven different forms of ambiguity (note the irony of the title itself). These are laid out in the appendix to this thesis (Appendix B). These examples help make clear the difference between ambiguity as it is used in this thesis, and ambiguity as it is often used in the rational choice literature (which conflates ambiguity with second-order or Knightian uncertainty).

attributed to Frank Knight (1921). The first use of the term ambiguity to refer to this second order uncertainty can be traced to Ellsberg's (1961) urn experiment. The subject is faced with a choice to bet on drawing a red ball from one of two urns, which contain 100 black and red balls. The probability distribution is known in one urn (50 black and 50 red) and not known in the other. The results of the experiment suggest decision-makers prefer to take bets on probabilities that are known. The Ellsberg paradox is often credited with undermining the idea that decision-makers formulate subjective probabilities when uncertain about probabilities, and are therefore indifferent between 'risk' and 'uncertainty' (Savage 1972 [1954]). This simple experiment has inspired the development of several sophisticated models of ambiguity aversion applied to financial decision-making problems (Gilboa and Schneider 1989; Camerer and Weber 1992; Epstein and Le Breton 1993; Epstein and Schneider 2010). These models suggest that ambiguity-averse agents choose more conservative positions (Epstein and Wang 1994). Ambiguity aversion models have also been applied to explain anomalies in finance such as home bias (Epstein and Schneider 2003) and the equity premium puzzle (Collard *et al.* 2011).

The problem of ambiguity is simultaneously posed and resolved in this literature. The problem is that of missing information about probabilities.¹⁸ The solution is more information. Consider the original design of the Ellsberg experiment. While information is withheld from the participant about the probability distribution of one urn, in theory this information could be known. The experiment designer could simply disclose to the participant the probability distribution, thereby resolving the problem of ambiguity.

¹⁸ Some are beginning to distinguish between uncertainty about probability and uncertainty about outcomes (see Onay *et al.* 2013) but the point is the same: missing information is the source of the uncertainty.

Leaving aside the possibility of collusion between the experimenter and participant, the ambiguity aversion literature has been concerned with how decision-makers can update vague beliefs when they receive new information. The literature has been described as ‘an extension of Bayesian updating concerned with characterising ambiguity-sensitive behaviour in terms of normatively compelling axioms’ (Al-Najjar and Weinstein 2010: 252). Ambiguity is understood as a short-run phenomenon. In the long run, agents overcome the updating paradox associated with holding multiple priors by changing their interpretation of information. For example, Hannay and Klibanoff (2007) suggest that individuals change their beliefs in ‘whatever way necessary to make them adhere to the *ex ante* optimal plan’ (*ibid.* 2010: 267). Interpretation is not part of the problem considered in this literature.

But this solution to ambiguity assumes an idealised individual decision-maker with sophisticated powers of interpretation. More than a lack of initial information, some are beginning to acknowledge that ambiguity aversion may also be due to ‘hard to interpret ambiguous signals’ (Epstein and Schneider 2010: 22). In contrast then to conventional wisdom that information always clarifies decisions, information itself can be a source of ambiguity. This broader definition of ambiguity is closer to Keynesian uncertainty than it is to Knight’s version, an observation made by Jacqueline Best (2008). To be sure, Keynes is concerned with uncertainty that results from missing information about probabilities. Indeed, his *Treatise on Probability* (1921) dedicates a great deal of energy to the topic. But, unlike Knight, Keynes goes on to identify a second dimension of uncertainty that draws on the social and interpretive nature of economic activity. This second dimension of uncertainty is central in Keynes’ later work in which he makes

explicit that he ‘does not mean the same thing by very uncertain and very improbable’ (1964 [1937]: 148).¹⁹ The second dimension of uncertainty is not only a result of the lack of pre-determined structure or list of possible states (fundamental uncertainty) but also the limited capability of human cognition (procedural uncertainty). That is, the second dimension of Keynes’ version of uncertainty is the result of the interaction between fundamental uncertainty (Type B) and procedural uncertainty (Type C) (see Table II.1). As Best (2008: 361) suggests, ‘even if we were to resolve such uncertainties through better information and more effective institutions; even if we were to develop the most sophisticated of risk-management techniques; we would still be faced with the challenge of interpreting, debating, and communicating that information.’ Financial markets are prime breeding grounds for this second dimension of uncertainty given that financial data are ultimately the aggregation of human interpretation and judgement.²⁰

¹⁹ Keynes distinguishes between events like weather, where some degree of belief could be based on evidence, and events like future interest rates, prices, and the likelihood of a war, which he argues cannot be predicted as there is ‘no basis on which to form any calculable probability whatever. We simply do not know’ (Keynes 1964 [1937]: 212).

²⁰ Even in hard sciences, several prominent scientists have noted that data are subjective and perception matters. Consider Einstein’s *Theory of Relativity*. Subjectivity is inherent in measurement, as we must account not only for the location of the event under observation in both time and space, but also the observers responsible for measuring the event. See also, Kuhn’s (2000 [1983]) incommensurability thesis. After revising his earlier position on incommensurability, Kuhn reaches the conclusion that there are multiple interpretations, none of which are the correct one (not to be confused with the idea that theoretical paradigms are incomparable).

Table II.1: Taxonomy of uncertainty

	Weak Uncertainty: Unique, additive, and fully reliable probability distribution	Strong Uncertainty: No probability distribution can be determined
Substantive uncertainty: Lack of relevant and good quality information	Risk	A. Uncertainty about probability caused by missing information that could be known (Knight and Keynes Type 1, 1921) B. Fundamental uncertainty: possibility of non-pre-determined structural change; non pre-determined list of states (Keynes Type 2)
Procedural uncertainty: Complexity due to limited capabilities of human cognition	Procedural uncertainty under conditions of risk: e.g., myopic loss aversion	C. Procedural uncertainty under conditions of complexity: e.g., Simon's satisficing (Keynes Type 2)

Source: Adapted from Dequech 2011

But the distinction between Keynes' and Knight's versions of uncertainty is largely ignored in the contemporary finance literature. One explanation for this oversight is that contemporary heterodox scholars have joined forces against the conventional theories that suggest that subjective probabilities dissolve uncertainty into risk (see Holton 1992). Indeed, many historical accounts draw a distinction between pre-war and post-war versions of risk and uncertainty. According to Bernstein (1996: 249), the Second World War made people more concerned with controlling their environment, 'returning to Victorian faith in measurement and the belief that the world's problems could be solved.' Heterodox economists seeking to criticise the obsession with risk and its mathematical quantification in the post-war era have merged the work of Knight and Keynes against a common enemy. Hodgson (2011), for example, traces the decline of the

term ‘uncertainty’ in economics, and in doing so collapses Knight and Keynes’ versions of uncertainty into one. To be sure, he acknowledges that there are differences but then proceeds by treating their different versions of uncertainty as one in the same. Had his bibliometric methodology included ambiguity, he would have found uncertainty – or at least Knight’s version of it (Type A) – is alive and well in the ambiguity aversion literature.

Behavioural approach to ambiguity aversion (Type C x Type A)

The behavioural tradition set in motion by Simon (1991 [1947]) and extended by Kahneman and Tversky (1979; 1982) has embraced the procedural element of Keynes’ second dimension of uncertainty (Type C). In particular, prospect theory deconstructs the normative axioms of rational choice theory by empirically demonstrating that decision makers consistently violate transitivity, dominance and independent preferences. The theory describes individuals who make decisions by a two-step process that involves first editing their choices and then evaluating them in relation to a reference point. Decision-makers tend to overweight probability of losses and underweight probability of gains. Prospect theory has been extended in a number of ways to consider the influence of different contexts of decision-making under risk and uncertainty.²¹

²¹ In some cases, more information adds nothing to improve the decision-maker’s position. For example, we have more information about climate change than we did twenty years ago but policy makers, managers and investors are arguably no better off with respect to decisions they face. More information may have led to increase in probability (0.2 to 0.6) of an outcome related to climate change, but this is less valuable information for decision-makers than if the new information had increased probability from 0.99 to 1.0 (certainty). These are the types of anomalies that prospect theory highlights.

Ambiguity is treated in this literature as the interaction between procedural uncertainty (Type C) and uncertainty about probability (Type A). Behavioural biases interfere with the solution to ambiguity aversion that is presented in the literature that treats ambiguity aversion as an extension of the Bayesian updating described above. For example, Heath and Tversky (1991) find evidence suggesting that ambiguity aversion is strengthened when the decision-maker's feelings of incompetence are amplified, such as by showing the decision-maker other bets in which they have more expertise. Fox and Tversky (1995) study the opposite of ambiguity aversion, finding evidence that suggests individuals have a preference for taking bets on familiar problems when probabilities are indeterminate. Curley *et al.* (1986) find evidence that suggests decision-makers avoid ambiguous options because they believe that a choice where the probability is known is most socially acceptable or justifiable. Common to all these explanations of ambiguity aversion is that they take seriously the psychological content of uncertainty.

But the behavioural paradigm is descriptive and its explanatory power is confined to hypothesis testing involving simple gambling problems with immediate outcomes. It does not consider the interaction of procedural uncertainty (Type C) with fundamental uncertainty (Type B). For example, commenting on Simon's work, Langlois observes, he 'often writes as if there really does exist a well-defined optimization problem out there (...); the only difficulty is computational complexity. This is why analogies to chess games or the solution of complex differential equations ... appear so frequently in his discussions' (1986: 226-27). The same can be said of the experimental tradition established by Kahneman and Tversky. Decision-makers unambiguously set a reference point and gains and losses themselves are unambiguously defined.

In real-world decision outcomes, losses or gains are often not realised until a future time period. Evidence suggests people are less risk averse to future losses (e.g., Ahlbrecht and Weber 1997) up to a certain point. Lowenstein and Prelec (1993) consider the application of prospect theory to discounted utility theory to take into account inter-temporal decisions. While they find evidence that discounted utility theory is violated and inter-temporal decision outcomes that reflect myopia are better explained by prospect theory, they also find that prospect theory does not explain an individual's conflict between their long-term interests and short-term desires. Decision-makers will always be biased toward the short term if they are able to update their preferences. More than discounting the future gains and losses, decision-makers may not account for all contingencies (Gennaioli and Shiller 2010). Some have begun to extend the influence of temporal distance to consideration of attitudes toward ambiguity (Onay *et al.* 2013).

A second challenge with the behavioural tradition is that much of the work on procedural uncertainty is experimental and as such does not provide an analytical basis on which to make predictions about interaction between different players, particularly when players have the ability to change the probabilities of outcomes (see Che and Yoo 2001). Moreover, most important decisions in society are made by those who do not directly lose or gain from the outcome of their decision. The decision maker's gain/loss profile may actually conflict with the individual who is directly affected by the outcome. But empirical studies on how individuals behave when making decisions on behalf of others are scarce (Eriksen and Kvaløy 2014). Theoretical work suggests individuals making decisions on behalf of others are more likely to engage in risky behaviour, and that principals acting on behalf of those who directly gain or lose have contradictory

incentive structures (Jensen and Meckling 1976). Some recent empirical evidence finds that trustees sometimes take less risk with clients' money than their own (Clark *et al.* 2006: 101).

I conclude this section by identifying some recent scholarship that is concerned with the interaction between Type B and Type C uncertainty, that is, the problems of ambiguity with which this thesis is concerned. In behavioural finance, Akerlof and Shiller's (2010) *Animal Spirits* considers human emotions such as confidence and fairness and their influence on financial decisions. If unchecked, these 'animal spirits' amplify economic cycles. But if managed this energy can be harnessed and provide a source of innovation. Sociological theories of finance draw attention to the relationship between economic theory and the infrastructure of the economy itself. More than simply observing the economy, economic theory contributes to shaping the way it functions (e.g., Callon 1998; Mackenzie 2006). Another area of scholarship that is making traction is game-theoretic models of decision-making that account for the possibility that probabilities can be manipulated by players themselves. While none of this literature directly references ambiguity, it all considers the human cognitive abilities in decision-making applied to problems characterised by fundamental uncertainty.

AMBIGUITY IN LAW

While ambiguity in the form of multiple possible interpretations of the same information is ignored in finance and economics, it occupies a central position in the literature on legal decision-making. But, like conventional approaches to finance and economics, legal philosophy and political economy seek to deny ambiguity, or at least assume that

ambiguity in interpretation can be eliminated in the long-term. Most legal scholarship on statutory interpretation is concerned with what courts should do when confronted with ambiguous statutes. I focus here on literature that addresses a more fundamental question, which is that of what constitutes interpretative ambiguity. The quintessential Hart vs. Dworkin debate serves as a useful, while blunt, point of reference for mapping how ambiguity is understood in various approaches to law. To be sure, philosophical views on interpretation in legal decision-making are more nuanced than what is captured in a stylised articulation of the debate between legal positivist and legal constructivists (see Shapiro 2007). The objective in this chapter is only to illustrate the ways in which major contributions to legal scholarship propose to resolve ambiguity in the form of interpretation by consequentially denying the manifestation of ambiguity in the form of irreconcilable conflict.

Constructivism

The constructivist tradition is often positioned as the more radical philosophical approach of the two as in the first instance it denies the existence of ambiguity (indeterminacy) in interpretation. Courts are assumed to appeal to the moralist grounds of law. That is, norms and values guide decision-making to one unambiguously right answer. Uncertainty and indeterminacy are distinct (see Dworkin 2011: 90). For example, a decision-maker might be uncertain about the right decision, but uncertainty does not mean that there is no right decision. As Dworkin (2011: 125-126) illustrates, ‘imagine a judge sending an accused criminal to jail, perhaps to death ... and then conceding in the course of his opinion that other interpretations of the law that would have required contrary decisions

are just as valid as his own.’ The agent is bound by a moral obligation, such that there can be uncertainty about the outcome, but no indeterminacy about the choice the agent must make to fulfill its obligations. Interpretation aims at truth. In the constructivist tradition, ambiguity in interpretation is immediately resolved by appealing to the unity of value.

But this overlooks the possibility of conflict over the interpretation of norms and social conventions themselves as guides to the truth. That is, norms and conventions are not independent of individual preferences. Clark (2011b) illustrates this point in his consideration of the norms and social conventions governing financial decision-making on behalf of beneficiaries (i.e., fiduciary duty). Far from an unambiguous norm structure on which to base decisions, ‘fiduciary duty remains as a trump card for those that would wish to protect their own interests in the face of obvious demands for profound change in the nature of investment practice’ (Clark 2011b: 24). There is some empirical support for the interference of personal preferences with interpretation. A survey of over 900 law students found that individual policy preferences strongly influence a respondent’s belief on whether or not a particular statute is ambiguous (Fansworth *et al.* 2010). Respondents were more likely to interpret a statute as ambiguous if they disagreed with the outcome of the case and were less likely to interpret it as ambiguous if their individual preferences aligned with the outcome of the case.

To be sure, the constructivist tradition has a theory for explaining how the underlying norms and values of society can change to reflect new realities. In particular, theoretical debates about the law prevent the entrenchment of norms and values that no longer make sense for society. But the possibility of theoretical debates of the concept of law (which differ from empirical disagreements, which are about ‘whether the grounds of

law have been obtained', Shapiro 2007) relies on the assumption that 'disagreements about the grounds of law are predicated on disagreements about the moral value of law...and theoretical disagreements are not incoherent or insincere' (Shapiro 2007: 35). That is, legal and political actors unambiguously engage in a shared theoretical interpretative and constructive approach to law that is free of individual preferences and interests.

Legal positivism

Legal positivism ascertains that the law consists only of social facts, thereby denying the moralist content of law. In its most extreme form, legal formalism resolves ambiguity in interpretation by assuming that all possible applications of the rule are captured in probabilistic judgments during the rule-making phase and, in aggregate, reflect all contexts under which the rule would be applied in the future. But as shown in the previous section uncertainty is not only a consequence of missing information about probabilities. Rules are often made with limited psychological faculties when applied to complex problems (procedural uncertainty) and to events that have no basis on which to make predictions (fundamental uncertainty). This is at odds with the process of rule making, which requires the input of an indefinite variety of decision types over prospects and the ability to deliver a single output (Pettit 2002). The incongruence between the nature of rules and the conditions that formalism requires in creating these rules results in an impossible situation, whereby the mechanistic application of rules by judges requires undermining the social legitimacy of those rules; conversely, judicial discretion to apply the rules to reflect their original intention presents a dangerous distribution of power to

non-elected officials (Kennedy 1973). In other words, when the interaction arises between existing rules and new and unanticipated situations, as it inevitably will in a complex and changing world, the consequence will be to encourage behaviour that is significantly different from that which the rules were originally intended to encourage, such that 'the formal system becomes a new constellation of forces it has itself blindly created' (*ibid* 1973: 384).

Legal positivists have responded to this criticism by developing a theory of dynamic problem solving when social facts run out. Positivists are willing to accept that indeterminacy (ambiguity) exists in the law. But indeterminacy is short-lived. This is because the law is assumed to be repaired in the long term, providing once again an unambiguous basis for making decisions. This solution to ambiguity relies on political and legal institutions, including courts and the legislature, to repair the social facts that constitute the law in instances where their application is not consistent with the original intention of its creators. In other words, it is assumed that legitimate political and legal institutions can unambiguously aggregate and represent the preferences of heterogeneous individuals and groups.

But the idea that ambiguity is resolved relies on strong assumptions about the nature and aggregation of interests in legal and political systems. The interests of political agents and judicial decision-makers may not be coherent and responsive to incentives as is required by the positivist 'repair' solution. For example, political agents may be motivated by the desire to establish a legacy rather than seek re-election (Maskin and Tirole 2004). Politicians and senior level bureaucrats often re-enter the private sector and their time in office may be motivated by outside career incentives rather than winning

votes or seeking re-appointment (Adolph 2013). Similarly, forward-looking politicians may seek to tie the hands of future governments (Moe 2013). Less pessimistic views suggest that political agents are intrinsically motivated (Bénabou and Tirole 2003), taking their fiduciary obligation to the public seriously. Moreover, aggregation of preferences is assumed as an unambiguous process. But election systems themselves contribute to shaping policy choices. For example, in the case of an electorate with multi-dimensional interests, there can be no median (Besley 2007). As Arrow's (2012 [1963]) famous impossibility theorem demonstrates, the problem of social choice through the electoral system is that there is no *pareto efficient* outcome that does not amount to a dictatorship. Reflexive use of information by politicians encourages politicians to choose policies that are closer to what voters want in the short-term, disregarding negative long-term consequences (Weingast 2014).²²

While legal positivism, like Dworkin's constructivist position, seeks to deny ambiguity in interpretation, some recent developments hint at positivists' willingness to accept the persistence of indeterminacy in law over the long term. In particular, the legal positivist view of discretion is laid out in a previously lost essay by H.L.A. Hart (1956) that has recently resurfaced in the *Harvard Law Review* (2013). The essay reflects a more tolerant position on ambiguity in interpretation of the law, in the form of discretion, than what is often ascribed to the legal positivist position. Discretion is described as a special approach to reasoning. Discretion occupies the space between arbitrary choice (whim)

²² Diaz, Magaloni, and Weingast (2005) refer to this as 'tragic brilliance'. As Barry Weingast (2006: 38) explains, 'This mechanism represents a pathology of both democracy and federalism and is at once tragic and brilliant: tragic because it forces citizens to play an active role in maintaining an authoritarian regime that they would rather replace; but also brilliant, in that authoritarians use their policy discretion to create political dependence and subservience while providing the outward veneer of elections, choice, and democracy.'

and determinate application of rules. It is a principled way of coping with ambiguity in interpretation of the law. As Shaw (2013: 669) suggests, Hart saw discretion as ‘a necessary component of any legal system because society’s ability to regulate the future is inherently limited by imperfect information *and* an imperfect understanding of aims.’²³ Discretion is only now beginning to be explored as a dimension in the Hart vs. Dworkin debate and is sure to open new avenues for interrogating the role of ambiguity in decision-making.

To summarise, literature that deals with decision-making in law is primarily concerned with ambiguity in the form of intersubjectivity; that is, multiple possible interpretations of the same object. At one extreme, indeterminacy over interpretation is denied from the beginning. Constructivists assume that decision-makers appeal to underlying norms and values that bind society together such that interpretation is ultimately truth seeking and there is only one right answer ‘out there’ to be discovered. Positivists take a more moderate position on the existence of indeterminacy, at least in the short-term, arguing that when the social facts that constitute the law run out, political and legal institutions provide the means to unambiguously repair the law. But the positivist solution to ambiguity relies on the assumption that the aggregation of preferences is unambiguous and that politicians are responsive to electoral incentives, leaving open the potential for granting a dangerous amount of power to unelected officials or politicians who are not motivated by electoral incentives. Even if politicians

²³ Hart saw the need for discretion “because we are men not gods.” That is, “we must accept that it is part of the human condition that in many decision- making contexts, even where governed by rules, there is no “one correct answer.” (Lacey 2013: 664).

are responsive to electoral systems, this is problematic in itself for issues that require long-term concern given that election cycles reward short-term results.

MANAGING AMBIGUITY

Having established the way that ambiguity is narrowly defined in conventional theories of rational choice in law, finance and economics, I now turn to consider some heterodox literature that accepts the permanence of ambiguity and recognises that ambiguity must be managed since it cannot be resolved. Managing ambiguity requires abandoning the assumptions that decisions are intentional, consequential, and can be optimised. But this need not lead to chaos, as conventional theories of economics suggest (Crotty 1994). If effectively managed, ambiguity can contribute to improving the decision-making process. The following does not claim to be an exhaustive review of heterodox scholarship that accepts the permanence of ambiguity. The objective is to introduce the constructive properties of ambiguity at the individual and organisational level and illustrate some ways in which it has been identified in the literature to improve decision-making.

Individual level: analogic reasoning

Following Simon's *satisficing behaviour* and Keynes' *rules of thumb*, a large body of experimental research is dedicated to exploring the ways in which individuals devise simple rules to form judgments when faced with complex problems. These heuristics are mental short-cuts that allow decision-makers to ignore some information and focus their attention (Gigerenzer 2004). Based on this definition, rational choice can be understood as a heuristic in itself (Hay 2004). Heuristics require the acknowledgement that ambiguity is a permanent state and that decision-making cannot be a precise science. That

is, the act of using a heuristic to solve a problem requires the decision-maker to acknowledge the ambiguity facing them, a condition that does not hold in the rational choice tradition.

Analogic reasoning is a heuristic that illustrates this point well. Early expositions of analogic reasoning are found in Keynes' *Treatise on Probability*, in which he formalises David Hume's ideas on resemblances (positive analogy) by adding concepts including inference and negative analogy. Analogies allow decision-makers to generalise about a problem space, by borrowing knowledge from another problem space that is more familiar to them. In doing so, decision-makers are able to convert a problem with uncertainty into a problem with a probability function based on the analogical source. Recent expositions of analogic reasoning have been extended to consider economic models themselves as analogies (Gilboa *et al.* 2014).

Analogic reasoning is a unique type of heuristic in that it moves beyond a short cut to produce its own internally coherent outcomes. In the learning sciences literature, this is described as the point where systems of relation take over from processes of resemblance (Sawyer 2005). Analogies have been found to be useful for inferential learning when students have limited knowledge of a particular area of science (Donnelly and McDaniel 1993). Another example of the constructive use of analogy is its contribution to establishing legitimacy. Etzion and Ferraro (2010) show how analogy drawn from conventional financial reporting was applied to sustainability reporting by the Global Reporting Initiative in the first instance to establish the legitimacy of the new reporting practices. Once legitimacy was achieved, analogy was again used as a cognitive mechanism to identify the differences (negative analogy) between financial reporting and

sustainability reporting, creating the conditions for innovation. Once individuals identify differences, they are able to work away from the analogical source and devise innovative systems that are internally coherent in their own right.

Individual level: strategic ambiguity

Ambiguity also presents an opportunity for clever individuals in situations when the decisions of others influence the decision-making problem. In political decision-making, Rodrik (2014: 190) shows how political entrepreneurs can extend what he calls the ‘political possibility frontier’ by being reflexive of the ideas that shape their own and others’ interests, recognising that ‘ideas are subject to both manipulation and innovation, making them part of the political game.’ Another example of the strategic use of ambiguity is the announcements made by central bank governors to avoid over-reactions, recognising that their words are often more influential than actions on market sentiment. This has been dubbed the Maradona Effect, named after Argentinian soccer player Diego Maradona, who scored a goal in a World Cup match by running in a straight line toward the net, making it impossible for opponents to defend against since they could not predict whether he would cut left or right.²⁴

To be sure, the exploitation of ambiguity by clever individuals can lead to negative outcomes for society. For example, Page (1976) suggests political candidates have an incentive to use ambiguity as a means to avoid taking positions on politically sensitive issues. Such strategic use of ambiguity has negative implications for public

²⁴ The term *Maradona effect* was first used by former Bank of England governor Sir Melvyn King. See for example, *Financial Times* article considering how Ben Bernanke used the ambiguous ‘term premium’, thereby “getting what he wants without actually doing anything.” Bernanke’s Maradona swerve hits bond markets’, 16 September 2013.

enlightenment and the democratic process. Similarly, Hotelling (1929) hints at the negative impacts on social choice when political competitors seek to ‘get in front’ of each others’ voters by adopting ambiguous, that is centrist, positions.

Organisational level: discretion

Most important decision-making problems in social sciences involve the coordination of multiple individuals and groups. Conventional economics does not often distinguish between organisational and individual decision-making problems. Moreover, it is often assumed that authority is unambiguously exercised within the organisation. In contrast, the behavioural theory of the firm advanced by the Carnegie School argues that unlike individuals, organisations do not have goals. As such, any organisation must be understood as a coalition of individual interests, where ‘the existence of unresolved conflict is a conspicuous feature of organisations’ (Cyert and March 1963: 32-33). Ambiguity is important for holding this coalition together, as it allows different individuals with different interests to agree for different reasons. In recent years, insights from the Carnegie School have been extended to consider firm learning and routine (e.g. Nelson and Winter 1982; Teece *et al.* 1997). But the evolutionary theory of the firm has drifted from core focus of the Carnegie tradition on decision-making (Gavetti *et al.* 2007). For this reason, I draw more heavily on the insights of James G. March and colleagues and present insights on ambiguity as both a cause and solution to poor decision-making in the context of organisations.

March (1988) identifies four types of ambiguity at the organisational level, paraphrased here. **Ambiguity about organisational preferences:** Far from consistent,

stable or exogenous preferences, organisations discover their preferences through action rather than act based on their preferences. **Ambiguity about relevance:** In conventional theories of decision-making, the logic of causality connects policies to activities, but actual events in organisations are much less tightly coupled. **Ambiguity about history:** history forms the basis of expectations about the future. Ambiguous experiences and incomplete learning cycles are features of organisations. **Ambiguity about interpretation:** thinking about life in terms of choice introduces bias into interpretations of decision processes. Information is always seen as clarifying decision outcomes. But gathering and citing information is best seen as a symbolic action. As a structure of meaning evolves, specific decisions are fitted to meet these structures.

For March and his colleagues, acknowledging the permanence of ambiguity can contribute to a better understanding of organisational decision-making and so can improve the decision-making process. In particular, ambiguity can be harnessed in the form of the discretion to realise constructive outcomes. Discretion is delegation without clear and explicit instructions, leaving the agent with some room to interpret the actions that she/he must take. Discretion refers to the idea that decision-making can be rational but non-conclusive, a view shared by Hart (2013 [1956]). I illustrate below a few examples of constructive use of ambiguity when it is managed in the form of discretion.

First, ambiguity about preferences allows goals to develop through experience. The learning cycle is incomplete in organisations and discretion allows for more constructive approaches to setting future goals and learning from the past (March and Olsen 1975). To be sure, the Carnegie School has in mind ‘a few relatively stable goals’ and not organisational chaos (Cyert and March 1963). But goals are not fixed and they

can gradually change over time as new members join the coalition and the external environment changes. Evaluation systems that allow for discretion and creativity in goal interpretation can facilitate intelligent learning in the organisation. That is, ambiguity in evaluation avoids situations where individuals and groups in organisations perform to meet precise objectives, among other pathologies frequently observed in organisations. Yet this is precisely what Jensen (2001) advocates for in his *enlightened value maximization* thesis. Interestingly, his view of the firm is similar to the behavioural theory in its absence of a single value objective function. That is, he sees the firm as politicised under a stakeholder view. But as soon as a single objective function is placed on the firm, these political conflicts are immediately resolved. Jensen has in mind some idealistic incentive scheme that would see each member symmetrically compensated for his or her effort in reference to the objective function. Moreover, he assumes that employees could be paid to adopt the single organisational objective in the first instance. But as several expositions of perverse incentives in the financial industry demonstrate, even with a single objective function agents are prone to pursue interests that hardly can be seen as in the best interest of the organisation (Admati and Pfleiderer 1997; Rajan 2006; Bénabou and Tirole 2013).

Second, discretion allows for more effective systems of reporting information. Discretion in deciding which information to report and how ensures the employee can capture the context of the decisions and, in doing so, ‘extend our horizons and comprehensions rather than fill in the unknowns on a decision tree’ (March 1988: 403). In other words, ambiguity managed in the form of discretion over collecting and

reporting information can be used to communicate information that is relevant to the decision problem but which cannot easily be codified.

Third, discretion granted to independent agents can contribute to transcending the tension between representation and expertise and time inconsistency problems, which are particularly prevalent among public financial organisations, such as public pension funds (Clark 2007) and central banks (Barro and Gordon 1983). The inflation bias problem in the central bank literature aptly illustrates the constructive attributes of discretion. Politicians prefer policies that are inflationary, given the positive short-term effects that coincide with election cycles. But the public is well aware of the politician's bias for inflation and will react in ways that undermine the potential benefits of inflationary policies. Discretion is granted to independent central banks for monetary policy to keep political interference at bay (see Cukierman and Gerlach 2003).²⁵

I conclude this section by considering some of the potential negative consequences of discretion in organisational decision-making. The use of flexible contracts between buyers and sellers to manage uncertainty about future prices can make agents more likely to shirk in the realisation of bad states (Fehr *et al.* 2009). When discretion is used as a means to leverage the superior local information of individuals within an organisation who are closer to the decision problem, agents may strategically

²⁵ 'When we define limits of discretion we constrain the individual or subgroup from acting outside those limits, but at the same time we constrain any other members of the coalition from prohibiting action within those limits. Like the allocation of resources in a budget, the allocation of discretion in an organisation chart is largely self-confirming, a form of mutual control' (Cyert and March 1992: 38). Compare this with Simon (1961: 225), who suggests 'discretion is increasingly limited the further down in the organisation we move, such that in the case of the man who carries out the army's task, we see that a great mass of influences bear upon the decisions which he makes.' Both Simon and Cyert and March have little to say about discretion, at least explicitly. That said, I believe there is a fundamental difference between their views on the role of discretion in organisations and this is why I draw much more heavily on March and Cyert than I do on Simon and his contemporaries.

choose which information to communicate to their superiors (Crawford and Sobel 1982; Dessein 2002). Specialised local information can lead to loss of coordination at the organisational level (Dessein and Santos 2006). The use of ambiguity for effective organisational decision-making has costs, which are explored in the substantive chapters of this thesis.²⁶

CONCLUSION

Conventional accounts of decision-making reflected in the rational choice tradition reduce organisations to problem-solving machines. Information is taken as given and organisations build, acquire or rent the necessary resources, skills and talent to solve problems. Finance and economics is concerned only with ambiguity as it manifests in the form of uncertainty about probabilities. Ambiguity is assumed to be reducible with more information. The interpretation of information is itself unambiguous. Law has given more attention to the interpretive source of ambiguity; but it too has its solutions to ambiguity, either denying it exists from the outset or assuming that political and legal institutions absorb the residual ambiguities.

Much has been written about negative externalities in the context of the sustainability challenges facing society. Corporate sustainability initiatives have largely been developed around the concept of adding externalities back into the decision-maker's problem space. But this requires again isolating the externalities and cutting out context in order to condense this new information into something that can be measured and used to predict future outcomes. That is, when confronted with the problems that result from

²⁶ H.L.A. Hart (1956) asks: 'what can be done to maximize the beneficial operation of the use of discretion and to minimize any harm that it does?' This is a tension that runs throughout this thesis.

original attempts at problem solving, our instinct has been to again apply problem-solving techniques and resolve externalities in the same way. But this leaves residuals that accumulate over time and pose the most serious sustainability threats to society. Moreover, it provides a false sense of certainty. That is, our most sophisticated decision-making models can tame even the most complex problems, such as climate change.

What explains our obsession with problem solving? It is well known that uncertainty causes significant fear among individuals. Entrepreneurs must be compensated to take risk and uncertainty demands even higher premiums. Similarly, ambiguity in interpretation provides a source of anxiety for individuals. Extensive cognitive-behavioural studies of social anxiety find that individuals form negative interpretations of ambiguous social interactions (e.g., Clark and Wells 1995). Those of us who are prone to social anxiety look to script our interactions with others and elicit unambiguous social cues to cope with this anxiety. When decisions are made on behalf of others, ambiguity can be perceived as weakness. Decision-makers seek unambiguous positions to demonstrate their resolve. Consider US Defense Secretary Robert McNamara's position on Vietnam and former President George Bush's zero tolerance on terrorism. Rational choice theory has been so successful across the social sciences because it plays to these fears and anxieties.

In practice, it is the residuals from problem solving (the uncertainties that get cut out during the problem solving process) that cause the most significant problems. Isolated incidents such as severe environmental damage due to pollution or oil spills are easier to incorporate into risk frameworks than incremental and cumulative processes like climate change. In fact, the most serious challenges facing us today in financial systems, health,

infrastructure and the environment cannot be isolated and solved using traditional risk frameworks (Goldin and Mariathan 2014). Ambiguity is not a problem to solve. It is a problem to manage. There are rewards for those that recognise this. For US Secretary of State Henry Kissinger, ambiguity was key to his successful negotiation strategy. Similar observations are made about the Bretton Woods I negotiations. It was not until parties began instilling rigidities onto the agreement that it began to unravel (Best 2005).²⁷ To be sure, ‘the practice of trying not to be ambiguous has a great deal to be said for it, ... it is likely to lead to results more direct, more communicable, and hence, more durable (...). But the phrase *trying not to be ambiguous* is itself very indefinite’ (Empson 1947: 235, emphasis added).

Reconciling decision-making theory with practice requires that we substitute our faith in certainty with a faith in discretion. It requires acknowledging that managers engage in constructive interpretation and contribute to shaping goals, choices and expectations. ‘The classical distinction of risk and uncertainty is beginning to unravel ... due to rising complexity and the difficulty of classifying real-world phenomena as either of these two. Additional concepts are increasingly required to understand the ‘possibility’ or risk of failure in an increasingly complex and connected world where assigning probabilities to risks is becoming more difficult’ (Goldin and Mariathan 2014: 27). I believe that ambiguity is one of these concepts. The rest of the thesis is dedicated to this

²⁷ Ambiguously defined concepts such as ‘fundamental disequilibrium’ provided flexibility to individual countries to adapt to changes in the global financial system (Best 2005). The United States’ ambiguous China position is critical for maintaining stability in the region. Adopting an unambiguous position to support either the PRC or ROC would compromise this stability (Wedeman 2001). Indeed, there are several examples that could be drawn on to demonstrate ambiguity as a constructive concept. Consider also Indonesia’s long-reigning Suharto regime. ‘Suharto pitted civilian hierarchy against military hierarchy, strategically deploying unpredictability and ambiguity as weapons for cementing his personal dominion’ (Slater 2010: 139).

task of illustrating specific examples of managing ambiguity in the context of long-term investment programmes of sovereign wealth funds.

III. FISCAL DECENTRALISATION AND INCENTIVES TO SPEND AND SAVE IN THE ALBERTA HERITAGE FUND

Submitted to: Territory, Politics and Governance

INTRODUCTION

Sovereign wealth funds have attracted significant attention for their potential to ensure inter-generational equity. With no liabilities outside an abstract citizenry, SWFs invest public revenue, often from the development of non-renewable natural resources, in global capital markets to earn a rate of return above the national rate of growth (Monk 2009). In practice, the results have been varied. The Norwegian SWF has been wildly successful at saving for the future, accumulating CAD\$ 1 trillion since the fund started depositing royalties from deep-sea oil development in 1996. In stark contrast, the Alberta Heritage Savings Trust Fund is often criticised for squandering the majority of royalties from development of the Canadian province's oil sands. The sub-national fund is worth less today (CAD\$ 17 billion, 2014) than the early years following its establishment in 1976, when adjusted for inflation. As tempting as it may be to compare the governance of the two funds to work out where Alberta went wrong, the fact that Norway's SWF serves as a pillar for macroeconomic stability as much as inter-generational equity, while Alberta's fund operates within a decentralised federalist system, renders comparison futile.

This chapter interrogates the impact of a decentralised federalist system on the incentives for political agents of sub-national SWFs to ensure inter-generational equity. SWFs can be understood as a long-term contract between political agents and their principals (citizens) to manage public wealth for current and future generations. There is

a paradox inherent in this contract; politicians strong enough to establish SWFs are also strong enough to capture this wealth in pursuit of their self-interest. Elsewhere, problems of political interference are resolved through the devolution of fiscal authority to local governments (Tiebout 1956; Oates 1972). Indeed, the past three decades have witnessed significant decentralisation across the developed and developing world.²⁸ Alongside enhanced accountability, decentralisation is celebrated for its contribution to economic growth and efficiency (Qian and Weingast 1997). Others debate the virtues of decentralisation, warning of a competitive ‘race to the bottom’ (Prud’ homme 1995; Enrich 1996) and a shift in the blame and burden to local governments (Peck 2014). While themselves a product of fiscal decentralisation, sub-national SWFs are largely missing from this debate.

The main argument underpinning this chapter is that decentralised federalist systems create incentives for political actors to dip into their sub-national SWFs rather than save for the future. This is because the relational structure and practices within a fiscal decentralised system shape ideas of local political agents, which ultimately shape their interests. Ideas are defined as individuals’ perceptions of reality. For example, fiscal decentralisation changes a local politician’s relationship with the central government from interdependency and unity to a relationship of autonomy and bargaining (Ahmad and Brosio 2006). In turn, the idea of autonomy shapes the interests of local politicians to use their sub-national SWF to replace central government transfers and break free from the conditions that are often placed on these transfers (Monk 2009). While second-generation theories of fiscal federalism claim to internalise these interests (Weingast

²⁸ See OECD fiscal decentralisation database. Expenditures and revenues as a percentage of GDP have increased at state levels relative to central governments across OECD countries.

2006; 2014), these models fail to account for the multifaceted and socialised nature of interests. Ideas such as loyalty and honour interact and shape political interests, beliefs and policy constraints, such that there is ‘no direct mapping from interests to outcomes’ (Rodrik 2014: 190).

Elsewhere, spending windfall revenue on current generations is seen as legitimate. It is better to pass on a thriving economy to future generations than an investment portfolio (Rozanov 2007). Put another way, equality within the current generation is seen as necessary for inter-generational equity (Brown Weiss 1983). Indeed, in a developing country context, there is often a strong case for using windfalls to finance capital assets to benefit current generations (van der Ploeg and Venables 2011). But this focus on the conflict between inter-generational equity (*between* generations) and intra-generational equity (*within* generations) distracts from the perverse incentive problems at the heart of the resource curse (see Sachs and Warner 1999; 2001). While sub-national budget stabilisation funds are an important innovation for smoothing volatility (Oates 2008), a relatively small amount of revenue is needed compared with the amount generated from exports (Arrau and Classens 1992). Politicians with access to excess amounts of natural resource revenues can be enticed to use resource wealth as a substitute for a sustainable tax system, thereby passing on massive public debt, excess capacity and political intolerance for increasing taxes to future generations.

Taking the Alberta Heritage Savings Trust Fund (AHF) as its analytical focus, this chapter explores the incentive challenges facing political agents when ideas are taken into account. The chapter draws on interviews and review of the Fund’s structure, governance and investment behaviour. The AHF provides a unique opportunity to isolate

fiscal decentralisation as an explanation for perverse political incentives from other factors such as weak political and legal institutions that often characterise natural resource rich economies in the developing world (see Humphreys *et al.* 2006). Over the past forty years the AHF has evolved from investing directly in local capital projects to promote economic and social development to investing in global financial markets to maximise financial returns. Several endowment funds have been carved out of the AHF for various local development initiatives, thereby adding liabilities and presenting new challenges for asset management (see appendix C). Finding the political agents of the AHF face incentives to maximise short-term returns on investment and spend investment earnings rather than save, the chapter considers how ideas contribute to transcending political constraints (Rodrik 2014). In particular, the chapter considers how the idea of long-term investing can change the interests of political agents to ensure inter-generational equity.

The next section reviews the literature on fiscal decentralisation. It observes that the literature is only beginning to account for how natural resource revenue interacts with efficiency and accountability outcomes for public finance. The chapter then makes the case for taking into account the ideas that shape sub-national politicians' interests in the context of inter-generational equity and explains why interests cannot be internalised by institutions. This is followed by a case study of the Alberta Heritage Fund, which shows how ideas of neo-mercantilism, autonomy and regional (in)equality shape incentives to spend natural resource wealth rather than save for future generations. The penultimate section considers governance frameworks for sub-national funds and long-term investing.

The chapter concludes with implications for sub-national and supra-national frameworks for inter-generational equity.

FISCAL DECENTRALISATION AND NATURAL RESOURCE WEALTH GOVERNANCE

The highly contested deliberation between levels of government over the establishment of the Nigerian SWF is an apt reflection of the widespread belief in the benefits of fiscal decentralisation in the context of managing natural resource revenues. Arguing in favour of decentralisation, the Governor of the oil-rich State of Delta conceded ‘we are not against the [national] Sovereign Wealth Fund’, but then used the SWF bill as an opportunity to argue that ‘states should be able to decide the amount to save and what to do with their savings since they are not appendages of the federal government’ (Point Blank News 2014). Also arguing in favour of decentralisation, the Nigerian Deputy Senator lamented ‘a federating arrangement where the states converge at the federal capital every month to share the wealth from oil revenue generated in a few other states...like spoilt adults to be bottle-fed with free money without thinking of how to make their own money [...]’ (Efeizomor 2013).

Note that while both politicians are arguing for the same outcome, the rationales underpinning their arguments are different. Behind the Governor’s comments is an argument about enhanced political accountability. It is widely held that local levels of government should be involved in the management of their own natural resources, as this allows for meaningful participation of citizens and results in more informed monitoring and decision-making (e.g., Ostrom 1992; Agrawal and Ostrom 2001). More broadly,

local decision-making authority for spending and collecting revenues can enhance trust between voters and political agents. Citizens have better information about political agents, meaning they can exercise their voice more effectively (Qian and Weingast 1997). Second generation models of fiscal federalism are beginning to extend these results to consider cases where political agents are not benevolent maximisers of social welfare (Weingast 2006). These models seek to internalise self-interest in incentive compatible contracts to restore accountability. Oates (2008) distinguishes this second-generation literature and its focus on individual interests from the political economy literature and its focus on institutions, including election and legal systems for accountability outcomes. For example, local governments have a greater propensity to be lobbied by special interest groups (Bhardan and Mookherjee 2000; 2005; Lockwood 2006) and can be more susceptible to corruption (Prud'homme 1995).

In contrast to the Governor's comments, the Deputy Senator's comments are underpinned by efficiency. Decentralised authority for taxation and spending is widely believed to induce competition among sub-national governments to attract investment. This competition is argued to place a constraint on politicians' rent-seeking (Brennan and Buchanan 1980) and encourage policy innovation (Donohue 1997). Similar to literature that considers the conditions that promote accountability outcomes, efficiency literature can be divided into second-generation models that seek to internalise individual political interests that inhibit economic growth (Weingast 2013) and political economy literature that focuses on efficiency of election systems and robust legal institutions (see Laffont 2001; Besley 2007).

The emphasis on institutions for promoting efficiency is puzzling in the light of recent empirical studies, which find that an economic dividend from decentralisation does not materialise for OECD countries, which have the most robust institutions. In fact, the relationship between decentralisation and growth is found to be negative in developed countries, regardless of whether local governments hold preferences for capital or current expenditure (Rodriguez Pose and Ezcurra 2010). In another study that includes both developed and developing countries, the authors find that legitimacy explains differences in efficiency outcomes. If the sub-national government is perceived legitimate, the economic dividend of decentralisation is found to be positive. In contrast, if legitimacy is held by the central government then the bargaining power of the sub-national government is considered weaker. The decision taken by a local politician to shift from capital to current expenditure ‘may not reflect a genuine choice by sub-national governments in order to address local needs, but a need to intervene in areas where there has been a retreat by the national government’ (Rodriguez Pose *et al.* 2009: 5).

Both strands of literature are only just beginning to integrate consideration of natural resource revenues’ interaction with efficiency and accountability outcomes (see Cai and Teissman 2005; Ahmad and Brosio 2006; Perez-Sebastian and Raveh 2013). The focus of this literature is on the developing country context. In a working paper, Perez-Sebastian and Raveh (2013) find evidence that suggests fiscal decentralisation increases vulnerability to the ‘resource curse’. In their sample of 52 countries, they find a significant relationship that ties fiscal decentralisation to the resource curse, using Sachs and Werner’s (1997) indicators. Ahmad and Brosio (2006) provide a theoretical explanation for the importance of national patrimony of resource revenue management,

arguing that decentralisation creates rivalries within the federation and distortions to national unity. Natural resource wealth differs from other sources of fiscal revenues, which prevents integration into existing models of decentralisation. First, governments can control the rate of extraction through the royalty framework. For example, the government can slow production rates by increasing royalties when commodity prices are high, or refrain from increasing royalties and thereby promote increased production beyond a socially optimal extraction path. In this way, governments can borrow from future generations, violating the hard budget constraint assumption that underpins arguments in favour of fiscal federalism (Weingast 1996). Second, natural resource revenue is often temporary. This makes planning and budgeting over long horizons challenging. Third, natural resource revenue is highly unpredictable. This creates perverse incentives for political officials to overestimate fiscal revenues for budgetary purposes.

Approaching these same issues from the growing body of literature on SWFs also finds sub-national SWFs under-theorised and under-researched. The overwhelming majority of empirical and theoretical work focuses on funds sponsored by national governments. This is understandable given their size and the nascent stage of the literature on sovereign wealth funds that were only identified in 2005. National funds are often borne of macro-economic necessity (Monk 2011). That is, they cannot be integrated into national budget expenditures without significant consequences for other areas of policy interests such as monetary policy. As such, there is a natural constraint to prevent politicians dipping into these funds. Sub-national funds do not face these same macro-economic constraints. While sub-national funds are routinely included in most aggregate

studies and indices of SWFs, few studies have paid attention to these funds (see Rose 2013).

To summarise this section, sub-national SWFs are overlooked in both public and private finance literature. The incentives of political actors responsible for managing sub-national funds are a significant blind spot. As the trend toward fiscal decentralisation converges with the increasingly popular policy choice among resource-rich economies to establish SWFs, a better understanding of the consequences of sub-national SWFs in both global financial markets and domestic context of public finance is needed. Indeed, intentions to establish new sub-national funds have been announced by at least three Canadian regional governments: Saskatchewan, British Columbia and North West Territories.²⁹

INCENTIVES TO SAVE IN REGIONAL SOVEREIGN WEALTH FUNDS

Many SWFs have explicit mandates to manage wealth for current and future generations, ensuring inter-generational equity. Inter-generational equity is an ambiguous goal. Its meaning and application have been extensively debated across the disciplines of law, philosophy and economics. While it is not the objective of this chapter to review these debates in any sufficient detail, it does seek to emphasise the significance of the goal's ambiguity for delegation and incentive design. Ambiguity manifests in the irreducible uncertainty over where one's own generation falls on the spectrum of equality relative to

²⁹ As of 2014, the SWF institute listed 10 (16 including United Arab Emirates) sub-national sovereign wealth funds, including 1 Canadian, 8 US and 1 Australian fund. Total assets of the ten sub-national funds combined are estimated US\$ 148.8 billion and US \$1.2 trillion when UAE funds are included.

other generations (Rawls 2001). Ambiguity also manifests in the form of irreconcilable conflict, reflected not only within disciplines (economists debate appropriate discount rates for future generations) but also across disciplines. For example, the concept of discount rates itself raises significant ethical and moral issues. In the context of SWFs, citizens delegate significant decision-making authority and discretion to political agents for ensuring inter-generational equity. This presents a puzzle: how can political agents be held accountable and incentivised to achieve a goal, the effort or outcome of which cannot be directly observed or measured?

Internalising interests: the principle of inter-generational equity

Elsewhere it is argued that appealing to the *principle* of inter-generational equity can guide decision-making under conditions of ambiguity. In particular, a principle can be useful for checking short-term temptations by instilling a higher moral purpose in trustees of the fund (Clark and Knight 2011). This must be qualified. First, the timeframe should be relevant to decision-makers (Woods 2011b). For example, the Australian SWF references 2020 and 2040 to meet the demands of an aging society (Clark and Knight 2011). Second, the principle of equity must account for private interests (Dworkin 1976). The Australian SWF uses the concept of ‘guardians’ to internalise the short-term interests of those responsible for its management. Underpinning this ability to internalise short-term political interests is the social contract (Clark and Knight 2011). The institution of the social contract engenders trust between citizens and their politicians (Gibbons 2005).

A social contract can be understood as a long-term reciprocal relationship between society and the sovereign state. Rousseau’s (1762) concept of social contract,

which serves as the basis of modern democracy, adds to earlier conceptions the provision of social good and services. The social contract requires a reciprocal relationship between society and the sovereign, and the sovereign constitutes an organic whole. By definition, the social contract cannot be broken into its parts. This does not preclude the state from delegating authority to other actors, including the private sector (e.g. credit rating agencies) or sub-national governments. But their legitimacy derives from the central state, whose interests reflect the general will of its society. In contrast, credit rating agencies have interests that are different than those that constitute the general will of society, so aptly demonstrated during the most recent global financial crisis. Similarly, sub-national politicians have interests that differ from the national interests of society as a whole. Mechanisms for reconciling conflicts of interest inherent in the political sponsor are needed in the context of sub-national SWFs and their inter-generational equity mandates.

Second-generation models of fiscal and political decentralisation internalise individual political interests by condensing them into a single objective function. The goal is to design positivist models that account for interests by aligning incentives of political agents with citizens. For example, Weingast (2014) shows how top-down reforms in China were achieved by devolving authority to the provinces and providing strong fiscal incentives to local politicians to reform. In the case of Chinese reforms, local political agents are assumed to have economic interests only, and seek to maximise their utility based on this preference. Moreover, the interests of local politicians are assumed to be independent.

Socialisation of interests

Recent scholarship suggests that the interests of political actors are not strictly economic and individual but rather multi-faceted and socialised, and that ideas shape interests (Rodrik 2014). For example, political agents may be motivated by concerns with legacy, which cannot be reduced to economic terms (Maskin and Tirole 2004). Political ideology ‘colors how we process information and what we believe about particular issues’ (Bulman-Pozen 2014: 1113). Indeed, several experimental studies in behavioural economics have shown that decision-makers tend to downplay evidence that is inconsistent with their model of the world (Fox and Tversky 1995). Local governments may serve as spaces to contest political ideologies advanced by central governments, even if it means sacrificing fiscal revenues from the central government (Bulman-Pozen 2014). Less pessimistic views suggest that agents are intrinsically motivated (Bénabou and Tirole 2003). Intrinsic value is often derived from attributes of an individual’s social identity (Akerlof and Kranton 2005). Understanding interests as socialised violates transitivity assumptions in the rational choice paradigm, particularly in a dynamic political environment (March 1978). Second-generation models do little more than first-generation models to illuminate the political realities because they do not account for the socialisation of interests.

In responding to the puzzle posed above, which is how to incentivise politicians to save for the future when there is no institution (social contract) to absorb residual ambiguity, it is necessary to avoid confusing the social engineering of interests with constructivist institutionalism (Blyth 2002). While the constructivist view provides a rich understanding of the institutional and social factors that shape and are shaped by ideas, it

gives an incomplete account of the origin of these institutions themselves (Hay 2008). Constructivism is concerned largely with identifying the extent to which institutions such as beliefs and paradigms explain interests. Social interaction (discourse) between micro-level agents explains the emergence of macro-level institutions, which in turn shape interests. But the micro-level interaction of agents is not explained in the first instance. That is, in the absence of an exogenous change in institutions, constructivism gives no basis for understanding why individual agents change their social interaction. As such, using a constructivist lens to map interests to outcomes leads back to the same problem that we began with: the absence of institutions for internalising the interests of political agents of sub-national SWFs.

Mapping interests to outcomes

Adopting a relational view of economic and social interaction can go some way to transcending this paradox (Yeung 2005; Bathelt and Glückler 2011). Consistent with constructivist institutionalism, the relational view suggests institutions are themselves manifestations of the social and economic interaction of actors. But in contrast to the constructivist view, knowledge is a direct perception of reality (Bathelt and Glückler 2011). The interaction between sub-national and central governments within the structure of fiscal decentralisation creates and shapes institutions, which reflexively shape the interests of actors. For example, the practice of competing with other sub-national governments gives rise to the idea of neo-mercantilism, which in turn shapes the interest of political actors in using their sub-national SWF to subsidise tax incentives to compete with other jurisdictions rather than save for the future. The act of bargaining with the

central government gives rise to the idea of autonomy, which in turn shapes interests to use the sub-national SWF to replace central government transfers rather than save. Similarly, competing with other sub-national governments gives rise to the idea of regional equality that in turn shapes interests of sub-national political actors to resolve regional inequalities rather than save for the future. The relational view provides a way to map the path from interests to outcome. Using this framework, the next section identifies the ideas that shape the interests of sub-national politicians with respect to spending, saving and investment allocation decisions in the context of the Alberta Heritage Fund.

THE ALBERTA HERITAGE SAVINGS TRUST FUND

The Context of the AHF

The distribution of powers between central and sub-national levels of governments in Canada has fluctuated until the 1980s. This decade marked the beginning of a strong commitment to delegating fiscal authority to sub-national governments (Burgess 1990). Canadian provinces enjoy significantly greater fiscal independence than most other Western federations. This autonomy is most aptly reflected in the provinces' authority over national resources. While provinces have always had ownership rights over natural resources and any revenues from direct taxation,³⁰ the federal government retains the right to impose indirect taxes in the Canadian Constitution (s.91, s. 92). Indirect taxes refer to taxes that are not levied on the final consumer but are paid indirectly through a

³⁰ Unlike the United States, in Canada, mineral resources, even on privately-owned land, belong to the Crown, i.e. the province through the *Territory Transfer Act*, 1930.

higher price, such as custom duties. The *Western Accord 1985* committed the federal government to allow the market to determine the price in the extractive sector, reversing the preceding Liberal government's attempts to nationalise the oil industry through its indirect taxation powers. Despite the economic convergence between regional governments that is assumed to accompany decentralisation, inherent differences in demographic and physical geography leave significant divergence in fiscal capacity between provinces. In a federalist context, equalisation plays an important role in consolidating differences in fiscal capacity across the Canadian federation.

In recent years, Alberta has carried the bulk of the burden for the federal equalisation programme. The discovery of oil in the 1950s made it the richest province in Canada on a per capita basis. Alberta has a large land area (640,000 km²) with a small but rapidly growing population, now over 4 million.³¹ Alberta's unemployment rate is among the lowest in the country (4.6%), relative to the national average of 7%. Since 1992, real GDP growth in Alberta has averaged 3.7%, well above the national average.³² But underlying these strong macro-economic indicators is the stark reality that Alberta's economic miracle is based on a vulnerable source of economic growth. On average, 25% of the province's total fiscal revenues are derived from its natural resource revenue, and secondary and tertiary industries are closely linked to its extractive sector. Adding to this vulnerability, Alberta's bitumen, which makes up a large percentage of its energy

³¹ Author's own calculations using data from Statistics Canada. To compare estimated the population of Alberta to be 2.6 million in 1995 and 1 million in 1950.

³² Calculations based on Stats Canada provincial GDP 1992-2013.

exports, is among the most expensive energy sources to recover in the world. Alberta's energy boom is highly vulnerable to swings in commodity prices.³³

For obvious reasons then, economic diversification has been a key policy priority for the provincial government. The Alberta Heritage Fund (AHF) plays an important role in the province's efforts to transform itself from a monolithic periphery to a diversified core economy. The Conservative government established the AHF in 1976 (see figure III.1). Initially, the AHF was used to promote local economic development through direct investments in the Alberta economy. In 1997, legislative changes prohibited investments which had economic or social development goals. The Fund is now invested in global financial markets and has a mandate to maximise financial returns and ensure inter-generational equity (see figure III. 2). If the AHF had the same contribution rate as the Norwegian SWF, it is estimated that it would have accumulated \$122 billion by now (Murphy and Clemens 2013). Instead, the value of the Fund peaked in 1983, with per capita \$2800. Inflation has reduced the current value to \$1146 per capita (2013).

[Insert figures III. 2 & III. 3 about here]

Western alienation: the idea of autonomy

It is difficult to overstate the function of the Alberta Heritage Fund as an instrument of independence from the federal government. The Fund was established in the midst of

³³ The extraction of bitumen is labour intensive and therefore more expensive than conventional methods of oil extraction and production. See Brandt, A. (2011) Upstream greenhouse gas (GHG) emissions from Canadian oil sands as a feedstock for European refineries Department of Energy Resources Engineering Stanford University.

historically high oil prices and a Federal Liberal Government that attempted to nationalise natural resources, through the National Energy Programme (NEP). Introduced in 1980, the Programme sought to increase the federal government's share of oil royalty revenues. The NEP was vehemently opposed by Peter Lougheed's Conservative Government and incited strong sentiments of western alienation among the Alberta public.³⁴ To impede the Federal Liberal Government's attempt to capture greater rents from natural resource royalties, the Lougheed Government cut oil production to 85% capacity. The NEP was shortly thereafter repealed under the new Federal Conservative Government, restoring the province's autonomy over resource revenues. But the sentiment of western alienation remains strong, as does Lougheed's legacy. At the heart of this legacy is the Alberta Heritage Fund. Political representatives of both the ruling and opposition parties have expressed that the threshold for political accountability with respect to the AHF is to avoid drawing down the capital of the fund,³⁵ elucidating the symbolic value of the AHF as a beacon of Western autonomy and downplaying its functional purpose as a savings vehicle for the future.

In addition to the function of preserving cultural and political autonomy, elsewhere it is argued that sub-national SWFs provide a source of economic independence from national governments (Monk 2009). In an era of aging populations, coupled with fiscal austerity at the federal level, federal healthcare transfers are covering

³⁴ A common Alberta bumper sticker during the NEP era in the 1980s: 'let the eastern bastards freeze in the dark'. See Janigan, M (2012). 'Let the Eastern Bastards Freeze in the Dark' The west versus the rest since confederation. Western alienation is a term commonly used to refer to the tendency of western provinces in Canada to claim their interests are marginalised by the central government.

³⁵ Personal Interviews, October 2012

increasingly less of the provincial burden.³⁶ Changes made in 2014 are expected to further reduce the amount provinces will receive from federal health transfers going forward. Austerity provides a strong incentive for political agents with sub-national SWFs to draw on investment income to fill these short-falls, which directly conflicts with their mandates to save for future generations.

The ‘Alberta Advantage’: the idea of neo-mercantilism

Investment income earned on the Fund serves as an invisible tax on citizens. This income allows the government to pursue province building, while boasting its low tax regime to attract business investment. Indeed, Alberta is the only province in Canada not to levy a sales tax. Compared with international energy producers, Alberta has among the lowest royalty regimes. In part, this has been attributed to the high cost of extracting bitumen and therefore the need to provide incentives to attract investment to Alberta’s oil sands. The lack of market price for bitumen adds to the challenge of establishing an appropriate royalty rate. In 2007, an independent review of the province’s royalty regime found that the province had forgone \$1.9 billion annually in potential revenue and that the government could raise its total government take ‘without endangering its competitive position; (Alberta Royalty Review Panel 2007).³⁷ The government has since revised its

³⁶ For example, projected health care costs in the province of Alberta have increased 3.5 times since 1995, adjusted for inflation (Author’s own calculations using statistics Canada data). Over the same period, social and education spending have doubled, while the population has increased 1.5 times (based on own calculations, Stats Canada CANSIM data).

³⁷ The report concluded: ‘To the question “are Albertans getting a fair share?” the answer is “no.” Alberta’s percentage take from energy development has dropped over the past decade, both absolutely and relative to other energy-producing jurisdictions. Royalties should be increased overall, and rebalanced fairly between high, low, old and new production.’

royalty framework to reflect some of the recommendations of the panel. While its royalty framework is arguably more aligned with interests of society, natural resource extraction provides a highly volatile source of revenue, which makes predicting future budget surpluses and deficits difficult (see figure III. 3).

The Sustainability Fund was established in 2005 to smooth budget deficits (i.e. it is a budget stabilisation fund). The Sustainability Fund consists of excess natural resource revenues not allocated to the AHF or the annual fiscal framework, such as when budgets overestimate expenditures or unexpected commodity prices lead to underestimating revenues. At one point the Sustainability Fund reached \$17 billion. The Sustainability Fund can be drawn on for discretionary purposes at the will of the Alberta Treasury. In interviews, it was described as a slush fund. Recent legislative changes introduced in 2013 cap the fund (now named the ‘contingency fund’) at \$5 billion, bringing it more in line with best practice rule-based stabilisation funds (Landon and Smith 2012).

Initially the AHF engaged in a direct form of province building, through the Alberta Investment Division (AID). The AID made investments in the province, operating much like a local development bank. The majority of investments were unsuccessful, with a few notable exceptions, including a \$500 million loan to Syran crude (Warrack 2005). Significant financial losses with high inflation in the 1980s and the restriction from investing in public equities contributed to a lack of success in diversification of the economy. Alberta remains highly dependent on oil. That said, diversification exists within Alberta’s energy industry, as natural gas, crude oil and bitumen are generally uncorrelated given that they are often used as substitutes for each other.

In 1997, legislative changes were made to the Fund prohibiting investment for economic or social development purposes and the AID programme was abandoned. In its place a new diversification strategy was pursued, which involved investment revenues from global financial markets to cushion against the volatile commodity prices.³⁸ This included a shift from investing primarily in fixed income, located within the province and Canada, to public equities. The creation of the Alberta Investment Management Corporation (AIMCo), an independent investment management corporation operating at arm's length from the government, has allowed the Fund to further diversify its investment allocation. Overall, the Fund has seen a reversal in investment flows from domestic to global markets and from early reliance on fixed income and equities to alternative long-term inflation linked assets. That said, equities still make up an important component of its allocation.

(Insert figure III. 4 about here)

Political agents of the AHF do not face the same restraints on spending the revenue from natural resources, and the investment income it generates, as do national funds like the Australian Future Fund or the Norwegian Government Pension Fund-Global. These national economies are small relative to growth in export revenue as natural resources increased. As such, they cannot absorb such a large volume of externally generated wealth without detrimental effects on their macro-economic

³⁸ While 1997 marked the end of the Alberta Investment Division, Alberta has a provincial development bank – ATB Financial, and the government is its sole shareholder. ATB has CAN\$ 33 billion assets as of 2013.

stability. Establishing an SWF is a macro-economic necessity as much as it is a commitment to the future (Clark and Knight 2011).³⁹

In contrast, politicians are able to invest and spend windfalls from exports of oil and the investment income it generates in the domestic economy, without a resulting increase in inflation or macro-economic imbalances. Alberta has one of the highest rates of economic growth, measured in real GDP, and one of the lowest unemployment rates (average unemployment since 2001, 4.8% compared to national average 7.2%). Over this same period, inflation has tracked closely to the national average (see figure III. 5). Increases in average weekly earnings have often outpaced inflation (see figure III. 5). Alberta is insulated to some degree from macro-economic pressures that face national governments and, as such, can absorb excess domestic demand.

(Insert figure III. 5 about here)

In the absence of any discipline applied by macro-economic imperatives that face national SWFs, coupled with competitive pressures in a federal decentralised system, the AHF is an invisible source of taxation revenue from income investment at the disposal of political officials. The competitive pressure in a fiscal decentralised system creates a strong incentive for political agents to draw on SWF assets to fill gaps left by tax incentive programmes to attract business development. This directly conflicts with the AHF's inter-generational equity mandate.

³⁹ It is important to recognise while the Australian Future Fund represented concern for macro-economic stability, it also was an active decision taken by the Fund's architects to save for the future. See Clark and Knight (2011) for discussion.

Getting their ‘fair share’: the idea of equality

While evidence suggests that economic convergence occurs as a consequence of fiscal federalism (Ezcurra and Pauscal 2008), economic and fiscal disparities still loom large in many federations, given path dependencies and diverse physical geography and demographic realities. Ontario and Quebec, and more recently BC and Alberta, have been the main drivers of the Canadian economy (based on provincial GDP figures, Statistics Canada). Unique to the Canadian federation is its equalisation programme, which is designed to ensure that all citizens have ‘equal access to public goods and services at a reasonable rate of taxation’. The equalisation formula calculates a province’s capacity to tax using a national average rate of taxation. A province’s per capita equalisation entitlement (or debit) is equal to the amount by which its fiscal capacity differs from the national average fiscal capacity. Natural resource wealth derived from royalties is not included in the equalisation calculation, though the downstream revenues in higher incomes and business profits are captured in the formula.⁴⁰

In recent years, the federal equalisation programme has faced hostility from the Alberta public. Many Albertans believe that they suffer the downside of a resource economy (migrant population, pressures on infrastructure, environmental degradation) while sharing the benefits with other provinces and shareholders mostly residing outside of Alberta. For example, Alberta’s citizens often perceive themselves as supporting bloated social programmes in Eastern provinces (Burgess 1999). It was suggested that

⁴⁰ For a useful discussion on equalization in see McMillan, M., (2012) Alberta and "equalization": Separating Fact from Fiction or, Sorting Out Some Implications and Options in Canadian Fiscal Federalism, Issue Bulletin 155.

there is a perceived fear among the Albertan general public that the SWF could be raided by the central government during hard times, providing a disincentive for building up the assets of the fund in the first instance.⁴¹ In its early days, the AHF was used as an instrument for sharing the benefits of the windfall with poorer regions to maintain legitimacy (Warrack 2005). In particular, the Canadian Investment Division was established to grant favourable loans to other provincial governments at concessionary rates. The programme allocated up to 20% of the Fund. It was terminated in 1982. The federal government grew suspicious of Albertans' control by recipient provincial governments and contributed to changing Alberta's attitudes towards equalisation (ibid 2005).

Grievances of regional equality also flow in the other direction. The cooperation of other provinces is instrumental for accessing international markets, since Alberta is landlocked. New pipelines are proposed to transport oil and the province is heavily dependent on the national rail network to export its oil. While these regions share in the risks of transportation of dangerous commodities for export, they do not share the benefits, at least directly. For example, British Columbia has identified the AHF as a potential bargaining chip in negotiations over the proposed Northern Gateway pipeline. Looking eastward, provincial and federal leaders often blame Alberta's success in the extractive sector for the high Canadian dollar and hollowing out the manufacturing sector. Taken together, these ideas about regional equality shape the interests of political agents in Alberta towards using its SWF as a mechanism for redistribution within generations, which directly conflicts with the redistribution of wealth across generations.

⁴¹ Personal interviews, October 2012

GOVERNANCE, ACCOUNTABILITY AND LONG TERM INVESTING

Best practice governance

It is widely held that institutional governance can serve as an important defense against political short-termism (see Clark and Urwin 2008; 2010; Clark and Monk 2012). This section focuses on best practice governance set out by Clark and Urwin (2008) and considers limits to its application in a sub-national context. Their framework has the advantage over other governance evaluation frameworks for publicly sponsored institutional investors (e.g. Truman 2009) because it does not idealise a particular size or form, therefore accommodating diverse and path dependent structures. Their framework focuses on three key themes: coherence, people and process. While each theme has multiple dimensions, the focus here is on clarity of the AHF's mission (coherence), the Ministry of Finance and the all-party standing committee responsible for reviewing strategic decisions (people), and the independent investment management institution AIMCo, established in 2008 (process).

The mandate of the AHF has undergone several transformations since the Fund's inception. The AHF was originally established as a rainy day fund and, subsequently, as an economic and social development bank; and in 1997, as noted above legislative changes restricted the Fund from economic development and socially motivated investments. Currently, 'the mission of the Heritage Fund is to provide prudent stewardship of the savings from Alberta's non-renewable resources by providing the greatest financial returns on those savings for current and future generations of Albertans'

(AHF Annual Report 2013). The Fund has a targeted 4.5% long-term rate of return over a five-year rolling period.

At first glance, the Fund reflects a framework for ensuring inter-generational equity that reconciles the needs of future generations with the needs of the current generation. But underneath is a distinctive political agenda. For example, the government recently announced two new endowment funds to be carved out of the AHF, reflecting a return to the previous mission to contribute to economic and social development (see figure III. 6). Moreover, the Heritage Fund has a significant commitment to equities, justified on the basis that equities promote long-term returns. This emphasis on equities veils the political reality that equities are relatively liquid and as such provide the political sponsors of the Fund with access to short-term returns. The Fund's mission is based less on principle and sound commitment than it is on the whim of political elites.

The Fund is ultimately the responsibility of the Alberta Minister of Finance. A nine-member all-party standing committee reviews and approves the Fund's performance, annual report and the business plan. It also holds public, televised meetings. Verbatim transcripts are available online. In interviews with those who participated in standing committee meetings, meetings were described as political theatre and far from an adequate forum for political accountability.⁴² While serving as a proxy for an upper house (which the Alberta government does not have), the standing committee has no decision-making power, nor does it have any resources of its own.⁴³ Ultimately the

⁴² Personal Interview October 2012

⁴³ Personal Interview October 2012

standing committee is accountable to the legislative assembly, undermining its potential as a check on power.

With respect to process, investments were originally managed by the Alberta Department of Finance. In 2008 the Province created AIMCo, an independent investment management corporation, modelled on the Canadian investment institutions that manage public assets internally. As of 2012, AIMCo manages 26 public funds, including pensions and endowments on behalf of the province. Assets of the funds are pooled, such that the AHF is invested in the same way as pension funds and other endowments in the province. Given its independence from bureaucracy, AIMCo is able to recruit talent by offering incentives commensurate with the private sector and to manage a sophisticated investment strategy in inflation-linked assets including infrastructure, real estate and timberlands. The Board of AIMCo is appointed by the Minister of the Treasury Board and Finance. To be appointed to the Board, a director must have demonstrated relevant experience and expertise. There are currently no political representatives on the Board. The Minister is ultimately responsible for the Fund. The Department of the Treasury Board and Finance is delegated responsibility for developing the investment policy and monitoring investment performance of AIMCo. That is, the department sets the policy portfolio and AIMCo has authority to invest within this guideline.

While the creation of AIMCo offers a promising step forward in accordance with best practice governance, the AHF performs poorly overall on governance. The legislature has shown its willingness to renege on previous commitments and the mandate has shifted drastically over time. The good news is that other regional SWFs are taking notice of Alberta's experience as a cautionary tale. For example, Saskatchewan recently

announced plans to re-establish its SWF to manage windfalls from potash and uranium development. The Province has consulted leading governance experts including global investment consultant Towers Watson and has set out to integrate best practice governance from the beginning to avoid the pitfalls of the AHF.⁴⁴

THE IDEA OF LONG-TERM INVESTING

In this section I consider the possibility that ideas not only constrain actions but also enable them. More specifically, I consider how long-term investing might extend possibilities for holding political power to account in the context of sub-national SWFs and their inter-generational equity mandates. Long-term investing is an idea that shapes the way that investors make decisions and see problems and opportunities. Long-term investing requires holding illiquid assets, such as infrastructure and real estate. These assets provide an illiquidity return premium that is often linked to inflation, thereby protecting value for future generations without having to rely on political commitment to inflation-proof the fund. A long-term investing strategy can also indirectly contribute to inter-generational equity. That is, long-term investing prevents political agents from relying on income generated from short-term, highly liquid investments for annual budget expenditures, thereby tightening the soft budget constraint and ensuring more sustainable fiscal systems. Long-term investing does not require the assignment of ownership rights or renegotiation of the complex relationship between central and sub-national levels of government, unlike market-based solutions such as the dividend policy used by the

⁴⁴ See McKinnon, P., (2013) 'A futures fund for Saskatchewan'

Alaskan Permanent Fund that seeks to privatise the benefits of the Fund, or legal-based solutions that require funds to share rights over natural resource revenue with national governments.

But adopting a long-term investing strategy requires an active choice by local politicians to establish new governance processes, such as longer tenure for directors and performance measures that tolerate short-term volatility. Moreover, asset managers often require more autonomy to implement these strategies, given the high level of sophistication involved in accessing alternative asset classes. These changes affect the existing distribution of power between sponsors and their investment managers. Moreover, long-term investing requires politicians to willingly give up access to their slush fund and engage in unpopular decisions to increase taxes or cut spending to balance the budget. This presents the classic puzzle in political economy: rational political actors will not adopt a new strategy based on economic efficiency when the status quo suits their own self-interest.

Rodrik's (2014) concept of political entrepreneurship provides some guidance for transcending this tension. Contrary to most political economists, who emphasise the gap between economic optimality and political reality, Rodrik sees ideas as also enabling possibilities. He argues, with the analogy of the technology transformation frontier, that political entrepreneurs can break down their own constraints by exercising the self-reflexivity of the existing ideas that shape their interests. There are two ways that this framework can be applied to explain why a politician might adopt a long-term investment strategy for their SWF. First, there may be an asymmetrical trade-off, such that any rational political agent would sacrifice their access to the slush fund in return for what

they stand to gain from a long-term investing strategy. Savvy ‘political entrepreneurs’ are able to identify this asymmetrical trade-off and engage in policy arbitrage. Second, long-term investing may actually be integral to a politician’s self-interest once we consider the way these interests are shaped by ideas.

First, consider the trade-off facing a politician considering adopting a long-term investing policy for the sub-national SWF. In return for giving up access to short-term investment returns, a long-term investing strategy can contribute to making good on political promises to diversify the local economy away from unpredictable and temporary natural resources. Assets such as direct infrastructure can provide a source of diversified and sustainable returns. While the individual interests of politicians may not be served by these benefits when conceived in strictly economic terms, if we accept that politicians are often motivated by loyalty to their political parties then they have an interest in ensuring diversification and a sustainable tax base to sustain political power. Second, in a competitive political environment, forward-looking politicians have an interest in tying the hands of future politicians (Besley 2007; Moe 2013). Withdrawing from a long-term investing strategy can incur significant transaction costs. In some cases, it may not even be possible to liquidate assets. Adopting a long-term investing policy can prevent future governments (including central governments) from accessing short-term returns to achieve objectives inconsistent with the ideological preferences of the incumbent. Third, perhaps more than most vocations politicians are intrinsically motivated (see Bénabou and Tirole 2003) and take their fiduciary duty to society seriously (Besley 2007). The intrinsic value gained from ensuring wealth for future generations may outweigh the economic value of the loss of access to the slush fund.

Moreover, a long-term investing strategy can support politicians in responding to the myriad of claims for ethical investment that can undermine the short-term financial performance of a fund and raise politically divisive conflicts. In the absence of significant investment in the fund's governance, (e.g. the Norwegian Council on Ethics had eight full time staff and five Council members dedicated to ethical claims in over 8000 public equities), claims on ethical investment can place political agents in an impossible situation of defining ethics for a heterogeneous society (Clark and Monk 2010). Recently, opposition members on the AHF Standing Committee have argued for ethical investment on the basis of the Norwegian Fund's criteria.⁴⁵ The Fund's asset manager acquiesced, justifying the decision to divest on efficiency grounds, given the enormous amount of resources required to properly investigate the companies for their complicity with ethical violations.⁴⁶ The AHF is likely to face more ethical scrutiny as the fund grows in size. Committing to a policy of long-term investment can contribute to mitigating tension between ethics and efficiency. That is, by moving away from a heavy allocation to public equities and toward more long-term investments in assets that broadly promote the sustainability goals of society such as infrastructure, long-term investing can buffer a politician from these impossible public debates. As such, politicians may have more to gain than what is lost from limiting their own access to short-term investment returns once we take into account the possibility that ideas shape their interests.

⁴⁵ See transcripts from standing committee meeting, 20 October 2011, for discussion on the possibility of subjecting the AHF to the Norwegian ethical screening criteria.

⁴⁶ Former Chief Executive Officer of AIMCo Leo de Bever responded: 'the reason I divested of the things that were mentioned in the heritage fund meeting last time (refers to Norwegian ethical criteria), altogether amounting to something like \$20 million I didn't do it particularly because I agreed with the assessment of what was ethical, but if I spend 5% of my time on .001 percent of assets, that's not a good use of AIMCo time or AIMCo management time.' Alberta Heritage Fund, transcript, Standing Committee Meeting.

A long-term investing management contract can substitute for the social contract in the case of sub-national funds. AIMCo has recently adopted a responsible investment policy that includes engaging with companies on ESG risks and has signed the United Nations-backed Principles for Responsible Investment, signalling its commitment to long-term investing. But AIMCo represents over \$80 billion of pooled and heterogeneous funds with different liability profiles and time horizons. If the AHF does grow to the projected \$100 billion as proposed by the current government by 2020, it will dwarf the other funds managed by AIMCo, requiring its own specific long-term investment contract. Moreover, if SWFs like New Zealand are any indication of what is possible, the asset management strategy for the AHF could look very different from the other pensions and endowments managed by AIMCo. Indeed, the most recent changes to the Fund's investment policy increased the weight it has placed on alternative (illiquid) assets to 30 percent (Annual Report 2012/13). But, with the continued potential for withdrawals from the Fund by its political sponsors, AIMCo remains constrained in its ability to make longer-term commitments to large deals requiring immediate action.

CONCLUSION

Concern for inter-generational equity is not new. Since at least the eighteenth century, the nation-state has been ascribed responsibility for inter-generational equity. This was initially justified on a conservative appeal to preserving the integrity of the past and acknowledging the path dependence that characterises the evolution of states as reflected in the writings of Edmund Burke (1790). But, when faced with twenty-first century problems, including climate change, environmental degradation, geopolitical resource

scarcity and increasing financial and economic interdependence, many argue the nation-state is no longer equipped to deliver on commitments to the future. Indeed, some have called for a global social contract, seeking to push power upwards and homogenise solutions to match our increasingly shared environmental, economic and social problems. Brown Weiss' (1983) Planetary Trust is among the most influential practical frameworks for ensuring inter-generational equity (see Woods 2011b). A global social contract relies on the assumption of convergence in values, norms, beliefs and interests they engender.

But this convergence and the implied irrelevance of the nation state has been grossly overstated in the globalisation narrative. Beyond its role in crisis intervention and lender of last resort, as witnessed in the most recent global financial crisis, the state is an enabler of globalisation (Weiss 2005). Moreover, as a proactive response to the resource curse, many resource-rich states have established SWFs to invest in global capital markets and sterilise their currencies. In this way, the state uses its SWF to protect against volatility in global financial markets (Clark *et al.* 2013). Frameworks for inter-generational equity that rely on extending the social contract beyond the sovereign take for granted the idea that current generations will guard the interests of future generations, irrespective of cultural, historical or social contingences (see Clark and Woods 2012). If the sovereign state is eroding, it is occurring from the opposite direction; a self-imposed and deliberate fragmentation and not a reluctant homogenisation. Indeed, the devolution of authority to local governments in most western societies is a top-down process in an effort to retain legitimacy of the state, post-Wall Street crisis (Peck 2014).

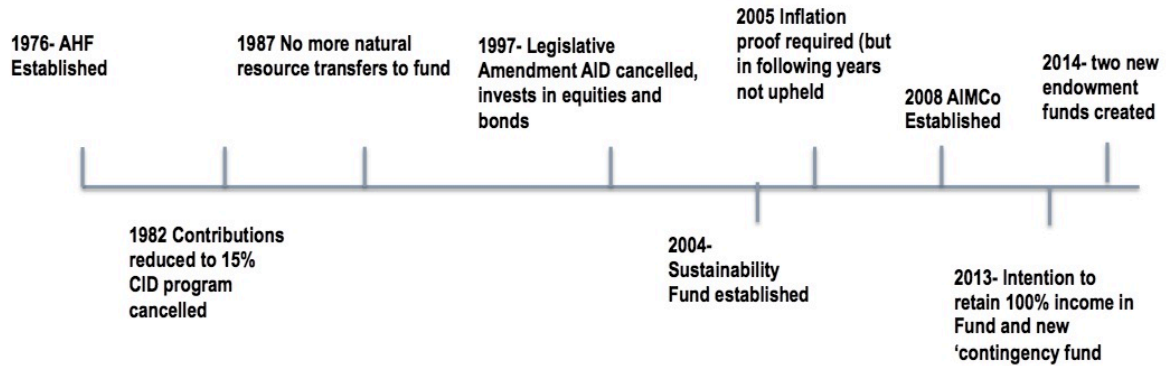
In both cases, solutions seek to circumvent the nation-state all together, as 'problems are too big, too interdependent, too divisive for the nation-state' (Barber

2013). But both views mistake the erosion of the nation state for the manifestation of sovereignty on different spatial scales (see Agnew 2009). Extensions of the social contract to either the global or sub-national level cannot internalise the perverse short-term incentives facing political agents. A sovereign state has at its disposal the legislature, courts, central banks, and election systems to complement the incomplete social contract (Gibbons 2005). These institutions do not exist on a global level. In the case of sub-national funds, local and state/provincial governments do not have control over their borders or monetary policy and can therefore not uphold reciprocal commitments. The challenge is to find a new framework for inter-generational equity as a suitable replacement for the social contract in which to instill a higher moral purpose in politicians at different spatial scales.

The framework presented in this chapter was concerned with incentives to make sub-national SWFs accountable for ensuring inter-generational equity. Indeed, in an era of austerity and devolution of fiscal and political authority, sub-national funds are likely to play an increasingly important role in the management of natural resource revenues. Taking political realities as constraints, the chapter considered how ideas can be used to transcend constraints to create new possibilities for political action and not just constrain them. Similarly, the theoretical arguments presented here can be extended to consider the implications for supranational arrangements that seek to manage wealth for current and future generations. The first-best option is to fully consolidate natural resource revenue with the sovereign state. But recognising we must often operate in a second best world, the idea of long-term investing reflects a powerful tool for reconciling the ambiguous goal of inter-generational equity with political accountability.

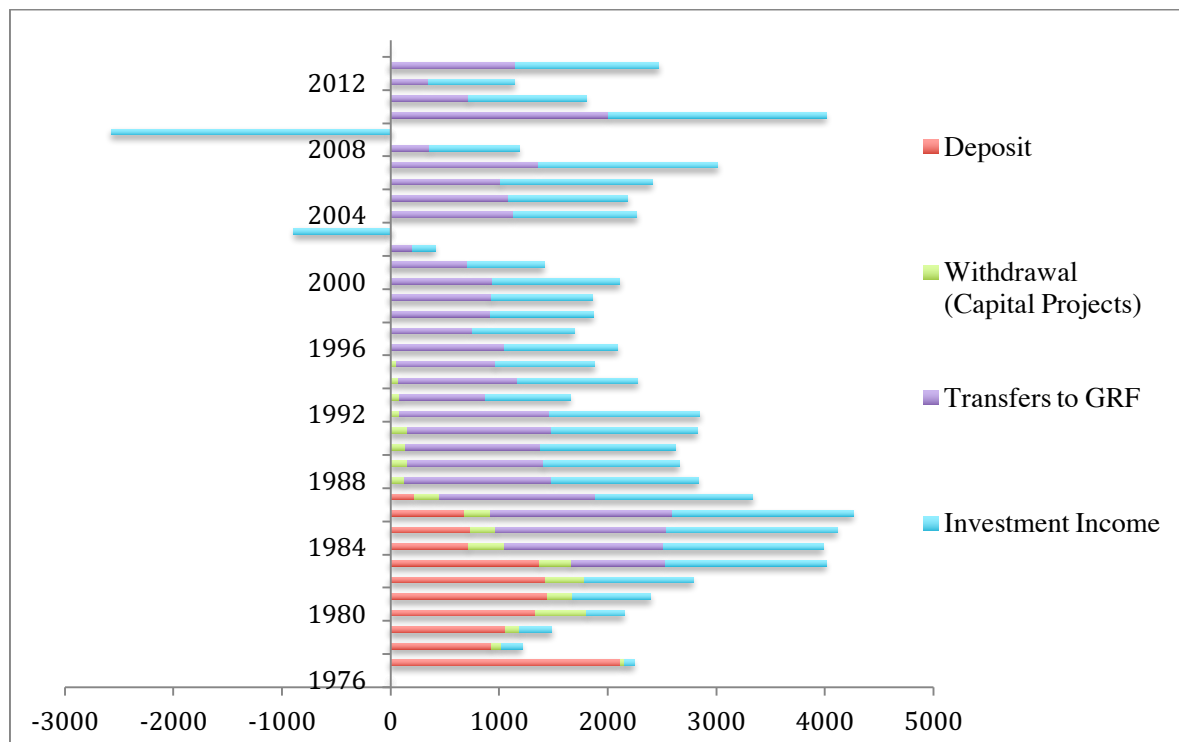
Appendix III

Figure III. 1 Alberta Heritage Fund Timeline



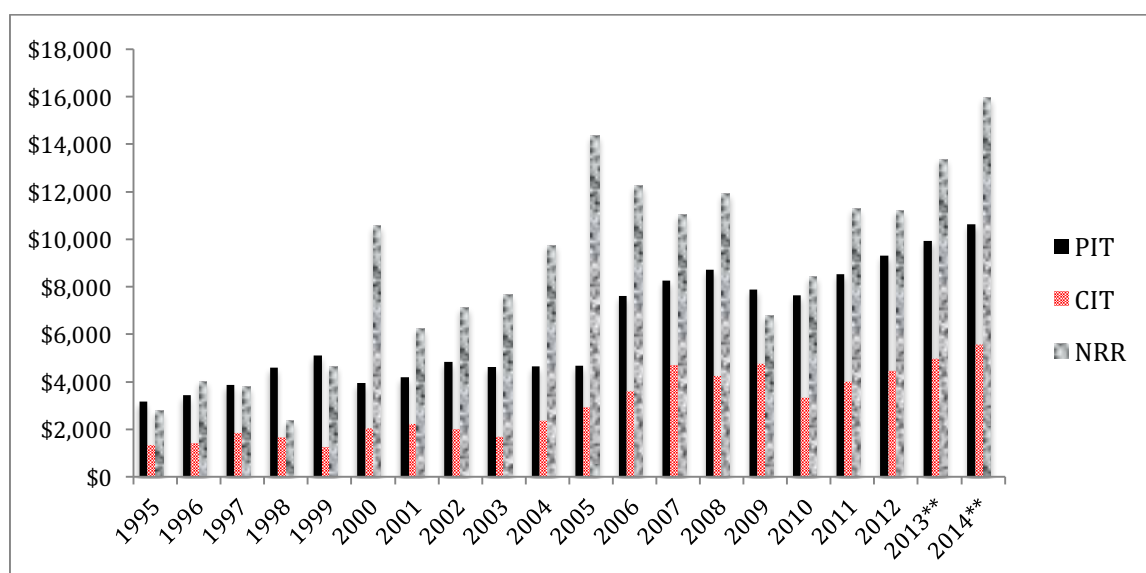
Source: Various AHF Annual Reports

Figure III. 2 Alberta Heritage Fund Deposits and Withdrawals 1976-2013



Source: Various annual reports, Alberta Heritage Savings Trust Fund (reported in nominal values). After 1987, no more deposits were made to the Fund. Inflation proofing is the difference between transfers and investment income (years 2005-2008). For all years since 1988, withdrawals to GRF have equaled investment income.

Figure III. 3 Alberta Tax Revenue 1995-2014



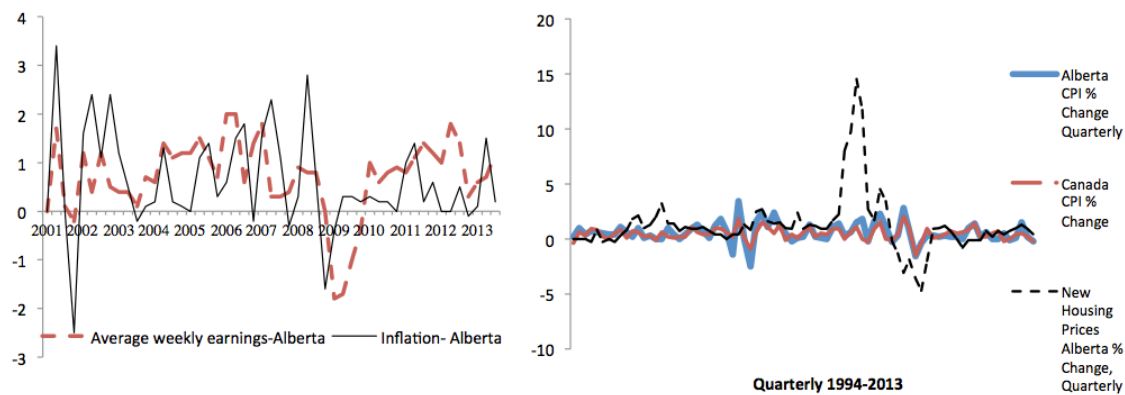
Source, various budgets, Alberta Treasury Board and Finance Department. Revenue reported in (millions).
 *Personal income (PIT), corporate income (CIT) and natural resource revenue (NRR) 1995-2014 adjusted for inflation (base year = 1995). ** Projected revenue Investment income revenue average \$1 billion. Over same period, the government has run a surplus until 2009, deficits every year. The Government retired its debt in 2013, but in 2014 budget announced \$5 billion debt to finance infrastructure.

Figure III. 4 Asset allocation: Alberta Heritage Fund 1993-2013

Asset Allocation (%)	2013	2008	2003	1998	1993
Fixed Income	20.2	30.5	35.8	80.8*	98.2
Public Equities	53.3	46.1	52.9	1.2	1.8
Canada	7.9	15.7	21.4	-	1.8
US	(39)	15.1	15.8	-	-
Global	39	15.3	15.7	-	-
Private Equity	6.4	3.6	0.80	-	-
Real Estate	17.1	10.8	7.9	-	-
Infrastructure	6.0	-	-	-	-
Alternative (Timberland private debt)	3.5	9	0	-	-
Direct Investment, Loans (Alberta)	0	0	0	0	84 m
Direct Investment, Loans (Canada)	0	0	0	0	0

Source: various public annual reports, Alberta Treasury Department*12.8 Provincial corporate debentures, project loans 4.4% and .8% deposits () US included in global allocation.

Figure III. 5 Alberta CPI, Average Weekly Earnings and New Housing Prices



Source: Author's own calculations from Quarterly CPI data Alberta reported as % change inflation and % change in Alberta NHI over same period (1994-2014, quarterly) from Stats Canada, CANSIM. Chart 2 shows CPI % change quarterly and %change in weekly wage earnings, averaged over a quarterly from 2001-2013.

Figure III. 6 Alberta Endowment Funds

Endowment Name	Year Created / Allocation from AHF	Spending
Alberta Future Fund	Established: 2014 \$200 million (2014) and \$200 million in each of the following nine years, for a total of \$2 billion	Discretionary spending, up to \$2 billion (no legislative approval required)
Agricultural and Food Endowment	Established: 2014 \$200 million (2014-15)	Legislative approval
Social Innovation Endowment	Established: 2014 \$500 million (2014-15) and \$500 million (2015-16)	Legislative approval
Alberta Heritage Scholarship Fund	\$200 million (2014-15)	Legislative approval
Alberta Heritage Science and Engineering Research Endowment Fund	\$40 million (2009) and used to support 'projects in Alberta's vibrant innovation economy'	Legislative approval
Alberta Heritage Foundation for Medical Research Endowment Fund	Over a period of 30 years, the AHFMR has invested more than \$850 million in medical research	Legislative approval
Alberta Cancer Prevention Legacy Fund	Established in 2006 Act establishing the Fund required \$500 M from the General Revenue Fund	Legislative Approval
Advanced Education Endowment / Access to the Future Fund	Suspended in 2011	N/A

Source: Alberta Treasury Department, various reports

IV. POLICY AMBIGUITY, DISCRETION AND ETHICS IN NORWAY'S SOVEREIGN WEALTH FUND

Submitted to: Business and Politics

INTRODUCTION

In the few short years since their formal induction in global financial markets, sovereign wealth funds (SWFs) have become the new subject of a long-standing debate over the politicisation of finance. As state-sponsored pools of capital invested in global financial markets, the investment policies of SWFs are often perceived to reflect national interests such as the expression of values and ethics, redistribution of wealth and geopolitical security. While most focus on the conflict between politicised national interests and the legitimacy requirements to participate in Western financial markets, less concern is expressed over the effective management of sovereign wealth from a domestic perspective (Monk 2009). One salient example of this internal conflict is illustrated in the ethical investment policies. Broadly conceived, these policies refer to the exclusion and divestment of companies that violate a set of ethical criteria. This 'exit' strategy conflicts with long-term wealth management through engagement activities that seek to change corporate behaviour by using the investor's voice (Hawley and Williams 2000; Clark and Monk 2010). Adding another dimension to this internal conflict is the public pressure to extend ethical investment to include investments that intentionally promote sustainability objectives. Such investments raise difficult questions regarding strategic asset allocation, liability structure and performance benchmarks, among others.

Internal conflict is prevalent in the Norwegian Government Pension Fund-Global (NGPF-G), one of the largest SWFs in the world with over \$US 800 billion in assets under management. The Fund has an ethical investment policy that requires the exclusion of companies on the basis of complicity with violations of its ethical criteria, which conflicts with its engagement activities to elicit change in corporate behaviour in pursuit of the Fund's long-term wealth preservation goal (Clark and Monk 2010). At a time when the Fund is deliberating the exclusion of fossil fuel companies from its universe, and public pressure for extending ethical investment to include positive investments in sustainable infrastructure and energy projects is mounting, this chapter offers some reflections on the evolution of the ethical policy since it was first adopted a decade ago. More specifically, the goal of this chapter is to explain the consequences of internal conflict for the decision-making process of SWFs in a complex and rapidly changing external environment.

There are two possible outcomes of this conflict, which reflect broader debates about the evolution of organisations and institutions (Hodgson 1999; Mahoney and Thelen 2010). First, the cost of pursuing a particular policy may become so large, making it impossible to justify against alternative uses of an organisation's resources. In this instance, the conflict will naturally resolve itself. Alternatively, the conflict persists because the policy reflects an ambiguous compromise between competing interests and not a fixed ideal outcome or goal. This chapter suggests the latter outcome reflects the context of the Norwegian ethical investment policy. It asks: what does it mean to implement an ambiguous policy? It argues that ambiguity inherent in the Fund's ethical investment policy acts as a built-in adaptation mechanism, and that agents responsible for

implementing the policy use their discretion to interpret and, in doing so, perform the policy. In developing this argument, this chapter contributes to the literature that views discretion as interpretive (see Best 2012) and not only a response to bounded rationality and uncertainty (see e.g. Holmstrom 1977; 1984; Epstein and O'Halloran 1999).

Paradoxically, the use of discretion to adapt to complexity in the external environment leads to an increase in internal administrative complexity. This is because ambiguous policies increase the need for expertise and discretion to implement them, which consequently increases the need for monitoring and control to mitigate agents' abuse of their discretion. This classic principal-agent problem is explored in Williamson's (1963) model of managerial discretion. But, when there is no ideal outcome, this trade-off between expertise and loss of control is elusive. Resources must be dedicated to justifying the process of decision-making, since it is not possible to measure the outcomes of the ethical investment policy directly. Complete delegation to expertise is not a viable solution for public funds that depend, at least in part, on political legitimacy (Clark 2007; Clark and Monk 2010). At its limits, ambiguity in policy goals contributes to hollowing out an investment institution's capacity, such that its legitimacy rests on an empty, though deeply entrenched, consensus – the hollow adaptation paradox.

To be sure, many policies are not ambiguous and formal models of delegation and discretion can provide valuable insight. But SWFs are more prone to ambiguity in their investment policies given their multiple dimensions of accountability (Gelpern 2011; Pekkanen and Tsai 2011). Elsewhere, ambiguity is explained as a strategic and deliberate decision by those with power in an organisation and who benefit from the discretion to interpret policies under conditions of uncertainty and complexity. Ethical and responsible

investment policies are adopted at the top of the organisation. These policies are more likely to reflect the unintentional use of ambiguity given their high degree of exposure to the political process (Baier *et al.* 1986; Matland 1995). The cost of renegotiation among a political coalition is high and there is no reason to believe that a new policy would be any less ambiguous given the same conditions under which it must be negotiated. Ambiguity then is a permanent feature of organisational life and does not dissipate over time.⁴⁷ At issue is how managers' interpretations of ambiguous policies change to reflect new complex realities.

The arguments made in this chapter have analytical value for SWFs and other public organisations more broadly. The chapter focuses on the Norwegian Fund because of its high degree of political legitimacy that depends on expert, rational decision-making. Its ethical policy is based on overlapping consensus, a legal principle that suggests a norm structure can provide a basis for determinant decision-making even when the rules and formal text run out. Discretion granted to the Fund's central bank and Council on Ethics has been reflected as an optimal form of delegation under conditions of uncertainty and complexity. In contrast, this chapter proposes there is no ideal outcome in the ethical investment policy, either morally or as established social fact, and acting as if there is such an outcome is increasingly costly for the NGPF-G to maintain in the face of the rapid pace of change in global financial markets.

The chapter proceeds in the following way. The next section reviews the literature on the interests of SWFs. It suggests SWFs must often adopt ambiguous policies where there is no ideal outcome as a consequence of conflict among dynamic and diverse interests. This is followed by an explanation of how the implementation problem under

⁴⁷ James Mahoney and Kathleen Thelen 2010 make a similar point regarding ambiguity in institutions.

ambiguous policies differs from conventional delegation models under uncertainty. The chapter explains that, as complexity increases in the external environment, more administrative resources are necessary to justify agents' interpretations of the policy, which in turn hollows out the capacity of the Fund to actually implement its ethical investment policy. Next, the chapter demonstrates these arguments in the case of Norway's ethical investment policy. The penultimate section considers how the NGPF-G has attempted to transcend the hollow adaptation paradox. The chapter concludes with consideration for limits to interpretive discretion to adapt under increasing complexity.

THE INTERESTS OF SOVEREIGN WEALTH FUNDS

Interests play a central role in analyses of decision-making in conventional models of rational choice. Knowing one's own interest is necessary to maximise expected utility (Jensen 2001). Knowing the interests of others allows the decision-maker to choose the best course of action in the light of expectations about others. Conventional theories in economics make no distinction between individual and organisational interests. That is, the aggregation of individual preferences is itself an unambiguous process resulting in an unambiguous outcome. In the private firm, authority can be used to ensure all employees adopt the same goal. Incentives are used when uncertainty makes it difficult to monitor employee behaviour. In the context of relationships between firms, contracts serve as the basis of aligning interests. Relational contracts and incentives discipline agents under uncertainty and complexity (see Prendergast 1999; Baker *et al.* 2002). In public organisations, elections in democratic societies and more coercive mechanisms in autocratic ones serve to aggregate individual and group interests into a single and unified

national interest. Common among all these models is the ability to condense heterogeneous interests into a single and coherent goal.

Sovereign wealth funds have been subject to significant scrutiny because they are believed to have both political and economic interests (Aizenman and Glick 2009). Indeed, taking large stakes in strategic national infrastructure and financial institutions have inspired significant fear among those that rely on rational choice models to form expectations about financial markets (Summers 2007). This fear has encouraged several empirical studies of their asset allocation and active ownership that seek to elucidate the motivations of SWFs. For example, Bortolotti *et al.* (2010) find that firms perform worse after acquisition by SWFs despite an initial positive market reaction, suggesting political influence may be present. Some propose constraints on SWF ownership rights (Gilson and Milhaupt 2007) and a high degree of transparency (Truman 2011) to sterilise their political motivations. These proposals have been institutionalised in the Santiago Principles (2008), a multi-lateral governance framework upon which many have hung their hopes for SWFs as ‘sought after providers of capital’ (Berhendt 2010: 13). Consistent across all these studies is that interests are understood as the manifestation of the political elite’s explicit intention to achieve some *a priori* and coherent political objective.

In contrast, scholarship that focuses on the internal dynamics of SWF investment decision-making advances a multi-layered conception of the national interest. SWF investment goals are the result of extensive bargaining among domestic groups and individuals. That is, SWFs reflect a coalition of diverse interests and not a clear winner. Pekkanen and Tsai illustrate this heterogeneity even among SWFs sponsored by

autocratic states that arguably are less exposed to domestic deliberation (Pekkanen and Tsai 2011). Anna Gelpern (2011) provides a framework for interrogating both the internal and external accountability dimensions facing SWFs and the various inconsistencies that require ongoing negotiation of their goals. Similarly, the series of Oxford SWF case studies elucidate the conflicts inherent in their goals (Clark and Monk 2010) and tensions between generations (Clark and Knight 2011). Moreover, SWFs serve to buffer the state against volatility in global financial markets (Clark *et al.* 2013). Taken together this literature suggests that SWF behaviour cannot be collapsed into a strategic national interest but must be understood as an ongoing negotiation between a variety of interests and the macro-economic forces that act upon these interests.

The lack of a single objective function need not result in chaos, as Jensen and others steeped in the rational choice tradition would have us believe (Jensen 2001). Indeed, ambiguity can be constructive for individuals, organisations and institutional arrangements as it provides a source of endogenous adaptation (Best 2005; 2012; Mahoney and Thelen 2010). Any attempt to understand SWF investment behaviour must account for the ambiguity inherent in the policy formation process. This requires avoiding the temptation to directly map interests to policy outcomes (Rodrik 2014). As Baier *et al.* (1986: 198) argue, ‘individuals and groups support (often with extraordinary vigor and at considerable cost) the adoption of policies that symbolise important affirmations even where they are relatively unconcerned with the ultimate implementation of the policies.’ Policy ambiguity allows different individuals to agree

and support a policy for different reasons and to hold different expectations about the outcomes.⁴⁸

Ambiguous policies present a puzzle for implementation. In the context of ethical investment policies there is often no consensus on which criteria should be used to base decisions upon. Further confounding ethical investment policies are the objectives of the policy itself. While ethical investment is based on moralist grounds, it is often confused with responsible investment, which seeks to manage long-term risks related to environmental, social and governance factors in the investment portfolio often through engagement with companies (Richardson 2011). Conflict between prosperity and virtue is well documented, though there is no consensus on whether simultaneously doing good and doing well is possible (see for e.g., Grossman and Sharpe 1986; Hamilton *et al.* 1993; Barnett and Salomon 2006). It is also not clear on what basis to determine whether circumstances warrant an exclusion to be denied in favour of long-term financial performance (Clark and Monk 2010). Such conflicts underscore the point that problems of implementation must be understood in reference to the process of policymaking itself (Baier *et al.* 1986). It is to these implementation problems that this chapter turns next.

DISCRETION AND THE IMPLEMENTATION PROBLEM

Delegation is what distinguishes organisations from individuals. If the principal could perform all functions and tasks, there would be no need for hierarchies or systems of communication (Gibbons *et al.* 2013). The lack of cognitive ability among individuals to

⁴⁸ Of course many policies are unambiguous and the idea that agents use their discretion to interpret less ambiguous policy goals under uncertain and complex external conditions that differ from when the policy was originally formulated is redundant of evolutionary theories of the firm (e.g., Hodgson 1999).

process complex information requires delegation. Under conditions of uncertainty, that is, when agents have information that differs from a principal, delegation takes on a second function. The principal delegates because agents know better than the principal what actions will lead to his or her desired outcomes, which requires agents to exercise discretion. Discretion means there is no ultimate guiding principle or rules for how to carry out a task or function such that the agent must use their own human interpretation or judgment.⁴⁹ As shown in the discussion below, a feature of both implicit and explicit models of discretion is an unambiguous outcome to which agents can be incentivised or coerced to conform as close as possible. Alternative explanations are needed for why principals grant discretion to agents when the policy is ambiguous itself. As we shall see, how we understand discretion also has implications for how organisations adapt to changes in their environment.

Explicit discretion

Explicit discretion is granted to agents in the form of written statutes and contracts that clearly define the limits of authority. There is a band of interpretation around a policy or objective that can be identified and communicated clearly. Moreover, a third party can observe instances where the agent is acting outside of this boundary. It is often assumed that explicit discretion is conferred to agents when uncertainty reduces the incentives for the principal to write detailed rules, policies, contracts and other guidelines. That is, even though it may be possible to write a complete and detailed contract, the principal

⁴⁹ H.L.A. Hart (2013 [1956]) defines discretion as judgment that is neither whimsical choice nor rule bound but occupies a middle ground. It is not the opposite of transparent; that is, “a discrete person not someone who just remains silent, but who chooses to be silent when silence is called for (p. 657).”

recognises it can do better by granting some degree of discretion to agents with private information.⁵⁰

The issue of explicit discretion features prominently in contract theories of the firm. Discretion is granted to an external agent that has better information. Discretion can also be conferred inside the firm when it is not in the interests of a manager to provide detailed instructions to employees about how to perform a task (Crawford and Sobel 1982; Aghion and Tirole 1997; Dessein 2002). In the case of public organisations, Epstein and O'Halloran provide an intuitive model of explicit discretion that is widely cited and analogous to the transaction cost theory of the firm (Epstein and O'Halloran 1999). In their model, the legislature (policy maker) establishes a baseline policy. There is little discussion about the process of reaching this baseline policy in the first place. It is assumed the boundaries of the policy can be clearly delineated. That is, the baseline policy is unambiguous. The principal then decides whether to grant discretion to an agent for implementation of the policy. If discretion is determined to be desirable, the principal chooses the level of discretion. The agent implements the policy within their range of discretion around the baseline policy.

At the heart of these models is a trade-off between expertise and the loss of control. The decision whether or not to grant discretion is co-determined by the level of uncertainty in the environment and the agent's bias. When uncertainty is high, discretion can improve the outcome of the policy as it is assumed the agent knows best the action that will produce the principal's desired outcome (uncertainty principle). When the agent's bias is far from the principal's interests, discretion is a less attractive option (ally

⁵⁰ Note that Hart does not favour the idea of conceptualising discretion as a continuum, as there are clear instances where discretion is not used. "We must recognise there are clear or simple cases, and if we could not do this we should not be able to use the term in communication with each other (2013: 653)".

principle). In this latter case, the principal should limit the scope it grants to the agent to prevent the agent from pursuing partisan or private interests. The cost of discretion is often framed in terms of the incentive and control mechanisms necessary to ensure that the agent chooses the best option within its limits. The seminal work of Holmstrom has been applied to both public and private organisations to inform the design of optimal mechanisms for delegation (Holmstrom 1977; 1984). It is in the interest of the principal to offer a menu of choices to agents. This allows the principal to learn the bias of the agents and optimally delegate authority to agents under conditions of uncertainty. The expert's discretion is constrained within this range.

But any solution to the implementation problem that seeks to reign in the agent's discretion requires that the policy can be defined as a single objective or ideal outcome in the first instance. In instances where policies are the result of extensive bargaining, the outcome reflects a variety of domestic and international interests that cannot be reduced to a one-dimensional policy baseline; the band of interpretation around the policy is itself indeterminate. In other words, the concept of an optimal incentive contract is of little value when there is no policy baseline to optimise. In these instances, explicit discretion must be conferred to agents for reasons other than a rational response to information asymmetries as is assumed in conventional models of delegation.

Implicit discretion

Models of explicit discretion assume the principal has the ability to choose the level of discretion. But in many instances it may be too costly to write the limits on an agent's discretion (Huber and Shipan 2002). Moreover, it may not even be possible to do so. That

is, some contingencies cannot ever be known. Attempts to definitively express the limits of an agent's discretion may result in unintended consequences, inconsistencies or contradictions in a policy's implementation. In these situations, deference replaces delegation. Deference relies on a relationship of trust based on a shared understanding of a promise or commitment and not a formal contract (Clark 2007). Unlike explicit discretion, the limits on the agent's range of interpretation around a policy or contract cannot be observed by a third party. To be sure, there are obvious examples where it is clear that the agent is acting in their own self-interest. The point is that implicit discretion frequently leads to instances where it is unclear to an external third party and the principal whether the agent is acting within its discretion granted by the principal or motivated by some exterior goal.

There are several models of how private and public organisations deal with these grey areas. In the private sector, property rights literature offers an optimal solution to the problem of implicit discretion through the assignment of residual rights (Grossman and Hart 1986; Hart and Moore 1990). Owning the means of production increases the incentive of the agent to make asset-specific investments. More recent attention has shifted to relational contracts as a mechanism to absorb the ambiguity in a dynamic context (Baker *et al.* 2002). Residual ambiguity is solved through the ongoing relationship between the contracting parties. Both parties are assumed to have an interest in the continued relationship and an incentive not to renege on their commitment to the other. The relational contracting solution assumes parties have a shared understanding of the objective to maximise (Gibbons and Henderson 2013).

The literature dealing with public organisations has its own solutions to problems raised by implicit discretion. In the judicial system, the constructivist tradition, most often associated with the work of Ronald Dworkin (1986; 2011), denies the existence of implicit discretion in the first instance. That is, the agent is bound by trust and a moral obligation such that there can be no uncertainty about the choice the agent must make to fulfill this obligation. To account for changes in underlying norms in a society, theoretical debates about the law are possible (see Shapiro 2007). A more moderate perspective of the underlying truth of norms in a society is John Rawls' (1987) framework of overlapping consensus. This practical framework allows for the possibility of competing norms in a society and aims at equilibrium through the process of balancing different norms. The result is a coherent, yet more diverse, norm structure than Dworkin's. That said, like Dworkin, Rawls implies that discretion is ultimately guided by truth.

In contrast, legal positivism accepts implicit forms of discretion and some even go so far as to celebrate it. As H.L.A. Hart argues in an essay on discretion recently published in the *Harvard Law Review*, 'the recognition of an implicit guiding purpose may encourage the illusion that we never reach the point where we have to reconcile conflicting values or choose between them without some more ultimate principle to guide us' (Hart 1956: 665).⁵¹ His point is that inconclusive but rational human judgement is necessary when the social facts that constitute the law run out. But, like Dworkin, Hart assumes judicial decision-makers are benevolent. Political economy takes more seriously the private interests of these actors. It is often assumed that legal or political institutions can resolve these conflicts in interests and absorb residual discretion. In particular, courts

⁵¹ Hart's 'lost essay' on discretion was printed in the *Harvard Law Review* 2013.

and legislative oversight mechanisms intervene to ensure the agent's use of discretion conforms as closely as possible to the ideal point of the legislature (Huber and Shipan 2002).

But again, the idea that discretion is a problem that can be solved is problematic in itself once we accept ambiguity in the underlying policy goal. It no longer makes sense to talk about discretion with reference to the principal's ideal outcome. Moreover, it does little good to resolve credibility problems in the context of relational contracts between contracting parties if they do not share an understanding of the *ex ante* commitment – that is, if they do not know what they are agreeing to in the first instance (Gibbons and Henderson 2013). Denying discretion by assuming that agents can appeal to underlying norm structures ignores the possibility that these norms can be exploited and interpreted by those with the resources to do so to advance and protect their own interests. Assuming that courts and political institutions unambiguously resolve problems of discretion relies on the assumption that new policies, rules, norms and social conventions that take their place would be less ambiguous. But, if produced in the same process and context as incumbent policies, there is no reason to believe that the new policy would be any less ambiguous.

Hollow adaptation paradox

Once we see that policies can be ambiguous and their creators often do not have the ability to make them less ambiguous, then discretion cannot be understood as something to optimise or constrain with reference to some ideal outcome. As such, there must be something more to explaining why agents are granted discretion, beyond the conventional

answer that agents have better information and processing capabilities and can make better decisions. This chapter contends that in some cases discretion is granted to agents because principals themselves do not know what their ideal outcome or policy baseline should be, or cannot articulate an unambiguous policy without undermining the coalition of interests on which the policy depends.⁵² Discretion is granted to agents to interpret the policy in the first instance.

What are the consequences of conceptualising discretion as interpretive? On the one hand, the agent's discretion serves as a built-in mechanism for adaptation to changes in their external environment. That is, agents can use not only their access to better information but also their human judgement and interpretation to adapt to changes even when there is no guiding purpose or norms. As a result, the organisation avoids the need for costly renegotiation in the future. For investment institutions with long-term investment horizons, the ability to adapt their behaviour to their environment is vital to success (Clark and Monk 2014). Context is particularly important in an era of increasing global integration and complexity, as it is becoming increasingly difficult to distinguish non-material from material financial issues using the traditional distinction between risk and uncertainty as a guide (Goldin and Mariathan 2014). Discretion allows agents to interpret investment policies and adapt them to emerging realities in ways that could not possibly be articulated in a policy or set of guidelines.

But interpretive discretion is a double-edged sword. Public investment institutions' legitimacy depends on rational decision-making and claims to financial expertise (Monk 2009; Clark and Monk 2011). Discretion as a mechanism to cope with

⁵² As Best (2012: 677) argues, 'policies do not live only in formal texts... but also in the ongoing ways in which they are applied on a daily basis.'

external complexity risks undermining organisations' own legitimacy. As such, organisations must dedicate more resources to administrative procedures, decision-making rules and monitoring for democratic control and legitimacy. In this way, policy ambiguity intensifies the trade-off between expertise and control. But it also confounds the trade-off. It is not a linear relationship where greater costs to control are offset by access to expertise that brings agents closer to the ideal point. Rather, control is valued in itself as a symbolic action, regardless of the outcome.

The elusive trade-off between control and expertise presents a paradox. The more ambiguous a policy is, the more entrenched it becomes. This is because individuals and groups can interpret and hold different expectations about policy outcomes that suit their own interests and are therefore less likely to contest it. But, at the same time, the capacity for implementing such an ambiguous policy or rule is hollowed out – the hollow adaptation paradox. Conventional delegation models are concerned primarily with expertise (Moe 2013). But expertise and capacity are distinct dimensions of the delegation problem (Huber and McCarty 2004). Capacity is the ability to actually achieve outcomes. This analytical framework is brought to bear on the analysis of the Norwegian SWF's ethical investment policy in the section below.

NORWAY'S SOVEREIGN WEALTH FUND AND ETHICAL INVESTMENT

Context of the NGPF-G

The Norwegian Sovereign Wealth Fund was established by the *Act of the Government Petroleum Fund* in 1990. Its mission is to 'safe-guard and build financial wealth for

future generations.’ The Fund invests royalties from natural resource wealth in global financial markets, earning a return above the national rate of growth. It is prohibited from making investments in Norway due to concerns with its perverse impacts on the Norwegian economy. The Fund invests in global financial markets and is increasingly moving into emerging markets. In 2005, the Fund was renamed the Norwegian Government Pension Fund-Global (NGPF-G). Despite its name, it has no current pension liabilities and represents a savings vehicle to fund the pension liabilities of future generations. Since the Fund began depositing revenue from oil royalties into the Fund in 1996, approximately 90% have been reinvested.⁵³

The Minister of Finance is ultimately responsible for the \$800 billion USD Fund and reports to Parliament. The investment decisions are not subject to judicial review (Richardson 2011). Until 1997, the Fund was wholly invested in government bonds, after which allocation to public equities was permitted. The Ministry raised its policy allocation to public equities in 2007, becoming a victim of unfortunate timing in light of the 2007-2009 financial crisis. The Fund cannot hold more than 10% of an individual company’s equity. In 2010, the Minister permitted the Fund to invest up to 5% of its total in real estate. The Fund now has approximately 60% equities and 40% fixed assets and made its first real-estate investment in 2010. Management of the assets is delegated to the Norwegian Central Bank Investment Manager (NBIM).⁵⁴

⁵³ The budget rule (2001) prevents the Fund’s sponsors from spending more than 4% of the investment earnings. This is a remarkable exercise of political discipline when compared to other sovereign wealth funds that direct investment earnings into their general revenue fund for fiscal purposes (e.g. compare Alberta Heritage Fund).

⁵⁴ NBIM is granted explicit discretion by the Ministry, such as in the form of tracking error and asset allocation. See Appendix IV.1 for management structure of the Fund.

The Fund first began integrating ethical considerations in its investment decisions in 2001. In 2004, the Fund adopted a formal ethical investment policy, following the release of the Graver Report.⁵⁵ The Report is the result of extensive consultation with the Norwegian public and its recommendations are intended to transcend partisan politics. At the time it was successful, gaining the support of all major political parties (Reiche 2010). The ethical exclusions are based on the premise that the 'Fund should not make investments which constitute an unacceptable risk that the Fund may contribute to unethical acts or omissions, such as violations of fundamental humanitarian principles, serious violations of human rights, gross corruption or severe environmental degradation.'⁵⁶

The ethics guidelines were updated in 2010 with the adoption of two new guidelines proposed in the 2008-09 Ministry of Finance consultations. The changes included a new mechanism (the ability to place a company under observation) and the addition of tobacco products to the exclusion criteria. The basis for the ethical criteria draws on overlapping consensus. Exclusion decisions are removed from the political process, forming a consistent set of 'norms' reflecting the Norwegian citizenry.⁵⁷ As a counterpart to the Fund's ethical exclusions, the second guideline provides for engagement with corporations on environmental, social and governance issues through leveraging its rights as a shareholder to align with its long-term investment mandate.

⁵⁵ Norwegian Ministry of Finance (2003) The Report from the Graver Committee

⁵⁶ The Council has interpreted 'contribute' to be synonymous with complicity, which has much broader implications than interpretations of 'contribute' in criminal or tort law (128 Storting 2008-09).

⁵⁷ See Graver Report, 2003.

Contrary to the motivations underpinning the Fund's ethical screening, engagement is consistent with managing long-term financial risks by influencing corporate behaviour.

The Ministry of Finance established the Council on Ethics in 2004 to support the implementation of the ethical guidelines. While the Council was not a formal legal body, it followed a quasi-legal process (Richardson 2011). The Council made recommendations for exclusions to the Ministry of Finance, which were then communicated to NBIM. The Council had discretion to implement the ethical exclusion policy within the scope of the guidelines. In the spring of 2014, upon recommendations of an independent Strategic Review Committee, the Council was dissolved and its functions were reassigned to the Central Bank. The other arm of the ethical investment policy, that is corporate engagement on environmental, social and governance issues, is implemented by NBIM. In 2009, NBIM selected six focus areas for engagement: water management, children's rights, and climate change, in addition to three governance issues. NBIM has discretion within these broad areas to choose specific companies with which to engage. It also has discretion for deciding how to engage. Engagement mechanisms include private dialogue, letter writing, voting proxies and collaborative engagements. The Ministry of Finance itself has discretion granted by the Minister and Parliament. This principal-agent relationship is captured by traditional theories of public bureaucracy.

The NGPF-G poses an analytical challenge to the idea of discretion as interpretive. In the first instance, political accountability requires that non-elected agents exercise the will of politicians, as expressed in legislation, regulations and guidelines. As such, the idea of unelected officials using discretion that is untethered to an ideal outcome is difficult to reconcile with the high degree of political accountability on which

the Fund is based. Moreover, the explicit reference to overlapping consensus underpinning the ethical exclusion criteria denies the possibility of discretion as it is assumed there is a consistent norm structure on which to base decisions and guide the Council and NBIM under uncertainty and complexity. In particular, the Council's legal process reflects decision-making deeply embedded in shared moral values, which guide decision-makers to conclusive decisions when guidelines and rules do not provide for realised contingencies. Against this backdrop, I consider changes in the Fund's external environment since it adopted the ethical investment policy and the consequences for internal implementation of the policy. The point is that there is no ideal outcome, either morally or as an established social fact. Moreover, I show that acting as if there is one is becoming increasingly costly for NGPF-G to maintain in the face of increasing external complexity. The sections below consider two examples of increasing complexity in the Fund's external environment and the consequences for its ethical investment policy.

Conflict and negotiation: exit and voice

The NGPF-G's royalty deposits have grown rapidly in recent years, due largely to the super-cycle that brought about an unprecedented boom in commodity prices. The Fund is expected to reach over USD\$1 trillion in assets under management by 2020.⁵⁸ Since the Fund is prohibited from investing in real assets and private markets, with the exception of real estate, as it continues to grow in size, its equity holdings of individual companies will inevitably increase as its growth outpaces new initial public offerings. In 2014, NBIM announced it would be increasing the number of companies in which it holds

⁵⁸ Ministry of Finance 2011, budget estimates.

equity stakes greater than 5% to 100.⁵⁹ This growth has consequences for the Fund's ethical investment policy. The Fund has excluded over 60 companies as of 2014, including 17 tobacco companies. There is an inherent conflict in this two-pronged ethical investment policy that has been acknowledged by the Fund itself.⁶⁰ Ethical exclusion interferes with the ability of the Council to engage with a company to change its behaviour.⁶¹

On the one hand, what may seem like inconsistency in rules, policies or guidelines is actually a situation where all but one of the conflicting rules or norms is not valid. That is, there is some unambiguous hierarchy such that there is no indeterminacy in the application of the Fund's ethical policy. In the case of the NGPF-G, the management mandate clearly provides such a ranking, whereby the NBIM's 'primary goal in its active ownership is to safeguard the financial interests stipulated for the investment portfolio', but this is subject to the permitted investment universe. In other words, exclusion trumps engagement. On this basis, there is no conflict between engagement and exclusion and therefore no need for agents to use discretion to interpret the policy. NBIM was simply following the direction of the Ministry on exclusions as recommended by the Council and then within this permitted universe engaged with companies on their ESG behaviour.

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60 "In some cases, the concerns of ensuring long-term financial returns and taking widely shared values into account will coincide, but not always. For example, the Fund will not invest in companies that are in gross breach of fundamental ethical norms, regardless of the effect this will have on returns (Ministry of Finance)", as cited in Richardson 2011.

61 That said, they are not necessarily inconsistent. It has been suggested by many that the Council's divestment/exclusion process could be considered a mechanism for changing corporate behaviour as it provides opportunities for dialogue and an exclusion does not prohibit the Fund from being added back into the universe (with the exception of tobacco products and companies that deal with Myanmar (Burma)).

Similarly, the Council made its exclusion recommendations irrespective of the potential of engagement with the company for improving its ESG performance.

On the other hand, the recent changes to the Fund's governance reflect an attempt to facilitate ongoing negotiation between these conflicting objectives. In the Ministry's *2010 Report to Storting* it was recommended that a mechanism for negotiation between NBIM and the Council on Ethics be implemented in instances where engagement might be effective in changing unethical behaviour of a company considered for investigation by the Council. The Fund has placed more emphasis on improving the dialectic relationship between the activities of the NBIM and Council reflected in the 2010 update to the ethics guidelines, which provided for the exchange of information and assessments and coordination between Norges Bank and the Council on Ethics, regular meetings between the Ministry and NBIM and the Council. Negotiation means that agents must work out the application of the policy and not rigidly implement the guidelines with deference to guiding principles or norms.

Overlapping consensus, changing norms and democratic process

A second example of the increasing complexity in the Fund's external environment concerns the exclusion criteria themselves. Global financial markets have become increasingly interdependent since the guidelines were initially established. Supply chains have lengthened. Moreover, they are becoming increasingly networked. Untangling the complicity of companies from their supply chains and foreign governments in ethical violations is more difficult. Norms underpinning the ethical guidelines themselves have changed over the last decade, despite the intention to base the criteria on overlapping

consensus. Recently, the Minister of Finance, following recommendations of the Ministry and the Council, has made three decisions about exclusion that have fallen outside of the ethical guidelines. First, it excluded a product (tobacco), where the guidelines stipulate that exclusions are to be made on the basis of a company and not at the product or industry level. Second, it excluded two companies that sourced their inputs from a conflict region (Western Sahara), whereas the guidelines specify that only companies that are directly responsible can be considered for exclusion. Third, the Fund excluded sovereign bonds from Myanmar (Burma)⁶² and companies that sell weapons to the State, whereas the original guidelines had prohibited divestment on the basis of a state.

Indeed, in the light of these changes many have questioned the practicality of overlapping consensus, which is intended to endure over generations, as a basis for the Fund's ethical guidelines. But overlapping consensus is replaced with a more radical suggestion that ethical investment decisions are based on a morality inherent in the guidelines themselves. The correspondence between the Ministry and Council and the resulting documentation of the change in ethical guidelines frames the deviations from the ethical guidelines as a theoretical debate. That is, the Council is not exercising its interpretive discretion, but rather engaging in a process that is ultimately seeking a conclusive, objective truth, guided by norms and principles unanimously agreed among society. The Council had been delegated authority by the Ministry to establish its own set of principles for implementing the ethics policy.

Consider the decision to exclude FMC Corporation and Saskatchewan Potash,

⁶²Norway Ministry of Finance, October 3, 2008 amendment to ethical guidelines: "investments in companies which sell arms or military equipment to states which are on the list of countries whose government bonds are not investible are to be avoided. November 14, 2008, the Council recommended divestment from Chinese company Dongfeng Motor Group given it sells military equipment to the government of Myanmar (Burma)."

two companies not directly involved in ethical violations and thereby not clearly covered by the exclusion criteria. The correspondence between the Ministry and Council might be understood to reflect a theoretical debate seeking a conclusive outcome, reflecting a legal constructivist position that interpretation is ultimately truth seeking. In its deliberations, the Council references the Guidelines, suggesting ‘Even if a company has unethical sub-contractors, it may [...] be sensible not to withdraw unless there is a pattern of the company using sub-contractors which employ dubious practices without seeking to do anything about the matter. The relationship will approach contribution if the customer relationship is long-term or repeated after the unethical matters are uncovered.’⁶³ While the Council notes the lack of details in the guidelines, it based its decision to exclude the companies by deferring to the principle of contribution, evidenced by the fact that both companies were engaged in a long-term contractual relationship with the Moroccan state-owned company.⁶⁴ Indeed, it is difficult to imagine a decision that the Council would admit could have resulted in a decision not to exclude the two companies that is equally justifiable.

Similarly, the decision to exclude tobacco might be understood as a theoretical debate about norms and updating them to reflect Norway’s decision to ratify the World Health Organisation’s (WHO) Framework Convention on Tobacco Control (Ministry of Finance Whitepaper no. 20, 2008– 2009: 25). As Nilsen explains, the WHO convention had been negotiated by the time the Fund had adopted the guidelines, but the convention had not yet been ratified in Norway (Nilsen 2010). The decision to include tobacco in its

⁶³ See Council on Ethics 2010 Recommendation to Ministry of Finance on divestment from FMC Corporation and Saskatchewan Potash.

⁶⁴ The decision to exclude FMC was reversed in 2010 on the basis that the company had stopped contracting practices that led to its exclusion in the first instance.

exclusions is justified on the basis of updating the guidelines to reflect changes in Norwegian norms as reflected in their commitments under international law.

But the very idea that the Fund is structured on democratic political accountability and not legal accountability rejects this possibility that discretion is simply a response to uncertainty and the Council and Ministry are engaging in theoretical debate about norms themselves. Rather, the Council and Ministry were exercising discretion by seeking to repair the ethical guidelines through appealing to the underlying intentions of the system in which the policy was made. The fact that the deliberations between the Council and Ministry have taken place in the public realm is a testament to this. All correspondence between the Council and the Ministry is available on-line in Norwegian and English. Moreover, the division of labour between the Ministry of Finance and the Council was structured such that the Council could not make binding recommendations. The Minister of Finance and Parliament ultimately make exclusion decisions and have rejected exclusion recommendations on at least five occasions.⁶⁵

Hollow adaptation in NGPF-G

Accepting that agents are not tethered to some ideal outcome raises an important question: how is discretion as interpretation reconciled with the Fund's legitimacy and, in particular, its claims to rational, expert decision-making? Clark and Monk have suggested that the NGPF-G's legitimacy is based on epistemic proceduralism, a concept that recognises the importance of the decision-making process, but equally 'requires that these procedures approximate, as much as possible, an ideal outcome' (Fabienne 2010). In

⁶⁵ The Ministry has recommended engagement instead of exclusion: AngloGold, Ashanti, Royal Dutch Shell, Eni Sp A, Siemens and Monsanto.

other words, the Fund's legitimacy depends on striking a balance between rationalist conceptions of legitimacy that rests on performance and a proceduralist form of legitimacy, which emphasises the process of decision-making. Indeed, it is difficult to imagine a quantitative evaluation system that would allow for a comparison between the outcome of excluding a company with reference to the ethical goals of the Fund. Similarly, measuring the outcomes or performance of engagement is difficult given that its effects are not observed in the short-term and attributing change in behaviour to the investor is challenging given the multitude of corporate stakeholders. But (short-term) performance of the Fund does matter, as the public reaction to the losses incurred during the 2007-2009 financial crisis demonstrated.

As discretion conferred to NBIM and the Council increased to cope with the complex and changing external environment, more resources were necessary to maintain legitimacy. Consider the negotiation between NBIM and the Council. The discretion used to interpret the policy and improve coordination is important for adapting to changes in the Fund's external environment as highlighted above. But negotiation has required new procedures and an additional layer of governance to host these negotiations.⁶⁶ Exclusion is a more immediate and visible signal of the Fund's commitment to ethical investment. Engagement with companies on ESG issues often takes place behind closed doors and disclosing the details about the engagement can undermine its effectiveness. Some other way to demonstrate to the public its commitment to principles of ethics and sustainability

⁶⁶ Section 6, Ethical Guidelines (2010) "(1) The Ministry of Finance, the Council on Ethics and Norges Bank shall meet regularly to exchange information about work linked to active ownership and the Council on Ethics' monitoring of the portfolio (2) The Council on Ethics and Norges Bank shall have routines to ensure coordination if they both contact the same company (3) The Council on Ethics may ask Norges Bank for information about how specific companies are dealt with through active ownership.

may need to be found given that engagement is often seen as complicit and the public cannot directly observe the effects of engagement for changing corporate behaviour.

One aspect of engagement that is public is the selection criteria. In recent years, NBIM has been criticised for its narrow focus on children's rights and climate change, leaving significant environmental and social issues (e.g. labour rights) unaddressed in its corporate engagement programme. NBIM has a wide band of discretion and as such must dedicate significant resources to justify the focus areas for its active ownership programme on an ongoing basis. Deep private dialogue with corporate management that is increasingly seen as critical to successful engagement can only be applied to a fraction of the Fund's total portfolio (over 8000 public companies), often the largest and most visible companies (Richardson 2011). More broadly this is a trend among institutional investors that target the largest and easiest firms to change behaviour and are more likely to engage with firms that they have engaged in the past and that are closer to home (Bauer et al. 2013). This does not bode well for an engagement programme that meaningfully reflects the long-term risks in the Fund's global portfolio.

Similarly, the Council's discretion over implementing the ethical guidelines required extensive resources in the first instance to scan over 8000 companies in its portfolio for possible ethical violations. The Council relied on third party consultants to identify potential violations requiring investigation and submissions from the public. The Council was staffed with five members and eight support staff. Its annual reports to the Ministry often exceeded 200 pages detailing its consideration of companies to exclude. But as complexity in the external environment increases more resources are required to justify the increasing number of proposals for exclusion that fall outside of the guidelines.

For example, the recent campaign to divest from fossil fuel companies has prompted the formation of a review committee to consider the decision, adding to the burden of resources in investigating claims. Even under the recent structural changes, the Central Bank will still be required to justify exclusion recommendations (authority remains with the Minister and Parliament) and reporting requirements and transparency. Moreover, it is anticipated that the Bank's exclusion activities will be reviewed and assessed by an independent advisor.

As Baier *et al.* (1986: 208) observe, the discourse of implementation invokes an image of policies and guidelines ready to be executed by those trained and skilled in their subject matter and 'it encourages us to think that a reasonable and responsible person can easily measure the discrepancy between policy and bureaucratic action (...).' But this is not the case, as demonstrated in the experience of the Norwegian SWF. Taken together, increased discretion and the processes necessary to maintain political legitimacy hollow out the resources necessary for building capacity internally in the Fund. Reconciling the interpretive discretion granted to unelected officials with political legitimacy requires significant resources to justify decisions. The result is a rhetorical policy that all can agree to but that cannot possibly be implemented in a meaningful way.

TRANSCENDING THE HOLLOW ADAPTATION PARADOX

This rhetoric suggests a gloomy prospect for using SWFs to address emerging realities in financial markets related to sustainable and ethical concerns. To be sure, at some point rhetoric becomes so apparent that renegotiation or abandoning the policy all together is necessary. But this renegotiation may come too late and there is no guarantee that a new

policy could be any less ambiguous, since it must be negotiated in the same political context as the original policy. That is, political sponsors have little control over the clarity of ethical and sustainable investment policies. This lack of clarity is at odds with best practice governance (Clark and Urwin 2008).

In response to this governance challenge, I suggest that if the agents responsible for implementing the policy are self-reflexive – that is, if they recognise their own contribution to shaping the policy through their interpretive discretion – they can transcend this hollow adaptation paradox and contribute to more substantive implementation of the policy while aligning it closer with the Fund’s long-term investing strategy. But again, this requires confronting the puzzle of what constitutes appropriate use of discretion when there is no ideal outcome. Moreover, a governance structure that encourages non-elected agents to recognise their contribution to shaping high-level policy goals is precarious in an organisation with a deep commitment to political accountability. As a partial answer to this puzzle, Shapiro argues: ‘if those in authority are basically trustworthy, ... deferring to the designers’ judgment about how to attain the fundamental aims of the system is a highly effective strategy for actually attaining those ends’ (Shapiro 2007: 47). This could also be applied to disciplining how those aims are interpreted in the first place.

In the context of the NGPF-G, its governance system makes provisions for public deliberation in a democratic context. In the absence of an ideal point, the problem of untethered discretion can be managed by deferring to the political system. Clark and Monk observe the political system poses a significant tension with the Fund’s long-term performance (Clark and Monk 2010). Similarly, this chapter has argued that the

consequence of the Fund's need to establish and maintain political legitimacy is to hollow out the capacity of the fund. But paradoxically the political process can also be used to transcend the hollow adaptation paradox. This requires the Fund to recognise that discretion is not guided by one unambiguous goal and to accept the ambiguity inherent in the policy. In the sections below I suggest some ways that accepting rather than denying ambiguity in the form of interpretive discretion has allowed the NGPF-G to more closely align the ethical investment policy with its long-term investment mandate in recent years.

Intelligent learning

The absence of an ideal outcome raises the question of how learning can occur under ambiguity. Conventional models require the experience and the past event itself to be unambiguous. Learning is then understood as a process of updating beliefs accordingly, consistent with the Bayesian tradition. But in many cases agents use their judgement to shape evaluation of past events and experiences (March and Olsen 1975). Understood in this way, learning is 'essentially open-ended, it involves alternation of frames and mental models of the world, rejection of inadequate ways of seeing and doing... not just cumulative knowledge but destructive knowledge and the capacity to unlearn' (Hodgson 1999: 254).

Divestment and engagement were originally conceived as two independent processes with their own logics; the former is deontological and the latter is consequential (Clark and Monk 2010). But the relationship between these two activities has evolved since the ethical criteria were first established, as NBIM, the (former) Council and the Ministry recognised the significant overlap and duplication of effort

between these two tasks. The process of investigating a company for divestment can itself be interpreted as a form of engagement. That is, the threat of divestment is the last stage in a long chain of escalating engagement tactics to be used when other strategies have been exhausted (Hebb 2008; Hebb *et al.* 2012). These were reflected in the 2010 updated ethical guidelines, which included the ability for the Council to place companies under observation, and provisions for cooperation and coordination between the Ministry, Council and NBIM. They also established a routine for coordinating activities when contacting companies and for sharing information.⁶⁷ Engagement and exclusion are becoming part of a more integrated approach to addressing the wider context in investment decision-making. The recent dissolution of the Council in spring 2014 and integration of its activities in the central bank has further confirmed the Fund's commitment to this more integrated approach. To be sure, the ethical exclusion process will still require transparency and procedures and given the lack of independence now, this may require even greater resources than when these activities were coordinated by the Council. Looking forward, it will be important that Fund embrace the ambiguity inherent in the ethical investment policy rather than act as if there is one right outcome.

Communication

Formal authority is held by the Ministry for the implementation of the ethical investment policy but NBIM and the Council have (had) considerable discretion in their communication of information and recommendations to the Ministry. Discretion under an

⁶⁷ The internal dynamics of routine provides a basis for human agents to react to outcomes and adapt (Feldman 2000). Contrary to the lack of active thinking that is often associated with routine, some suggest that routine encourages active reflection and changes in behaviour as a result of this reflection and therefore is a source of change (see for example, March and Levitt 1987; Feldman 2000).

ambiguous policy allows information to be communicated to superiors in a way that provides room for elaborating on meanings and not just ‘filling in blanks on a decision tree’ (March 1988). Communication provides agents with the opportunity to evoke public responses to shape future political decisions given the public nature of the NBIM and Council’s communication with the Ministry.

NBIM, through its public communications with the Ministry, can suggest alternative logics for its investment strategy. In a Strategic Report to the Ministry in 2014, NBIM concluded, ‘the key constraints are an investment universe limited to public investments in fixed-income and equity and private real estate, a set asset allocation and a narrow scope to deviate from the strategic reference index.... Moreover, [h]igh demands on public transparency and specific cost restrictions may put additional constraints on our management of the fund’ (NBIM Strategy Review 2014: 6). NBIM is doing more than simply communicating its expertise and filling in information gaps. NBIM is drawing public attention to the fact that the NGPF-G’s size and illiquidity premium is not leveraged by investing in assets such as unlisted equities or infrastructure and the costs of bureaucratic procedures and transparency.⁶⁸ NBIM is using its discretion to shape the public dialogue and, in doing so, indirectly influencing the policy in a way that reflects greater consistency with long-term wealth preservation.⁶⁹

CONCLUSION

68 This has also been highlighted by (NBIM) in its correspondence with the Ministry of Finance in 2006 and 2010.

69 Similarly, through its expectation documents, NBIM is contributing to shaping the Fund’s policy on climate change and sustainable resource management.

Sovereign wealth funds have become a subject of fascination as a consequence of the dilemma they pose for maintaining open financial markets. The ambiguity inherent in their interests poses interesting questions about their internal governance, which broadly map onto long-standing debates about the shareholder value vs. stakeholder value theories of the firm applied to the context of institutional investment organisations. In the absence of a unified and single objective or goal, Michael Jensen warns of the politicisation of the firm since managers have no outcome for which to aim or against which to evaluate performance. For Jensen, ambiguity is not a permanent state. It is resolved in favour of the interest of powerful stakeholders with the resources to manipulate ambiguous policies and rules in their favour. I have proposed an alternative scenario in this chapter, where ambiguity in the policy goals of an organisation need not be resolved either by imposing a single objective function or by assuming a clear winner emerges to explain its decision-making and its outcomes. Ambiguity is necessary to hold the coalition of diverse interests together.

There are costs associated with managing ambiguity on an ongoing basis, which I have aimed to highlight in this chapter. These costs are manifested in the form of transparency and procedures associated with justifying decisions taken by agents with discretion in the absence of an ideal outcome. As the NGPF-G continues to grow in size relative to global financial markets and the structure and performance of markets themselves change, political legitimacy will be increasingly difficult to reconcile with the discretion granted to agents to implement ambiguous policies. The decision taken by the Norwegian SWF with respect to the fossil fuel divestment will be closely scrutinised by the international community. But it is the domestic response that matters for holding

together the coalition that constitutes the Fund's policy on ethical investment. Over the past ten years the Ministry, Council and NBIM have used their interpretive discretion in ways that have moved the Fund's ethical policy more closely in alignment with long-term wealth management, while being reflexive of the ideology of the system in which they participate.

But there is reason to be less optimistic about the constructive properties of interpretive discretion to hold together the coalition over the next ten years. At some point, structural change is required to adapt to emerging realities in an increasingly complex investment context. These changes are already beginning to unfold with the dissolution of the Council on Ethics. This chapter has explained these changes in reference to the hollow adaptation paradox. Moreover, some factions of Norwegian society are demanding more from the Fund. Recent proposals for direct investments in infrastructure to support the development of renewable energy reflect wider debates about the obligations to use public money to make impactful investments that contribute to long-term sustainability objectives. But making such investments requires expertise and capacity to develop more sophisticated investment strategies and attract the talent needed to make these large and long-term deals.

One way forward is to establish an arm's-length investment management company to provide flexibility in the incentives needed to attract this talent. Doing so will sow the seeds of the Fund's shift away from its ability to give effect to national ethics through direct political channels. Moreover, an independent management structure may not be enough to assuage the fears of countries that would host SWF investment in national infrastructure, including major ports, transit systems and energy projects. As

SWFs begin to contemplate adding alternative assets such as unlisted infrastructure debt and equity to their portfolios, a new round of fear is likely to ensue over the consequences of SWFs participating in global financial markets. Fear mongers will again need to be reminded to look more closely at the internal dynamics that led to a Fund's decision to invest in the first instance and the ambiguity inherent in its investment policy.

V. MAKING SHAREHOLDER ENGAGEMENT MORE EFFICIENT IN DECENTRALISED INVESTMENT MANAGEMENT FIRMS

Submitted to: Economic Geography

INTRODUCTION

Large institutional investors are increasingly engaging with firms in their portfolios on environmental, social and governance (ESG) performance to enhance long-term financial returns. Initially, the literature portrayed engagement as a public confrontation between owners and managers, finding limited success (Karpoff 2001; Romano 2001; Gillan and Starks 2007). In contrast, studies that focus on private forms of engagement through dialogue behind closed doors find more positive returns to engagement effort (Hendry *et al.* 2006; Becht *et al.* 2010; Hebb 2008; Bauer *et al.* 2013). While studies of private forms of engagement have done much to elucidate how investors exercise their influence, fundamental questions about how engagement is coordinated by institutional investors remain unexplored. Engagement is a resource-intensive task and many investors cite limited resources as a significant constraint on their ability to engage with more firms in their portfolios. At the same time, investment managers are increasingly adopting decentralised structures by issuing specialised mandates within each asset class to cope with the complexities associated with their increasing geographic scope and size relative to capital markets (Blake *et al.* 2013). Private engagements rely on specialised knowledge and relationships with target firms. These resources are widely dispersed within decentralised investment management firms. This places a premium on efficient internal coordination to encourage cooperation among multiple agents and achieve synergies. But

investment managers must also coordinate tasks that depend on specialisation and competition.

The goal of this chapter is to explore how organisations can induce cooperation on tasks with a high propensity for synergies (engagement), while maintaining local incentives for specialised tasks (portfolio management). There is a significant misalignment between the incentives for these two tasks. Inducing effort with competitive incentives for specialised tasks leads agents to focus on short-term results (Admati and Pfleiderer 1997), which conflicts with the long-term incentives necessary for inducing team effort on the synergistic engagement task. The chapter demonstrates how this internal control problem gives way to an external problem – that is, ineffective engagement programmes. Recent empirical studies of engagement by a large UK investment manager find a strong bias towards selecting target engagements in close geographic proximity to their headquarters (Bauer *et al.* 2013). As investors continue to increase their participation in emerging and distant capital markets, significant ESG risks in the investor’s portfolio will go unaddressed due to this home bias. Some investors such as the California Public Employees Retirements System (CalPERS) have resorted to excluding specific emerging countries from their investment universe in an effort to raise corporate standards (Hebb and Wójcik 2005). While CalPERS recently stopped screening investments on the basis of country level factors, its private engagements with emerging market corporations remains limited, due to a lack of information and resources (Huppe and Hebb 2011).

Taking as given the regulatory and coordination constraints on collaboration between investors on engagement (MacNeil 2010), this chapter focuses on what an

individual investment manager can do to achieve efficiencies in its own corporate engagement programme. It asks how investors can capture synergies that occur when their portfolio managers and engagement units cooperate by sharing and combining resources (knowledge and relationships with target firms) to select engagement targets and implement engagement tasks? To investigate this question, I develop a model of a multi-task incentive problem in teams. Initially, the principal delegates authority for engagement to an *engagement unit*. The model allows the engagement unit to enter into side-contracts with other agents within the organisation (i.e., portfolio managers). The objectives and production functions of portfolio managers differ from the engagement unit in a systematic way. In particular, portfolio managers have a bias toward low-effort engagements when they are also responsible for implementation of the engagement.⁷⁰ Active portfolio managers have superior local information about target engagements. They also have stronger relationships with the target engagements, due to more frequent interactions (see Barker *et al.* 2012). The salience of this relationship with target firms for a successful engagement outcome is dependent on its depth, which is a measure of the degree of influence a social relationship has on an economic (engagement) outcome.

Discussions with representatives of engagement teams and portfolio managers inform the model. Interrogating theory with practical experience contributes to a modelling dialogue (Myerson 1992), which carries the broader arguments beyond stylised facts established in the baseline model. The chapter focuses on large investment managers of captive pension and sovereign wealth funds that coordinate the bulk of their

activities internally, drawing on the Canadian model of investment management.⁷¹ As long-term investors that coordinate the bulk of their activities internally, many pensions and sovereign wealth funds can wait out short-term market volatility and reap benefits from active management in these emerging markets.

This chapter argues that inducing cooperation between the engagement unit and portfolio managers can lead to more effective engagement outcomes due to synergies from sharing resources (relationships) and combining resources (information) to create new resources (knowledge) necessary for effective private engagements. The tradeoff is that the principal must weaken individual incentives for the specialised task to prevent portfolio managers from shirking on the less measurable engagement task, as predicted under the traditional multi-task incentive problem (Holmstrom and Milgrom 1991). This trade-off can be minimised as complementarity between engagement tasks and the specialised task increases.⁷² The chapter considers options for inducing this complementarity. It finds that focusing on complementarity in the rewards to effort for the two tasks is more effective than seeking to induce complementarity in costs of effort.

Related literature

The chapter contributes to the literature in the following ways. First, it relates to recent work on organisational synergies, in particular Dessein *et al.* (2010), who investigate the

⁷¹ Captive institutions exist to provide investment management services to one particular group of investors or funds, most often public pension funds or sovereign wealth funds.

⁷² While complementarity and synergies is often used interchangeably, in this chapter ‘synergies’ refers to outcomes that are greater when multiple agents cooperate on a single task and complementarity refers to two different tasks that when performed by the same agent are more efficient (contrasted with substitution, where tasks compete for the agent’s effort and attention).

tradeoff between coordination and motivation when one task is synergetic and another relies on high-powered incentives to mitigate moral hazard in teams. While their solution rests on a functional manager to achieve synergies from standardisation, this chapter considers options for inducing complementarity between tasks, drawing on multi-task incentive literature (Holmstrom and Milgrom 1991; 1994). Second, the chapter builds on a relational view of economic geography (Bathelt and Glückler 2011; 2003; Yeung 2005). It is novel in considering not only the problematic dispersal of information (see Dessein 2002), but also the dispersal of relationships within large geographically diverse organisations. Finally, within a growing literature on shareholder engagement (Smith 1996; Carleton *et al.* 1998; Becht *et al.* 2010; Bauer *et al.* 2013; Dimson *et al.* 2012), this is the first to consider the contribution of internal coordination of the engagement task and functions for successful outcomes.

The rest of the chapter is organised as follows. The next section presents the model and explains home bias in engagement. This is followed by consideration of a change to organisational governance to take advantage of synergies when engagement is coordinated in a team. The chapter then explains moral hazard and a multi-task incentive problem associated with this change in governance and explores options for incentive systems that can induce complementarity between the engagement task and generating financial returns necessary for meeting the fund's short and medium term liabilities. The penultimate section extends consideration to non-monetary incentives, bounded rationality and organisational pathologies, and the chapter concludes with suggestions for future research.

PRELIMINARIES

Consider the Chief Investment Officer (CIO) of an investment management corporation as the ‘final producer’ of a sustainable return on investment, in an infinite time period. It is assumed that the interests of the agent and principal are aligned, such that the CIO of the investment management organisation represents the interests of beneficiaries with probability $p = 1$. While a strong assumption, it is necessary in order to focus on the internal dynamics of the investment manager. Moreover, exploring solutions to misalignment of interests from inside the black box of the investment management firm can lead to new insights for the delegated portfolio management problem.

The CIO relies on agents to produce components (diversified investment returns), necessary for the final output (see Grossman and Helpman 2005). The CIO can decide whether to delegate authority for specific tasks and functions to agents. Alternatively, the CIO can rely on (imperfect) communication from agents and make decisions him or herself. Agents are employees of the investment management firm and it is assumed that outsourcing is not an option. The CIO is risk neutral and agents are risk averse.

Private engagements rely on two intangible inputs. The first is information. Significant resources are required to research and monitor corporate performance *ex ante* and *ex post* engagement, given the tacit nature of ESG information. Active portfolio managers meet regularly with companies to accumulate tacit information that cannot be gleaned from public sources (Barker *et al.* 2012). This tacit information is too costly to communicate across the investment management firm (high probability of information loss). Further, to be useful, the specialised information must be reconciled with its global context (see Wójcik 2009). This is where the engagement unit has a comparative

advantage: by virtue of being generalists, they can consider the relevance of specific ESG issues in the context of the risks facing the investment management firm as a whole. The second input is the relationship with the target engagement. Barker *et al.* (2012) document the value that active portfolio managers place on building a relationship with corporate management and Bauer *et al.* (2013) find a higher probability of engagement based on a history of engagement, suggesting that a relationship with the target firm is important for successful engagements.

There are two types of agents, A_i (portfolio managers) and A_j (engagement unit) involved in the activities, (x, y) both necessary for the final activity (sustainable financial returns). Activity y is the synergistic activity (engagement), and activity x is a local ‘specialised’ activity (risk-adjusted return, measured quarterly). Initially, A_i is only responsible for x_i and A_j is responsible for y_j . The principal’s marginal value for good y , $S(y)$, is a concave function, $S^1 > 0$, $S^{11} < 0$ and $S(0) = 0$. This reflects decreasing returns to scale of engagement, as it is assumed that engagement with the worst performing companies adds the most value.⁷³ Marginal value for activity x , $S(x)$ is also concave, as more specialised managers mean it is more costly to coordinate their actions at the organisational level (Sharpe 1981; Blake *et al.* 2013). Both outputs are random variables, with probability distribution function $f(x, y, e)$, where e (effort), and C (agent’s costs).

Contracting nature of private engagement

⁷³ In practice, marginal value is not strictly positive, as engagement with companies that are already ‘good performers’ would be disruptive to their value (distracting management, wasting their time that could be spent on productive activities), but for simplicity in the model, I assume engagement always adds some value.

- Engagement effort is not (easily) measurable. Engagement is a long-term and multi-stage process (screening, selection, relationship building, ongoing monitoring)
- Engagement outcome is non-verifiable (to a certain extent)
- Payoffs for agents are risky and uncertain because engagement targets are idiosyncratic and difficult to compare with others, *ex ante*.

The engagement unit, A_j , is incentivised on a fixed wage plus a voluntary bonus (evaluated on subjective criteria with noise), $w(y) = q + V$, and exerts effort on engagement activity y only, using inputs of time, resources (allocated budget) and skill. Costs for $f(y, e)$ are strictly convex, $C^1(e_y) > 0$, $C^{11}(e_y) > 0$, $C(0) = 0$ as a consequence of complexity associated with coordinating an increasing number of engagements. Cost of effort is strictly positive, such that the agent has no intrinsic motivation. Activity x is subject to high common shocks. Effort is not observable, but output is verifiable. A_i is compensated on a fixed wage plus a contingent (relative performance-linked) bonus, $w(x) = q + B(x)$, awarded annually ($B(x) \geq 0$). A_i 's cost of production is strictly concave, $C^1(e_x) > 0$, $C^{11}(e_x) < 0$, $C(0) = 0$, reflecting the increasing returns to scale for individual specialised portfolio managers (see Blake *et al.* 2013).

The CIO delegates authority for the engagement task to A_j , the engagement unit ($P-A_j^*$). A_j cannot engage in side-contracts with other agents and must rely on communication from A_i to select engagement targets. While the engagement unit is often a team, I assume that A_j s can engage in unrestricted side payments with other A_j s, such that the unit behaves like a syndicate, which allows for treating A_j as a single agent

(Holmstrom and Milgrom 1990). The Revelation Principle does not hold, because even if information about target engagement selection can be codified and loss of communication is mitigated, the CIO does not have the cognitive capacity to interpret high volumes of information necessary to make decisions about engagement targets. Therefore, the second best option of delegating engagement to A_j is rational. There is no strategic communication (see Crawford and Sobel 1982), as A_i has nothing to gain (A_i 's effort bias = 0).

Explaining home bias in engagement

Advances in communication and information technology contribute to making engagement with distant firms more affordable. Proxy voting can be done remotely and meetings can be coordinated via video teleconferences. But these cannot replace the value derived from face-to-face interaction when trust between the transacting parties is important or messages are complex and propensity for misinterpretation is high (Storper and Venables 2004; Asheim *et al.* 2007). This is often the case with engagement on ESG issues, which involves sensitive and complex discussions around changes to corporate behaviour and private dialogue face to face is seen as important for establishing legitimacy (Hebb *et al.* 2012; Gifford 2012).

Granovetter's (1973) distinction between social ties as weak and strong is frequently invoked in economic geography to explain the impact proximity has on economic outcomes. In knowledge-intensive industries, weak ties are important for successful economic outcomes (e.g. Bathelt *et al.* 2004). At the extreme, markets themselves are socially constructed (see Mackenzie 2006). In this sense, everything is

relational, leaving little scope for distinguishing between the quality and structures of social relations that are salient for economic interactions from those that are merely embedded in them (Sunley 2008). Relational economic geography requires conceptual tools for distinguishing between social relations that can be explained by economic institutions and those that deviate from these institutions in important ways.

As such, I develop a concept of depth to predict when social relationships (weak or strong ties) influence economic outcomes. It is important not to confuse depth with strength. Shallow and deep refer to the *bearing* a social relation has on economic interaction, and not to the nature of the relation itself. To simplify, I do not distinguish between the direction of influence a social tie has on an economic outcome (positive or negative). For example, trust can be positive or negative for economic development depending on the context (Rodriguez Pose and Storper 2006). Consider the function $R = f(l)$, where R is the measure of depth of the relationship with a target engagement and l is a measure of asset liquidity. The function approaches 0 when l is high (efficient markets, high liquidity of asset), but never reaches 0 to reflect the idea that all economic interactions have some degree of underlying social influence, given the social nature of economic institutions. Similarly, when l is low (inefficient markets, low liquidity) the function approaches asymptote at some level of R , as there are limits to the degree of influence a social tie can have on an economic outcome.⁷⁴

⁷⁴ Bathelt and Glückler (2011) explain limits to knowledge with reference to the ‘expansion-coherence dilemma’. Also, there are legal constraints on how much an investor can gain from its relationship with a target firm.

Figure V. 1 Relational depth

		Social Tie	
		Strong	Weak
Depth	Shallow	A	B
	Deep	C	D

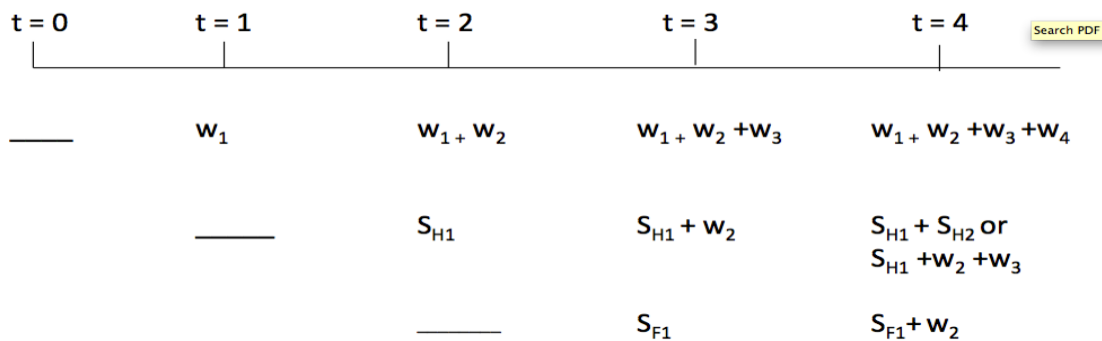
Strong ties are defined by Granovetter as the level of emotional intensity, time, intimacy and reciprocal services and are distinguished from weak ties.

There are two markets, home (H) and foreign (F). The H market is distinct from the F market in three important ways: (1) The corporate governance regimes differ significantly; (2) It is cheaper for the investor to establish strong ties in the home market than in the foreign market, due to transaction costs (e.g. travel and translation) and information costs (asymmetries); and (3) Weak ties are more likely to be deep in the home market and shallow in the foreign market (Box D), explained by culture and a shared understanding of ‘good’ corporate governance between the investment manager and the target company in the home market. There are also more shallow-strong ties (Box A) in H than F. This is because the investor is in close proximity to companies in the home market, and naturally develops strong ties. Deep and shallow ties are equally distributed between home and foreign markets.

The time period is infinite and A_j , the engagement unit, is delegated authority for selecting and implementing the engagement, and given a constant engagement budget

each period. At $t = 0$, the engagement unit has weak ties with firms in both markets as a consequence of being a shareholder. To launch a private engagement with a weak tie, A_j must use its entire engagement budget for that period (research on ESG issue, formulating message and making contact with the firm). A_i already has weak and strong relations with some firms, but since the engagement unit cannot engage in side contracting, it must establish its own strong ties (duplicating effort). A_j can only choose one engagement target with a weak tie in $t = 1$. In $t = 2$, the engagement unit can decide whether to invest in building a stronger relation with a firm it engaged in $t = 1$, or engage a second firm through a weak tie. The weak tie engagement undertaken in a previous period can be maintained at a negligible cost until success is achieved (since the bulk of work is done in t_{n-1}). It takes the engagement unit two (three) time periods to establish a strong tie in the home (foreign) market, and once established it must maintain it by investing in the relationship each subsequent period. Otherwise, the relation reverts back to a weak tie.

Figure V. 2 Engagement timeline



* w = weak tie, S_F = strong tie foreign, S_H = strong tie, home. As $t \rightarrow \infty$, it becomes more costly to coordinate the increasing number of weak-tie engagements and it becomes preferable to have strong ties with fewer targets.

The engagement unit cannot predict the outcome (shallow or deep) of its engagement effort, *ex ante*. As such, there is risk in building a strong relation that turns out to be shallow. Once P learns the productivity of the engagement unit, she may cut or increase the budget of the engagement unit. The risk averse A_j will seek weak ties only (it is riskier to invest in strong ties). While the engagement unit cannot predict outcomes of their *ex ante* choices, it knows there are more deep, weak ties in the home market. As such, the rational engagement unit who cares only for its monetary payoff, will do best to engage with firms in home market (Box D). If A_j does engage in the foreign market, from the assumptions in the model, the majority of these weak ties fall into B (shallow outcomes) rather than D (deep).

To summarise, the best option for the engagement unit under uncertainty about the outcome of their effort is to engage in the home market (D) with weak ties. If it does extend its engagement programme to foreign targets, it will engage with weak ties and we know from our assumption (3) that these are more likely to be shallow (B). If the investment manager decides to develop a strong tie, it must choose between (i) a weak deep tie in home market, which would be inefficient since it only needs a weak tie, or (ii) a weak tie in the foreign market (B), transforming it to (A). Establishing a strong tie with an existing target in B will transform to A, because the target firm in B is an easy target that is already facing significant public scrutiny and likely to change regardless of whether the investor is engaging or not (see Bauer *et al.* 2013). As such, establishing a deep tie with an existing weak tie in B will not transform to C, which is the desirable type of strong tie. This would require building a strong relationship with a new target firm, forgoing an engagement in one period (two periods in case of the foreign market).

There is some empirical support for home bias in engagement.⁷⁵ Bauer *et al.* (2013) find a UK asset manager targets engagements in the domestic market. They also find investors target foreign firms for engagement that are relatively easier to affect change⁷⁶ and the investor is more likely to repeat its engagements with firms it has already engaged. There are two explanations for home bias in the broader literature on public equities. The first is that investors have more information about firms in their home markets (French and Porteba 1991). Some make a further distinction between home bias, which is explained by transaction costs (exchange rate risks, political risks), and local bias, which is explained by information asymmetries (see Coval and Moskowitz 1999; 2001; Chhaochharia *et al.* 2012). The model in this chapter reflects elements of both. A second explanation for home bias is familiarity preference (Huberman 2001), which draws from behavioural studies of decision-making (see Heath and Tversky 1991). Agents may be sacrificing superior payoffs from investing in a foreign market, due to their own feelings of competency. This source of home bias is not reflected in the baseline model. I return to this explanation in the penultimate section.

⁷⁵ In finance, home bias refers to the tendency of investors to overweight domestic equities and underweight foreign equities (see for example French and Porteba 1991).

⁷⁶ Similarly, Chhaochharia *et al.* (2012) suggest firms with more proximate investors exhibit ‘a lower propensity to engage in undesirable corporate behaviour’, as these local investors are more likely to attend shareholder meetings, submit resolutions and meet with companies to raise concerns.

ORGANISATIONAL DESIGN OPTIONS FOR TRANSCENDING HOME BIAS

As captive pension and sovereign funds continue to grow in size, their investment managers face increasing pressure to extend their investment mandates to new asset classes and geographies to avoid diseconomies of scale (Andronov *et al.* 2011; Blake *et al.* 2013). As such, home bias will become more problematic for their engagement programmes, as they will focus on an increasingly narrow portion of the total portfolio.

Changes to organisational design that seek to integrate engagement tasks and functions between different employees within the investment management firm can capture synergies (cost efficiencies) by leveraging shared resources (knowledge and relationships). For example, consider a CIO who now contracts with a team of diverse employees (A_i s and A_j s) for the engagement activity, y , to take advantage of synergies associated with assigning multiple agents to a task with a convex cost function (see Itoh 1992). There are two options for integrating the engagement task across units within the investment management firm. First, the CIO can contract with each agent separately (P - A_j^* - A_i^*), such that A_j (portfolio manager) is responsible for y_{ji} , but now A_i is also responsible for y_{ij} . The second option is that P contracts only with the engagement unit, (P - A_j^* - A_i) as in our baseline model, but now allows the unit to engage in side-contracting with A_i to achieve y . I assume the latter is chosen because the engagement unit can monitor A_i better than the CIO (Dewatripont and Bolton 2005).

Under this new structure for engagement coordination, a team consisting of portfolio managers and the engagement unit must be incentivised to induce effort on the engagement task. The engagement unit can engage in side-payments. As in the baseline

model, the engagement unit is paid a salary, but the CIO also implements a joint performance evaluation system to encourage team members to monitor each other, providing an implicit incentive not to shirk (Varian 1990; Che and Yoo 2001).

Synergies from team cooperation on y , the engagement task, are now possible under this new form, as a consequence of leveraging A_i 's existing relationships and local information used for x , the investment task. For example, when active portfolio managers interact with companies necessary for x , they can also incorporate ESG issues in their discussions and correspondence to influence corporate behaviour. Further, because A_i has better local information about companies, the agent can frame the engagement discourse in terms relevant for management.

A second form of synergy is the combination of the agents' different sets of information (local and global), which produces new knowledge. The engagement unit has superior knowledge of global ESG issues that can be used to anticipate future risks at the portfolio level. When combined with specialised knowledge held by A_i , this new knowledge is more valuable than the sum of its parts. Since the engagement task is integrated across the two units (A_j and A_i s), target selection can now include foreign and domestic targets, Box C (strong tie, deep outcome). This is because strong ties already exist (A_i 's ties).⁷⁷ Overall, integration of engagement tasks results in more efficient use of resources for engagement, avoiding waste of time and resources on engagements that are more likely to result in shallow outcomes (A and B) and allowing the investment

⁷⁷ I am making a significant assumption that portfolio managers establish 'ties' with issuers – the model assumes PMs are active managers that seek long-term value through dialogue with public company management. Barker et al (2012) describe the relationship building process between portfolio managers and company management and the importance that portfolio managers place on this process.

manager to target firms in C and D, representing the greatest potential returns from engagement.

Moral hazard in teams

While changes in organisational form contribute to transcending home bias, they also introduce new motivation challenges that must be weighed against benefits of synergies. In particular, producing engagement with a team of diverse agents can give rise to moral hazard problems. Moral hazard in teams occurs when attempting to incentivise agents to supply productive inputs (effort) when agents' actions cannot be verified (Holmstrom 1982). From the model presented in the early part of this chapter, engagement effort cannot be verified.

To isolate the moral hazard problem, I begin by assuming x and y are perfect complements (there is no multi-task problem). I am strictly concerned with the activity y (engagement) and assume that any effort exerted by A_i contributes to both x and y . This could occur if (i) x is measured strictly in terms of long-term returns, such that engagement on ESG issues are synonymous with effort required to generate x ; or (ii) engagement outcomes can be realised immediately, such that effort on engagement also would contribute to short-term financial returns (x).

In the baseline model, there is no moral hazard because the engagement unit was assumed to share a common goal and act as a single agent. But now that engagement is organised as a team with diverse agents in different business units (specialised and generalist), individual contributions to engagement cannot be verified and shirking is

likely.⁷⁸ The engagement unit must decide whether to: (i) consult A_i on target selection and implement engagement themselves; (ii) delegate the engagement selection to A_i but implement engagement themselves; (iii) consult A_i on target selection and delegate implementation to A_i ; or (iv) delegate engagement decision and implementation to A_i .

A_i has a bias towards low-effort engagement when they are also responsible for implementing the engagement task [(iii) and (iv)], since they have to bear costs of engagement but share the rewards. The trade-off for eliminating bias by choosing (i) or (ii) is the loss of an existing relationship with the target engagement (no cost saving synergies). In (iii) or (iv), because A_i is responsible for implementation they will be biased towards recommending/selecting low-effort engagement targets, and will engage in strategic communication with other team members to shirk their own effort.

Holmstrom (1982) proposes a group penalty contract to resolve the moral hazard problem in teams. Initially, he assumes there is no principal. It is impossible for the team of N agents to achieve Pareto Optimal output as a Nash equilibrium, under budget-balancing, since all agents will choose their input levels simultaneously. Individuals each equate marginal productivity divided by N to their individual marginal costs. But Pareto optimality requires that each individual's marginal cost be equated to the team's marginal productivity and not their own. That is, agents must agree to 'throw away' some output to achieve the Pareto optimal level. This requires an $N+1^{\text{st}}$ party (in this case, the asset owner/CIO) that is not involved in the activity to absorb the excess team output that deviates from Pareto optimal, Nash Equilibrium levels.

⁷⁸ Disconnecting pay from results would work if the agent could demonstrate to the principal the basis for their choice, but this is not possible in the engagement problem.

Moral hazard in dynamic settings: Trust and fairness

In a repeated setting, such as the employment relation under consideration in this chapter, this mechanism may break down in the absence of trust. A commitment device is needed that allows the agent to trust that the N+1 party (asset owner/CIO) will not renege should a bad state arise in the future. Otherwise, if the agents do not trust this budget breaker to distribute the gains from their efforts to engagement, agents will not be motivated to provide the effort necessary to achieve synergies for successful engagement outcomes. Agents will revert to selecting inefficient targets under home bias, anticipating the budget breaker to renege in bad states (when engagement effort leads to no financial gain for the investment management firm). That is, it is not enough to change organisational form and governance processes to capture synergies. The delegation of authority can constrain the principal's temptation to renege. Delegation insulates the engagement unit and portfolio managers from the return maximising drive of the CIO (the temptation to renege in the event of bad engagement outcomes).

This raises the issue of contract for delegating authority to the engagement unit, under conditions of uncertainty about the engagement outcomes. Hart and Moore (2008) suggest contracts are reference points, such that agents set their expectations to the initial contract. If their payoff differs from what was specified in the original contract as a result of renegotiation under a flexible contract arrangement, agents will feel aggrieved and will engage in costly shirking behaviour (also see Hart and Holmstrom 2010). That is, agents care about fairness, which manifests in the form of reciprocity. Fehr *et al.* (2009) demonstrate that a principal's best option is to offer a rigid contract, when the initial contract is negotiated under competitive conditions. Even though the rigid contract will

result in worse outcomes than a flexible contract in bad states, the rigid contract prevents agents from shirking. It is therefore possible to mitigate moral hazard by delegating authority for engagement tasks and functions under a rigid contract.

Multi-task incentive problem

Thus far, the solution to home bias has relied on an assumption that financial returns (x) and engagement outcome (y) are perfect complements. In practice, there are significant conflicts between both (i) cost of effort on tasks x and y, and (ii) rewards to effort (high powered incentives for x and low powered for y), such that they are more accurately defined as substitutes. When motivating the agent on substitute tasks under moral hazard using performance-linked pay, diseconomies of scope imply the principal will induce effort on only one task (the more measurable task).

In their classic model, Holmstrom and Milgrom (1991) show the principal does better to pay a fixed wage on both tasks. But when high-powered incentives matter for one task (as in the case of x), their results show it is better to separate tasks, such that the team-related tasks (y) are grouped into a single job, and the measurable task (x) is separated into another, as reflected in the baseline model with no synergies. In other words, the trade-off is between reaping the benefits from synergies by inducing cooperation among multiple agents on task y and incurring the costs of shirking under a multi-task incentive problem. Weakening the high-powered incentives for the non-synergistic activity (x) can contribute to reconciling this tension, but this must be measured against the extent to which the high-powered incentive matters for inducing the desired level of effort on x.

Optimal contracting theory suggests that portfolio managers must be incentivised to search for good investments and to take risk under conditions of uncertainty. Performance-linked pay is necessary to attract high productive workers when it is not possible to observe their skills *ex ante*. Relative performance benchmarking (RPE) is widely used to compensate portfolio managers in an environment characterised by high degrees of noise and low signals to discern skill from luck (Lazear 1998). For decentralised investment management where diversification loss is a concern (Sharpe 1981), RPE is important for mitigating coordination challenges at the portfolio level related to diversification, risk preferences, and investment horizons (van Bissbergen *et al.* 2008).⁷⁹

But high-powered incentives also provide perverse motivation. The 2008/09 financial crisis has brought these perversions to centre stage. Performance pay encourages investors to take excessive risk, since imposing symmetrical pay (negative wages) on poor performance is often illegal. Similarly, investors are rewarded for taking bets with high tail risks, as these events often do not occur until long after the portfolio manager has found employment elsewhere in a highly competitive labour market (see Bénabou and Tirole 2013). Another perversion is the incentive to invest close to the benchmark, resulting in herd behaviour (Rajan 2006) and distortions in risk-sharing (see Admati and Pfleiderer 1997; cf. Agarwal *et al.* 2012). Despite widespread recognition of these perverse incentives, 'it has proven almost impossible to reconcile principals' interests in long-term returns with the short-term rate-of-return imperatives that drive the behaviour of agents' (Clark 2011a: 13). That is, production technologies for *x* and *y* are inherently

⁷⁹ A recent survey of over 4000 mutual funds finds that over 75% of portfolio managers are compensated on performance-linked pay, and 28% have deferred incentive plans – see Ma, Tang and Gomez (2012).

incompatible, due to perverse incentives in a highly competitive market structure. A multi-task incentive problem therefore inhibits our proposed solution to overcoming home bias in engagement by capturing organisational synergies through structural changes.

INCENTIVES FOR INDUCING COMPLEMENTARITY BETWEEN TASKS

In the discussion above, I explained why joint and relative performance evaluation cannot be implemented simultaneously (for the same employee) when tasks are substitutes. This result is also discussed by Dessein *et al.* (2010), who find individual incentives may have to be weakened to achieve synergies. When high-powered incentives are important, however, they consider alternatives for achieving synergies. Their solution depends on a centralised functional manager to coordinate a synergistic activity by standardising the task across the organisation. But, unlike their model, standardisation is not the source of synergies in the case of shareholder engagement. Engagement synergies are a result of combining and sharing resources, resulting in cost efficiencies and the production of new resources (knowledge). We are left with a multi-task incentive problem.

In this section, I consider the potential for making these two tasks more complementary. There are two approaches to inducing complementarity in the competing tasks. The first is to focus on the cost of effort side. For example, university research and teaching tasks are often used as examples of effort substitutes that can be made more

complementary by making financing for research contingent on revenue from teaching.⁸⁰ In the context of this chapter, profits from the engagement task are too ambiguous to use as an effective mechanism for determining the allocation of financing task x . Complementarity in cost of effort can also be induced by making the production technology of the two tasks overlap. But, as the discussion above suggests, in a highly competitive market, alignment in production technologies for x and y is severely constrained by perverse incentives that make any effort on long-term value irreconcilable with an agent's motivation for earning short-term returns. Leaving aside the possibilities of inducing complementarity on cost of effort, I now turn to consider complementarity on the rewards to effort side of the equation.

Deferred compensation, and tolerance for early failure

Engagement shares many contracting qualities with innovation (long-term horizons, unobservable effort and the agent is uncertain about his expected payoff of an action *ex ante*; see Holmstrom 1989). Given these similarities, there is value in considering the literature on incentives for innovation and its application for incentivising engagement. Most relevant for the purposes of this chapter is the multi-agent bandit problem, where agents can cooperate in a team to explore different possibilities for innovation, or imitate others, such that innovation potential is limited (Ederer 2013; Manso 2011). In their experiment, Azouly *et al.* (2011) find that under a standard pay-for-performance contract, team members seek to free-ride on the exploration of others rather than innovate themselves. This is similar to our engagement problem, where cooperation is inhibited by

⁸⁰ Also see Cockburn *et al.* 1999

moral hazard in teams. If x and y are not complements, the model shows that portfolio managers will shirk on the team activity.

To incentivise agents to choose the uncertain option (which requires cooperating with other agents to test a variety of methods to find the best outcome), the innovation literature suggests the principal must tolerate early failure and provide a combination of long-term individual and group incentives for joint success in the future (Ederer and Manso 2012). In the engagement context, consider CalPERS' recent decision to increase its holdings of existing shares in the companies it has engaged through its focus list programme, effectively creating a concentrated portfolio of 'engaged' companies.⁸¹ Provided the portfolio managers responsible for this engagement portfolio are also assigned the engagement task, then rewards from their effort on engagement are effectively deferred and linked to rewards from activity x , in the form of financial returns earned on the concentrated portfolio. Note also that this would induce complementarity in the production technologies, as x now uses the same production technology as y .

This solution depends largely on the discount rate of agents. Assuming agents are rational and care only for monetary incentives, then incentives that increase over time that are consistent with an agent's discount rates (assume that the closer an employee gets to retirement, the higher the discount rate) could mitigate this problem. Indeed, there are many design issues to work out. Here, I have only sought to demonstrate the possibilities

⁸¹ California Public Employees Retirement System (CalPERS), US\$ 50 million would initially be allocated to the concentrated portfolio, (5 to 10 companies each year), with the potential to grow significantly if successful.

for inducing complementarity in rewards, though recognise this could also have effects for inducing complementarity in production technologies.⁸²

Inducing complementarity with internal auditing

A second approach to inducing complementarity between tasks x and y is to introduce a conditional internal audit to measure performance of the task that is more difficult to observe (engagement). In Sinclair-Desgagne (1999), the agent desires to be audited because he/she has the potential to improve his/her overall expected payoff. That said, it is also possible for the auditor to punish the agent for poor performance, such that the agent's payoff is worse than if he had not been audited in the first instance (by docking performance-linked pay for task x for example, after a poor audit). Being audited is conditional on good performance on the first task (x). A conditional audit would therefore induce complementarity between the rewards for the two tasks, as an agent who performs well on the high-powered incentive task (x) knows they will be audited on the synergistic task (engagement) and as such will also need to exert effort on this task, to avoid being penalised for their poor performance on task y.

For the purposes of shareholder engagement, the audit could include attending engagement meetings, reviewing correspondences, interviews with staff and auditing engagement expenditures. A problem with the audit solution is cost. Improvements in information and communication technology can contribute to reducing the costs of performing the audit. If costs for internal audit of engagement are kept low enough to

⁸² There are several other approaches to achieving incentive complementarity between long-term and short-term tasks, including deferred stock options, linking pay to performance of the institution, lagged performance evaluations and claw back clauses, yet none of these would directly link effort on engagement task to the portfolio manager's compensation.

justify, audits could induce complementarity between engagement and the investment revenue and overcome challenges with incentive systems to induce both cooperation and competition. This also depends on whether the complementarity in reward is strong enough to counteract the substitution on the cost of effort side of the equation (not a problem in the deferred incentives solution).

NON-MONETARY INCENTIVES, BOUNDED RATIONALITY AND ORGANISATIONAL PATHOLOGIES

Thus far, the model has assumed that agents respond only to monetary incentives, rationally seek to maximise their individual utilities, and that the aggregate result of this behaviour is optimal for the organisation as a whole, unless otherwise noted. But each of these three assumptions rests on an individual (under-socialised) view of agents that is increasingly being challenged both theoretically and empirically. Indeed, this chapter has set out to emphasise the social relations between target firms and investors that shape outcomes of engagement. Consistent with this theoretical approach to interrogating engagement task, it is important to bring this lens inside the firm to consider the social relations between employees of the investment management firm themselves. I consider the implications in the event that these assumptions do not hold for the model and identify future research.

Non-monetary incentives and intrinsic motivation

There is a growing base of research that highlights the importance of non-monetary incentives such as altruism (reciprocity), status, self-image, career concerns, and public

recognition, drawing on early insights from the behavioural theory of the firm (Cyert and March 1963). The auditing solution does not preclude the use of non-monetary incentives. For example, good performance could be recognised with internal sustainability awards or improved chance of promotion. More consideration of the role of non-monetary incentives is also necessary in the case of the deferred compensation solution. For example, as a portfolio manager's tenure increases, they may be less concerned with career incentives and stronger monetary incentives may be required to compensate them for effort on a steeper discount rate curve. In such cases, the costs of deferred compensation may become too high to justify against the benefits of synergies on the engagement task.

Agents may also be intrinsically motivated to perform on the engagement task. Introducing explicit monetary or non-monetary incentives can crowd out their original motivations for participating in the engagement task (Bénabou and Tirole 2003; 2006). There are of course limits to an agent's intrinsic motivation, and incentives are necessary to induce effort beyond some level. This is consistent with the view presented in this paper, which is that organisations do not exist to motivate individuals (individuals are already motivated). Rather, they exist to coordinate synergies, and exploit the gains from division of labour (see Dessein *et al.* 2010).

Bounded rationality

The second assumption in the model is that agents rationally seek to maximise their expected payoffs. Given the uncertainty of engagement and complexity in untangling attribution of output to the influence of the investor, it is more likely that agents are

boundedly rational. That is, agents may not be able to identify the best targets for engagement even if they are incentivised to do so. With respect to the specialised task, assumptions that deviate from agent rationality may have implications for changing incentive pay that should be accounted for in future research. In particular, myopic loss aversion explains why agents are averse to taking risks when they frequently check the performance of their portfolios (see Bernatzi and Thaler 1995). Conversely, when MLA interacts with competitive incentives, Eriksen and Kvaloy (2014) find agents engage in excessive risk-taking due to learning effects and social comparisons (e.g. when agents are under-performing benchmarks they will take excessive risk to ‘catch up’). Indeed, myopia can explain a number of anomalies in investment decision-making (e.g. local thinking; Gennaioli and Shleifer 2010). Some of these are raised in discussion on perverse incentives, but a much more systematic treatment of myopia and its interaction with incentives is needed to highlight important deviations from our assumptions.

Myopia is also a spatial phenomenon (Clark 2011a). In the model presented in this chapter, home bias is explained in reference to information asymmetries and transaction costs, where agents were responding rationally by maximising their expected payoffs. But home bias may also arise due to familiarity preferences. That is, agents perceive what they are more familiar with to be less risky, as they have more confidence in their familiar knowledge (Heath and Tversky 1991; Fox and Tversky 1995). Agents downplay local risks and overestimate foreign risks (Huberman 2001). If this behavioural explanation is the source of home bias, change in organisational form would not have intended results as predicted in our model. In such cases, explicit rules about engagement target selection may be necessary to encourage agents to engage with foreign targets.

Organisational pathologies

This leads to a third assumption in the model, which is a level of coherence within the organisation. Alternative conceptions of organisations and teams are necessary to explain unintended consequences of incentives (see Cohen *et al.* 1972) and pathologies within organisations (March and Simon 1958). A classic example is Merton's (1957) suggestion that rules, discipline, and incentives can lead to an 'obsession' with adherence to rules such that rule conformity becomes an 'end in itself'. The influence of incentives must also be understood in reference to their context. For example, incentives take on different values if an agent can find alternative employment (participation constraint). Bénabou and Tirole (2012) invoke market structure (competition in the labour market) to explain perverse financial sector incentives. Peer effects are also important. Some evidence suggests agents shirk more when others around them are shirking (Card *et al.* 2010), and agents' concern for equity and reciprocity can interfere with their aligning their incentives. Finally, groups within an organisation may form their own identities⁸³ that deviate from the organisation's goals. Taken together, these results suggest the employment relation must be understood both in terms of both social and economic dimensions (Baron and Kreps 2013).

Given the interest of this chapter in the investment manager's external relationships with target firms for engagement outcomes, a limitation is that it has not given more attention to relationships inside the organisation. For example, changes to form that create new sub-groups (portfolio managers and engagement unit team) may

⁸³ Strength of group identity could be influenced by frequency of interaction, shared goals, prestige of the group, (and negatively correlated with competition between group members), see March and Simon (1958).

create new attitudes, interests and norms, or new concerns for inequality (engagement unit may feel aggrieved when working in a team with PMs, who are compensated higher on their other tasks). Consideration of the social and economic relationships inside the investment management organisation should be integrated in future studies on the coordination of engagement.

CONCLUSION

This chapter has developed a stylised model to capture the trade-off between organisational synergies and the resulting multi-task incentive problem in teams. In particular, there is an inherent tension between the long-term objectives of shareholder engagement and the short-term incentives deemed necessary to motivate portfolio managers to exert effort and take risk. This chapter has argued that inducing complementarity in incentives for the conflicting tasks can contribute to retaining organisational synergies without compromising incentives necessary to induce the effort needed to produce the returns necessary to meet asset owners' short-term liabilities. While the focus has been on incentives for engagement tasks, the model has broader implications for long-term incentives in the financial sector and, in particular, re-conceptualising the role of portfolio managers.

The chapter has also contributed to developing a framework for distinguishing the quality and structure of social relations that influence economic outcomes from those that are merely embedded in them. In particular, the contribution to the concept of relational depth provides a tractable treatment of social relations and influence of economic (engagement) outcomes. While I have only scratched the surface of measuring the

salience of social relationships for economic outcomes in a stylised setting, the concept of relational depth provides fertile grounds for further interrogating the quality and structure of economic and social relations that is currently lacking in the relational economic perspective.

Although the chapter has studied several aspects of organisational design for engagement in a stylised setting, it has balanced the need for tractability in the model with more realistic considerations through a modelling dialogue. Given the increasing recognition among asset owners and their managers of the importance of engagement with companies on environmental, social and governance performance, coupled with the increasing global reach of their portfolios and the observed home bias in engagement, it is critical that we deepen our understanding of how to make shareholder engagement with corporate managers more effective and efficient. Developing a framework that can address both the synergies inherent in engagement tasks when performed by a team of diverse agents, and the incentive conflicts that emerge as a result of changes in organisational form, is an important advancement towards a deeper understanding of engagement effectiveness.

Future research should include a systematic comparison between the impacts of different internal coordination options for engagement outcomes. Comparative case studies would be particularly useful here. Second, while this chapter has focused on captive funds and their investment managers that coordinate the bulk of their activities in-house, many institutional investors outsource their engagement programmes to specialised engagement service providers. These engagement service providers are concentrated in financial centres, such that home bias becomes even more problematic

for realising the social welfare benefits of active ownership, particularly as investors continue to invest in markets outside of the US and UK. The model here could be extended to consider the consequences of outsourcing the engagement task particularly for international markets. This chapter has treated portfolio managers within the investment management firm as all having the same interests with respect to engagement. But it is possible that fixed income portfolio managers, for example, may have different interests with respect to engagement outcomes than public equities managers with the same firm. That is, there is potential for conflict of interests between portfolio managers themselves, adding another layer to the model presented in this chapter to explore. Finally, large empirical studies could survey the attitudes of portfolio managers and engagement units toward engagement tasks to identify the presence of intrinsic motivation or non-monetary incentives. Taking seriously the challenge of solving incentive problems and delegation problems together, this chapter has suggested some ways in which large investment management firms operating in global financial markets can leverage spatially dispersed relationships and information within their own organisation to achieve synergies and ultimately achieve their long-term wealth management goals.

VI. INVENTING THE MARKET FOR PUBLIC INFRASTRUCTURE: THE WEST COAST INFRASTRUCTURE EXCHANGE

Submitted to: Competition and Change

INTRODUCTION

Matching the rapidly growing demand for investment in public infrastructure projects with the equally growing supply of long-term capital from pension and sovereign wealth funds is one of the most significant global policy challenges of our time. In this current era of government austerity, projected global funding shortfalls are reported in figures so large they seem abstract. But the consequences of this gap are very real and are already being felt in both developing and developed economies around the world. In the United States (US), the lure of cheap private capital available in the municipal bond market has encouraged local officials to overlook the benefits of long-term private finance. These include efficient risk transfer, private sector expertise and inter-generational equity by distributing costs across the lifecycle of the asset. Moreover, the public-private partnership model that is celebrated elsewhere for successfully delivering long-term private finance remains politically untenable in the US. Despite the urgency of the infrastructure challenge – witness the pending insolvency of the Federal Highway Transfer Fund (CBO 2012) – political posturing continues to undermine President Obama’s resolve to establish a national infrastructure bank to address the looming long-term funding deficit.

Regional efforts to access new sources of private long-term capital in the US have made more traction. In 2012, the West Coast Infrastructure Exchange (WCX) was established to address the estimated \$US 1 trillion gap in long-term finance for public infrastructure over the next thirty years. It is the first initiative of its kind in the US that seeks to establish a framework for attracting private investments to publicly owned infrastructure projects.⁸⁴ It is a remarkable example of cooperation between the States of California, Oregon and Washington in an era of fiscal federalism that drives competition to attract private investment (Enrich 1996). But, more importantly in the context of this chapter, the WCX reflects the intention to create a market for new financial services and products that align with the long-term interests of institutional investors. If successful, it will allow asset owners to circumvent the perverse institutional arrangements and strong orientation to short-term results that currently characterise the financial industry and gain direct exposure to infrastructure that matches their long-term liabilities.⁸⁵ But at the same time the WCX provides a basis for collective action to re-engage with the industry on their own terms (cf. Clark and Monk 2014).

Using the WCX as an illustrative case, this chapter argues that the market needs to be invented before buyers and sellers can participate in it.⁸⁶ In developing this argument, I draw together three building blocks to explain the emergence of a new market. The first is the co-evolution of innovative financial products and services

⁸⁴ Other initiatives following the WCX model include the Intermountain exchange, the Council of the Great Lakes region and the mid-Atlantic regional exchange. See the Clinton Global Initiative.

⁸⁵ Kathryn Judge (2014) explains the entrenchment of existing institutional arrangements that favour high fees for intermediaries, given their positional and informational advantages. While advantageous from economies of scale perspective, the concentration of knowledge yields significant influential power to intermediaries over regulators.

⁸⁶ Bresnahan and Levin (2013) draw attention to this point, originally made by Stigler (1951), which they argue has only partially explored in the organisational economics literature (878).

introduced by institutional investors and the institutional arrangements required to support their diffusion. In contrast to the evolutionary spiral of financial innovation driving markets toward greater efficiency (Merton and Bodie 1995), I explain how the market can become entrenched in inefficient institutional arrangements. While several studies highlight the opacity and ambiguity of the infrastructure asset (Torrance 2009; Clark *et al.* 2011; Hebb and Sharma 2014), none explicitly consider the co-evolution of the infrastructure asset with its underlying market structure. The second building block is an explanation for why a new market in a periphery region is possible in the context of the strong gravitational pull of financial centres for market systems themselves (Knox Hayes 2009; Wójcik 2011). At issue is the trade-off between innovative institutional arrangements and the efficiency of building on existing institutions. The third is an exposition of the market's internal dynamics. Taken together, these three concepts underscore the important, though often neglected, point that the market does not simply exist in a state of nature (cf. Williamson 1975) and following from this, institutional arrangements⁸⁷ underpinning a market are not only shaped by, but also contribute to shaping, market forces.

There is a paradox inherent in the creation of a new market. Currently, only a few large institutional investors have built up the resources necessary to invest directly in infrastructure. All institutional investors would benefit from a competitive market that offers exposure to long-term returns. But none are willing to disintegrate their internal infrastructure teams in absence of a supporting market infrastructure. In other words,

87 Following Bathelt and Glückler (2014), this chapter defines institutions as stabilizations of mutual expectations. On the one hand, institutions constrain the space for alternative actions (North, 1990); on the other hand, they provide the necessary conditions under which continuous interaction is made possible (Hodgson, 1988).

‘markets in which *homo economicus*, the rational egoist, appears to thrive cannot be created by *homines economici*’ (Mackenzie 2006:151). Neoclassical economic theory has it that government intervention is necessary for the provision of public goods and services. But, as Coase (1974) points out in his historical account of British lighthouses, public goods can indeed be provided by private enterprise. This chapter emphasises instead that the ‘provision’ of public goods by the public or private sector, when the good refers to institutional arrangements, cannot be reconciled with the fact that these norms, social conventions and rules are relational resources that can only be produced through social interaction (Bathelt and Glückler 2011).

The remainder of this chapter is organised in three parts. It begins with explaining the process of innovation in the financial industry and the intricate link with market structure. This framework is used to explain why the current market for performance-based public infrastructure is not progressing along the assumed evolutionary path of efficiency. The chapter proceeds with an explanation of the factors that allow for the creation of the WCX outside of existing institutional arrangements. The penultimate section describes the internal dynamics of the market that is enacted by the WCX. Emphasis is placed on the early stages of setting up the market and its intended functions. The chapter concludes by identifying some challenges confronting the WCX going forward.

THE NATURE OF FINANCIAL MARKETS

There are many ways to explain how a new financial product or service is diffused in a competitive market. Explaining the process of diffusion depends on how one views the

nature of markets. While early studies of finance provided descriptive and institutional accounts of markets, neoclassical finance emerged as a distinct analytical and theoretical approach (Mackenzie 2006). It is primarily concerned with modelling the relationship between prices and consumption. Diversification explains how risk is controlled at the portfolio level. Similarly, capital structure is seen as irrelevant for firms. Together, these pillars of finance deny the role of institutions for the efficient allocation of resources (Hodgson 1988). To be sure, the price mechanism is important to neoclassical theory. But this institution is self-coordinating and not an object that can be theorised or empirically studied (Berndt and Boetlecker 2009). Dispersed individuals pool their incomplete information in the market to constitute complete information or knowledge and no actor has an information advantage such that prices in equilibrium reflect fundamental values.

Implicit in the neoclassical tradition is the evolutionary momentum driving the market to its efficiency. Merton and Bodie (1995; 2005) make this explicit, suggesting innovation drives global financial markets toward greater economic efficiency, providing for risk sharing and reducing transaction and agency costs, and asymmetric information. Innovation moves from intermediaries to the market in a continuous spiral. Bresnahan and Levin (2013: 879) illustrate this using the example of the mortgage market. Initially, they observe, the bank extended a loan to an individual, and undertook collections of interest and principal payments, among other complementary activities. Over time, the invention of securitisation contracts allowed the bank to sell the loan to investors, giving rise to a vertically disintegrated market structure. The driving force behind the innovation spiral is client demand. That is, market forces shape institutional arrangements and ambiguity inherent in the financial product dissipates over time. Intermediaries engineer

securities to meet this demand (Allen and Gale 1994). Derivatives are the ultimate realisation of this innovation spiral, providing market agents with the ability to compress time and space.⁸⁸

But as pointed out by many scholars this progression from internal production to diffusion in a competitive market is not inevitable. Clark and O'Connor (1997) distinguish between financial products on the basis of their transparency to explain their spatial diffusion in the market. The production and trade of transparent products is more likely to be concentrated in financial centres, whereas more opaque products such as real estate and infrastructure depend heavily on an investor's proximity to local information. The salience of proximity is even observed in assets that have been converted into securitised products, as suggested by the observed home bias in public equities (Coval and Moskowitz 1999; 2001; Clark and Wójcik 2007). Limits to arbitrage resulting from behavioural biases have become a widely researched topic in finance (Shleifer and Vishny 1997; Barberies and Thaler 2003).

Institutional investors such as pension and sovereign wealth funds have long-term horizons and superior information processing capabilities that, in theory, allow them to transcend limits to arbitrage arising from behavioural biases (Clark and Wójcik 2007). But many institutional investors are reluctant or unable to leverage their competitive advantage as long-term investors. They often lack effective internal governance (Ambachtsteer 2007; Clark and Urwin 2008).⁸⁹ More specifically, there is a lack of

⁸⁸ David Harvey (1989) first used the term time space compression to explain process of changing the relationships between time and space. Financial markets and products are significant drivers of this process (see for example, French and Leyshon 2012).

⁸⁹ The Norwegian Government Pension Fund-Global is frequently criticised for wasting the opportunity to leverage its competitive advantage as a long-term investor.

professionalism on the asset owner side (see Clark *et al.* 2006; Clark 2007; Clark and Monk 2012), which leads to dependence on asset managers. When coupled with perverse incentives that encourage asset managers to invest close to existing benchmarks (Admati and Pfleiderer 1997), the idea of ‘notional equals’ in the context of an asset management contract has been described as deeply naive (Clark and Monk 2014). Taking into account the unique position of intermediaries in the financial industry, Judge (2014) suggests that agency costs and collusion explain the persistence of inefficiencies in the financial industry. Intermediaries use their influence due to positional and informational advantage to entrench institutional arrangements that favour high transaction costs in the form of fees. From this perspective, financial innovation is supply-driven. Intermediaries design financial products and instruments that suit their own interests.

While behavioural theories have done much to elucidate the perverse incentives and explain the persistence of anomalies in financial markets, sociological theories of finance have set out to provide an alternative theory of markets that accounts for institutions and networks (e.g. Castells 1996; Callon 1998; Knorr-Cetina and Preda 2005; Mackenzie 2006). There are significant differences between various sociological approaches to finance and we must be careful not to conflate them. Network theories have risen to prominence in the context of globalisation and have been spurred on by significant advances in information and technology. Castells (1996) has been particularly influential, predicting integrated and decentralised networks of capital and information flows will characterise financial markets. While recognising the existence of global cities such as London and New York, he suggests they are much less stable than suggested by the global city theory (Sassen 2001). In particular, Castells emphasises the vulnerability

of global cities to networks flows, such that ‘the global city not a place but a process’ (1996: 417).

The conflation of financial markets with social networks is at odds with the scholarship that considers the geography of the financial industry and, in particular, its spatial concentration in financial centres (see Clark 2002; Faulconbridge *et al.* 2007; Wójcik 2011). Clark (2002) identifies three reasons why London is not likely to dissolve into a decentralised network of flows. First, there are reputation advantages of being located in London. Second, London sits at the intersection of diverse local and global markets (2002: 439), which gives service firms that locate here access to widely dispersed consumers. Third, there are complementarities in these global financial centres in the form of expertise and information, and consulting, legal and accounting services that make co-location desirable from an efficiency perspective (see also Beaverstock 2000; Faulconbridge *et al.* 2007; Knox Hayes 2009). As such, global cities are much less vulnerable to virtual flows of capital and information than network theories would have it.

To reconcile insights from the geography of finance with networks, this chapter draws on a relational view of economic geography that explains markets as enacted by networks but not reduced to them (Bathelt and Glückler 2011). Networks are endogenously created by the interaction of individuals that when taken in aggregate constitute a structure. The structure can be understood as a set of informal and formal institutions, such as rules, norms, social conventions and shared expectations that interact across different spatial scales (Martin 2000). These institutional arrangements do not merely constrain behaviour of market actors; they also shape market forces (Hodgson

1988). But agents also seek to exploit these structures as part of their competitive strategy and, in doing so, blur the territorial, cultural and institutional boundaries that are often used to define networks (Tracey and Clark 2003; Yeung 2005). In this way, the approach taken in this chapter is economic as much as it is social. The relational view draws attention to the fact that institutions other than the price mechanism matter for economic outcomes. Understanding how a new financial product is diffused in a market requires consideration not only for the behaviour of individual firms in the financial industry, but how their decisions co-evolve with the market structure. This co-evolution is explored below.

HIERARCHIES AND MARKET STRUCTURE

This section focuses on the intersection between two different sets of literature: organisational economics, which explains vertical integration as an efficient response to contract frictions; and industrial organisation, that explains integration decisions at the market level.⁹⁰ This intersection is used to explain innovation in the context of investment management firms.

Inspired by Coase (1937), a large body of scholarship is dedicated to explaining the vertical integration decision or, as it is more colloquially known, the ‘make or buy’ decision. Initially, the literature focused on how the firm responded to opportunism and uncertainty (Williamson 1975; 1985), and was extended to incomplete and relational contracting (Grossman and Hart 1986; Baker *et al.* 2002) and insourcing, outsourcing and

⁹⁰ Bresnahan and Levin (2013: 854) explain that moving from organisational level of analysis to the market level requires ‘additional steps, because the availability of suppliers or the existence of functioning markets or contracts needs to be treated as an outcome of the analysis rather than a fixed parameter.’

offshoring (Grossman and Helpman 2005). Common to all stylised versions of the make or buy decision is that market structure is taken as given and market forces⁹¹ shape institutional arrangements and reduce the costs of transacting in the market over time. To be sure, some consider how the differences between features of the market, such as its thickness, influence the decision of individual firms, but comparisons are static (e.g. Grossman and Helpman 2005). Evolutionary theories of the firm offer dynamic comparisons of the market and firm, but focus on how internal capabilities co-evolve with the firm's vertical integration decision (Teece 2000; Hodgson 2002; Jacobides and Winter 2005). Largely unexplored is how a firm's vertical integration decision co-evolves with its market structure. A new transaction might seem highly complex and specific, but much less so once institutions are developed to standardise the transaction (Bresnahan and Levin 2013).

For George Stigler (1951), the diffusion of new products and services in a competitive market presents a puzzle. Beginning with Adam Smith's axiom that the division of labour is limited by the extent of the market, Stigler asked: how could we then explain competitive markets? If a new product exhibits increasing returns to scale, why do the innovating firms not continue to produce and reap benefits of monopoly (or oligopoly) power? Consider investing in unlisted infrastructure equity. Inputs required include specialised knowledge, contacts and relationships with limited partners, project sponsors, gatekeepers, consultants, among others (see Torrance 2009). We should expect a few investors to dominate the market for unlisted infrastructure, given increasing returns of knowledge due to its fixed cost (Teece 2000). Moreover, these will likely be

⁹¹ Market forces include supply, demand, and intermediary influence (Judge 2014)

larger investors, given their competitive advantage for processing information (Clark and Wójcik 2007).

Stigler reconciles these conflicting ideas – competitive markets and scale economies (monopolies) – by noting that firms have many functions. and that while some exhibit increasing returns to scale other functions are characterised by decreasing returns. Organisational economics offers some useful insights here. Diseconomies of scope might arise due to competition between a firm's functions for management time and attention, increasing costs of bureaucracy (Williamson 1985), coordination challenges (March and Simon 1958) and communication costs (Dessein 2002). Diseconomies of scope across all the firm's functions compete with economies of scale associated with an individual function. At some point, the institutional investor can increase its rate of production by disintegrating a specialised function that exhibits increasing returns to scale and maintaining those functions that are complementary to its existing governance framework (Clark and Monk 2013).

But disintegration is not always an option. As Stigler cautioned, imposing the American model of specialisation in a developing economy context would not yield the same results. The luxury of specialisation is only afforded to those firms that operate in market structures characterised by many buyers and sellers. In other words, the market must first exist before firms can benefit from the option to disintegrate specialised functions. In instances where market institutions do not exist to support new specialised firms, Coase's emphasis on transaction costs is much less useful for explaining the firm than Knight's (1921) emphasis on uncertainty (Hodgson 1988).

While transaction cost theories of the firm have little to offer when market institutions do not exist, integrating incentive theories of the firm with market structure produces some interesting predictions of the vertical disintegration decision. Azoulay (2004), for example, shows that in the pharmaceutical industry firms will coordinate knowledge intensive activities internally and outsource data-intensive tasks that are more easily measured. In the financial industry, most activities are knowledge intensive and not easy to measure or observe directly. The industry resolves this problem by using relative performance benchmarks. In the absence of benchmarks, the investment institution will not disintegrate its specialised activities since it has no mechanism for distinguishing talent from luck (Che and Yoo 2001). A second example where integration decision and market structure linked is in the capabilities theory of the firm. Garciano and Hubbard (2008) find there are low returns to specialisation in a thin market and hierarchy (integration) acts to protect the specialised employees from having to engage in generalist tasks.

To summarise, this section has suggested that market structure and the firm's vertical integration/disintegration decision are intricately linked. In the absence of supporting institutional arrangements, such as performance measurement standards in the case of knowledge intensive tasks, vertical disintegration is not an option. The market structure will be characterised by imperfect competition. If a firm wants to engage in a new activity, it must coordinate it internally. For those firms that have the resources to do so, they will benefit from economies of scale up to a certain point – that is, once the diseconomies of scope across all the firm's activities outweigh the economies of scale related to the specialised activity. A question then both for large investors that currently

coordinate a new activity internally and small investors that do not have the capacity to do so is how to extend the market to allow for specialisation.

Extending the market

Extending the market refers to deepening the number of buyers and sellers participating in it. As a point of reference, the section begins with identifying the role that reduction in transportation, information and communication costs play in extending markets for commodities. Consideration is then given to explaining the extent of the market in the context of the financial industry. To be sure, there are several factors that contribute to increasing the extent of the market, such as regional and global integration, financial innovation, and standardisation of the underlying product or service to be exchanged. It is my intention in this section to highlight only the unique characteristics of the financial industry that make extending the market a unique challenge.

Much of the earlier industrial organisational literature focused on the role of transportation costs for extending the market for commodity-producing firms. Lower transportation costs provide firms with greater access to suppliers or buyers. A well-known example is Joskow's (1985; 1987) study of coal-fired electricity plants in the US. Coal suppliers are concentrated in the eastern states. As transportation costs decreased, coal plants in the western states were able to shift away from long-term relational contracts with suppliers to more efficient spot market contracts that provided them with flexibility necessary to respond under conditions of uncertainty to price changes. Global and regional market integration yields similar results by reducing taxation, regulatory hurdles and other frictions. More recently, scholarship has focused on how the reduction

in information and communication costs influences the extent of the market. Reductions in the cost of information processing and transfer reduce the cognitive burden imposed by decentralised decision-making, making it a more viable option. Communication technology has the opposite effect as information technology, making the hierarchy and centralised decision-making a more viable and cost effective solution (Garciano 2000).

For obvious reasons, transportation costs play a less central role in extending the market in the financial industry than communication and information costs. But not so obvious is the way in which advances in communication and information technology influence the extent of the market in the financial services industry. For some, decentralisation and specialisation is an inevitable consequence of the advancement in information and communications technologies (Castells 1996). But elsewhere this has been shown not to be the case. The financial services industry remains highly concentrated and networked in global financial centres (Sassen 2001; Faulconbridge 2010; Wójcik 2011). Co-location is necessary for newly disintegrated specialised firms to take advantage of complementarities such as performance measurement, expertise and legal advice (Clark 2002).⁹² For an innovative product or service, this presents a significant challenge. Co-location is necessary for sellers to access dispersed consumers (Wójcik 2011; cf. Sassen 2001). But co-location means the product or service is embedded in incumbent institutional arrangements and as a result loses its innovative potential. Knox-Hayes (2009) has illustrated this in the case of the market for carbon credits. The efficiency gains from relying on existing market institutions and

⁹² Wójcik (2011, Ch 7) notes that Sassen's theory of the global city focuses on the producers and ignores the consumers (which are globally dispersed).

complementarities between firms located in global financial centres trumps concern for creating new markets that are distinct from existing institutional arrangements.

Taken together, these examples suggest that extending the market in the context of the financial industry requires co-location to take advantage of existing institutional arrangements in the absence of collective action that is necessary for new market institutions that are needed to support disintegration. This contrasts with the conventional narrative of financial innovation described in the section above, where market forces shape the institutional arrangements, including standardised contracts, norms regarding price negotiation and exchange, disclosure rules, among others.⁹³

MARKET STRUCTURE FOR PUBLIC INFRASTRUCTURE

This section brings this framework to bear on the market for public infrastructure as a financial product for long-term investors. More specifically, it focuses on investment in unlisted equity for public infrastructure through public-private partnership (PPPs). PPPs are contractual arrangements between the public and private sector. The private sector agrees to deliver some range of services (design, build, finance, operate, maintain) and assume risks, including financial, technical and operational. In return, the public sector compensates the private partner with a stream of revenue and risk premium agreed to in a contract.⁹⁴ These opportunities are attractive for long-term investors such as pension and sovereign wealth funds, given the ideal match of inflation-linked and predictable cash

⁹³ The process is commonly referred to as securitisation, which refers to the translation of an illiquid asset into a tradable commodity, making it both cheaper and easier to trade.

⁹⁴ Not all projects are suited for a PPP. Smaller projects often cannot be justified against the transaction costs associated with the partnership. For example, the Build Canada Fund requires all public projects only over \$ 100 M to be screened for possible delivery through a PPP.

flows with their liabilities. Conventional economic theories have it that market forces shape institutional arrangements that, in turn, are needed to support a disintegrated market structure (that is, a market with specialised asset managers that provide services to institutional investors that align with their interests). But, as the discussion below suggests, existing institutional arrangements also shape demand and supply and ultimately contribute to an inefficient market structure for the infrastructure financial product.⁹⁵

Demand for public infrastructure asset

Hebb and Sharma (2014) trace the evolution of the infrastructure financial product, which serves as a useful starting point for discussing the demand among institutional investors for direct exposure to public infrastructure through unlisted equity. Initially, institutional investors gained exposure to unlisted infrastructure through specialist funds.⁹⁶ The intermediaries managing these funds charge high fees. Moreover, asset managers have asymmetrical power that allows them to impose contractual requirements on asset owners to commit to ‘long-term, lock-in provisions and penalty clauses for early termination’ that serve to prevent them from changing asset managers even under poor performance (Clark and Monk 2014). Such perverse arrangements have prompted some large institutional investors to vertically integrate by establishing their own in-house infrastructure teams to circumvent the asset management industry. Indeed, this reflects a

⁹⁵ This chapter takes for granted that PPPs can deliver efficient risk transfer and value for money by delivering projects on time and under budget. It is concerned with the institutional arrangements necessary to ensure these benefits can be realised.

⁹⁶ Only recently has infrastructure begun to be considered an asset class in its own right. Previously, funds gained exposure through listed companies and fixed income (OCED 2012 Survey).

broader trend among pension and sovereign wealth funds: they are shifting into new asset classes without the use of intermediaries (see Al-Kharusi *et al.* 2014).

There is a significant gap between the number of investors that have expressed an interest and the number that actually invest in infrastructure (OECD 2013). Clark *et al.* (2011) identify at least twenty funds engaged in direct investment. While these direct investors are concentrated in Canada, Australia and the Netherlands, some of the largest US pension funds are beginning to integrate infrastructure into their asset allocations.⁹⁷ A recent OECD survey of global infrastructure investment finds an increase in the number of investors, with over \$70 billion invested by pension funds and reserve funds in unlisted debt and equity infrastructure in 2012.⁹⁸ Making direct investments in infrastructure exposes the fund to a range of risks that is not encountered in other asset classes, including political, legal, physical and demographic changes. Smaller funds are left to rely on intermediaries to access infrastructure opportunities. Large investors are also struggling to find viable investment opportunities as global demand begins to outpace supply.⁹⁹ Moreover, efforts of large investors to vertically disintegrate their specialised infrastructure investment teams have been unsuccessful. As the Ontario Municipal Employees Retirement System's experience with attempting to disintegrate its specialised real estate and infrastructure manager (Borealis) demonstrates, the lack of institutional arrangements to support performance benchmarks for direct investment in

⁹⁷ CalPERS adopted a new investment policy in 2008, which included a targeted allocation of 2% (updated to 3% in 2012) to infrastructure, with specific allocation to in-state infrastructure projects under the California Initiative. Other US funds that invest in infrastructure include California State Teachers Retirement System, the Alaska Permanent Fund Corporation, Oregon Investment Corporation, New York City Retirement System and the Washington State Pension Plan (various annual reports, 2013-2014).

⁹⁸ Unlisted equity represents the overwhelming majority (US\$ 64 billion), which had increased from US\$ 55 billion in 2011. The OECD survey finds at least 33 funds are investing directly in infrastructure.

⁹⁹ Personal interview August 2013.

infrastructure remain a significant challenge to moving toward a more specialised market structure.¹⁰⁰

Supply of the public infrastructure asset

On the supply side, there is no shortage of potential long-term investment opportunities in public infrastructure. Increasing urbanisation, aging populations and extreme weather patterns and climate change effects are wearing heavily on existing public infrastructure in the US.¹⁰¹ At the same time, traditional sources of long-term capital for public infrastructure are dwindling. US local and state governments have been encouraged by the federal government to engage in fiscal entrepreneurship to finance gaps in funding public goods and services (Peck 2014). In particular, municipal bonds finance approximately two-thirds of new investment in US municipal infrastructure, 80% of which are held by retail investors (SEC 2011).¹⁰² The municipal bond market is a short-

¹⁰⁰ In 2002 the Ontario Municipal Employees Retirement System, among the largest pension funds in Canada, spun off its specialised infrastructure team, Borealis. But disintegration soon after led to re-integration in 2004 under a unique arms-length model (see Clark et al 2011). Citing the high fees associated with its newly disintegrated service provider, OMERS Chairman Fred Borio commented: “Did we bring [Borealis's assets] in? Yes. Simple reason: When you've got 18 per cent of your assets going to a third party and you are paying money to have them managed, it's going to cost you money. When you have 40 per cent, it costs you a lot more money, and that's when the decision was made.

Vertical integration is beginning to give way to some forms of horizontal integration among institutional investors, including consortiums, syndicates and cooperative platforms. These forums of cooperation and collaboration represent the incentives for investors to go around the market and share resources to reduce the costs of investing in direct infrastructure. This chapter focuses on vertical integration decision only, but recognises the important developments in horizontal integration that are explored elsewhere (OECD 2014).

¹⁰¹ See for example the dismal ratings assigned to infrastructure across the country by the American Society for Civil Engineers Report Card 2013.

¹⁰² In era of fiscal decentralisation, some have observed a ‘race to the bottom’ as state and local governments seek to attract investors with tax incentives and other preferential terms (Enrich 1996). Indeed, many states in the US offer double tax exemptions; that is, not only are investors in municipal bonds exempt from federal taxes, but also state level taxes. The irony is that long-term investors - state and local pension funds that would benefit from investing in this infrastructure themselves - are implicitly used

term solution that undermines the potential long-term investors from participating in the market for public infrastructure and bringing with them their expertise, stability, confidence and capacity to absorb risks. Moreover, subsidies for short-term sources of capital in the form of federal (and in some cases state level) tax-exemptions fuel misconceptions among public officials about the cost of long-term finance. More specifically, subsidies increase the perceived gap between the cost of short-term capital available on the municipal bond market and the cost of long-term sources of capital. The benefits associated with long-term finance, such as expertise and the ability to transfer risk, are often overlooked by political officials.

The problem is with the structure and quality of investible infrastructure projects that provide viable investment opportunities for long-term investors. Investors are investing in ports in Abu Dhabi but are not investing at home in the US because there is a lack of good deals.¹⁰³ This lack of deal flow is in part due to the fragmented nature of public infrastructure provision in the US. Local and state governments carry the bulk of the burden for providing public infrastructure and often lack the expertise necessary to effectively structure deals that are attractive to private investors while demonstrating value for money to the public. Designing performance-based publicly owned infrastructure projects requires significant expertise. For example, Ansar (2013) highlights the importance of ensuring co-development with the end-users of infrastructure projects. The public sector often lacks the expertise and capacity necessary to structure

as collateral in these ‘innovative’ (read risky) financing deals. Under Chapter 9 of US municipal bankruptcy law, obligations to debt holders take precedence over contractual labour obligations to pay pension benefits (SEC 2011).

¹⁰³ Personal Interview, 31 October 2013

performance-based projects. Moreover, local idiosyncrasies in contracting practices make it difficult for investors to compare projects and bundle them into suitable investment opportunities that meet their scale requirements.¹⁰⁴ This is a particular challenge for greenfield investments, which are projects still in the conceptual phase that are highly leveraged. Infrastructure as an asset class itself is inherently heterogeneous. Public infrastructure ranges from utilities to major airports and transit ways, which each have their own unique risk-return profiles (see Sharma 2013). Overall, the supply side lacks institutional arrangements to structure deals that are attractive to long-term investors such as contracting and procurement standards and standardisation of projects that enable them to be bundled into deals that are of large enough scale for private investors. Indeed, it is easier to develop new market institutions if the infrastructure asset itself is standardised.

An efficient market for public infrastructure?

Few buyers (institutional investors) and few sellers (government sponsors) amounts to an inefficient market structure for unlisted equity in performance-based public infrastructure. Problems exist on both the supply and demand side. The lack of performance benchmarks inhibits effective monitoring for those investors that depend on intermediaries to access the asset class. Designing benchmarks for infrastructure is not an easy task. The lack of available data on cash flows presents a significant challenge for strategic asset allocation decisions and risk budgeting.¹⁰⁵ Even if this data could be

¹⁰⁴ Personal Interview, August 2013. Most funds require at least CAN\$ 100 M investment. Compare this with the size of water infrastructure projects sponsored by a local government, which are typically less than \$50 million and much smaller in many cases (PPP Canada 2013).

¹⁰⁵ At the outset of the rise in global infrastructure investment expected returns on an annualised basis were 15% or more (Inderst 2009). Similar expected return figures for PPPs provided by JP Morgan ranged

collected, Blanc-Brude (2014) notes the challenges of deriving performance benchmarks given the majority of cash flows for infrastructure projects remain in the future. Moreover, performance evaluation must take into account the life cycle costs of the asset. Given the majority of infrastructure projects require commitments from investors of over twenty years, environmental, social and governance risks are essential to this evaluation. Yet there are no standards for integrating these factors into the evaluation. These factors can be used to disguise political objectives (see Torrance 2008). Hebb and Sharma (2014: 497) predict that, due to the inherent heterogeneity of infrastructure asset and the importance of relational investing, ‘transparency is never likely to be achieved.’ That said, there are many that want to be buyers and many that want to be sellers. The remainder of this chapter is concerned with the creation of new institutional arrangements that are necessary to bring these latent buyers and sellers into the market.

THE WEST COAST INFRASTRUCTURE EXCHANGE: INNOVATION VS. EMBEDDEDNESS

Against this backdrop of fragmented supply of investible infrastructure projects and latent demand among long-term investors, the WCX was established in 2012 by a framework agreement between the States of California, Oregon, Washington and the Province of British Columbia. Its mandate is to promote performance-based, publicly

from 9 and 14% measured as internal rate of return (ibid 2009). While expected returns and data in general for infrastructure is difficult to given it is varied, there has been an overall dampening of returns given the increasing global competition that is outstripping supply.

owned infrastructure that offers viable investment opportunities to private investors.¹⁰⁶

On the one hand, the WCX might be considered a government-led initiative to provide a public good: institutional arrangements to facilitate efficient exchange. But like many other exchange platforms it functions as a private intermediary that seeks to match buyers and sellers, write rules and ensure their enforcement, admit projects, assure disclosure, establish information technology, and diffuse market information, among other activities (World Federation of Exchanges, in Wójcik 2011). When the public good refers to institutional arrangements, including formal and informal ones, the very idea of the government or private actors providing the good makes little sense. Formal institutions such as rules are influenced and shaped by intermediaries (Judge 2014), and informal institutions such as norms only become real in practice (Bathelt and Glückler 2014).

For many observers, exchange platforms, and stock exchanges in particular, represent the ultimate realisation of global financial market integration. Drawing on evidence of their increasing virtualisation, international consolidation, standardisation and codification of rules, the location of exchange activities might be understood as becoming increasingly trivial. For others, the spatial dimensions of stock exchange activities remain key to understanding their performance (Grote 2007; Wójcik 2011). Like financial services and products, exchange platforms themselves are subject to economies of scale, scope and agglomeration (Wójcik 2011). There is a strong incentive to embed stock market activities in existing market infrastructure in financial centres to take advantage of complementary inputs including skilled labour pools and expertise,

¹⁰⁶ It is the ‘first ever attempt by multiple US states to jointly define the types of public infrastructure projects that would be most suitable for engaging private capital and to lay out a framework for how best to structure such investments to maximize public benefits while addressing the needs of investors.’ (WCX Framework Agreement).

information technologies, accounting and legal services. For example, in the case of a new market for trading carbon credits, the efficiency gains from relying on existing physical market infrastructure trumped concern for creating an innovative market from the ground up (Knox Hayes 2009). Second, co-location of an exchange's activities can confer legitimacy required to take advantage of network effects (Grote 2007). Third, it is easier for new exchanges to leverage existing rules, norms and conventions than to establish their own institutional arrangements (*ibid.* 2009). Given the incentives for embedding exchange activities in existing market infrastructure, the possibility of locating an exchange and its activities outside of existing financial centres is not a trivial matter. In what follows, I consider three conditions that make it possible for an exchange platform to locate outside of existing and highly centralised networked financial market infrastructure to maintain its innovative potential.

First, someone must bear the sunk costs associated with creating new physical infrastructure from the ground up. This includes the costs of a database and IT services, establishing a headquarters and hiring staff to take on the tasks involved in the initial phases of setting up the exchange. The WCX is supported by a US\$ 750,000 grant from the Rockefeller Foundation.¹⁰⁷ Moreover, financial and in-kind contributions from member states are provided on a voluntary basis until the exchange reaches the operational stage. It is anticipated that the exchange will then transition to a self-sustaining fee-for-service model. Admittedly, the sunk costs of setting up the exchange are negligible. The important point to emphasise is the symbolic action of a third party (the government) covering the sunk costs of setting up the exchange.

¹⁰⁷ More recently, the WCX has secured funding from the MacArthur Foundation and continues to seek grant funding from foundations to support the early phases of its establishment.

A second condition necessary for the establishment of a new market in a periphery region is legitimacy among its potential clients on both sides of the exchange. Legitimacy is a relational good (Bathelt and Glückler 2011). It cannot be produced in isolation.¹⁰⁸ The issue of legitimacy among private investors poses an additional challenge in the context of the WCX, given its dual mandate to attract private investors while maintaining public ownership and value for money. Indeed, one concern commonly raised by investors regarding public infrastructure is political interference. PPPs often seek to achieve public benefit objectives, such as job creation or affordability and equal access, at the same time as private financial returns. While these objectives are not necessarily in conflict and can be critical to the long-term financial success of a project, investors may be reluctant to invest or may demand higher premiums to compensate for the uncertainty at the political level of prioritising the public benefit over financial returns (see Torrance 2008). The WCX discussions have emphasised the importance of an independent organisational structure and transparency and accountability in its own operations. It is envisioned that the WCX will operate at arm's length from its member states in order to maintain credibility and legitimacy among the private sector.

Third, the creation of new institutional arrangements, including formal rules and norms, shared expectations and social conventions and complementary inputs such as legal contracts and accounting services and performance benchmarks are essential to the establishment of a new market in a periphery region. In many cases, participants may not

¹⁰⁸ In 1971, Milton Friedman was commissioned by the Mercantile Exchange for \$5000 to write a paper, titled 'the Need for Futures Markets in Currencies', which helped to establish legitimacy necessary for the Chicago futures exchange (Mackenzie 2006: 147).

know what their shared interests are, which inhibits the creation of new institutional arrangements. It is in this capacity that the government plays an important role in convening diverse participants to discover these shared interests (see Storper 2008). Once their shared interests are identified, actors can establish new rules and norms necessary to achieve these objectives. For example, the participants in the WCX discussions recognised their interest to have access to better information about the wider context of infrastructure projects to effectively evaluate risks such as climate change and environmental disasters and labour disputes. This provided the basis for creating certification standards that allow for incorporating these contextual factors and evaluating infrastructure projects that would be admitted into the exchange. These are detailed in the following section.

To summarise, given the proneness of exchange activities to be concentrated in global financial centres due to efficiency gains from relying on existing physical infrastructure, legitimacy and institutional arrangements, I have suggested that establishing a new market outside of core financial centres depends on at least three conditions. In the first instance, there must be someone willing to bear the sunk costs of establishing the physical infrastructure, however negligible, as a symbolic action. Second, legitimacy is necessary to attract clients on both sides of the market exchange. Third, convening power is important to enable participants to discover their shared interests.

FUNCTION OF THE WCX

Having established the conditions that make it possible for the WCX to exist as a new market with its own distinct institutional arrangements, I now turn to consider the internal

dynamics of the proposed market. This is a rare exercise in light of the conventional view of markets that assumes they are simply given. The following reviews the proposed function of the WCX paying particular attention to the relationships between investors and government sponsors on one side and the WCX on the other.¹⁰⁹

Relationship with government sponsors of infrastructure

I begin by describing the proposed relationship between the WCX and the sponsors of government infrastructure in the initial phases of its development. I proceed with a discussion of the proposed functions of the exchange and consider how the relationship with its government clients might change once the exchange is fully operational, with reference to the virtualisation of some exchange functions. The fact that the exchange represents a multi-jurisdictional initiative to create a market for infrastructure is remarkable in an era that is characterised by fierce competition between states and local governments to attract private investment.

While a number of actors can be identified as drivers behind the creation of the WCX, the Oregon's State Special Initiatives Branch deserves particular mention. Recognising that the government is in a major fiscal crisis, political leadership was needed to 'do the hard politics'. The initial phases of the exchange's development took place at the state (regional) level, involving the governors of state treasury departments. Two in-person meetings were held: one in Salem, Oregon in November 2011, and a second in Sacramento, California in 2012. The WCX is bolstered by a strong history of cooperation in the west coast region. The WCX agreement is based on the West Coast

¹⁰⁹ This approach to detailing the internal dynamics of the market is inspired by Wójcik's (2011) analysis of the relational dynamics of the Polish Stock Exchange.

Action Plan on Jobs (2012) and both fall under the Pacific Coast Collaborative Agreement (2008), which identifies common interests among states and provides a basis for cooperation and collaboration.¹¹⁰

Looking forward, a key proposed function of the WCX is to provide centralised expertise to local and state governments on procurement, planning, delivery and oversight, drawing inspiration from Partnerships British Columbia (PBC). PBC functions as a centre of expertise for facilitating public-private partnerships, offering expert advice and services in planning, delivery and oversight of major infrastructure projects. Since its creation in 2002, PBC has successfully delivered CAN\$ 12.5 billion in innovative financing arrangements for over 40 PPPs in BC.¹¹¹ The WCX seeks to extend this model to serve the west coast region. ‘The goal was to explore the feasibility of a stand-alone, self-funded and sustainable non-governmental organisation to provide value-add expertise not currently available at most levels of state and local government’ (WCX 2012).

A second proposed function of the exchange is to provide project certification. The certification will assure investors and other partners that the proposed project meets a minimum set of standards. The project certification includes the requirement that the project be subjected to a business case evaluator, a tool to ensure public benefits associated with the partnership are evaluated in monetary units adjusted for risk and optimised to deliver maximum public and financial benefits. Where it is not possible to

¹¹⁰ The PCC seeks to promote opportunities for cooperative action, leadership and information sharing, and ‘a common voice’ on issues facing Pacific North America’, related to climate change, transportation, unemployment, and declining government revenues, investment and consumer demand.

¹¹¹ Partnerships BC annual report 2012/13

translate environmental and social factors into financial indicators, qualitative aspects will be transparently ranked against the stated project goals.¹¹² It is anticipated that this tool will provide government sponsors with legitimacy not only for marketing projects to private investors but also among public constituents by demonstrating the value of tax payers' money. Furthermore, the standardisation of projects will make it easier to bundle projects together. The WCX will facilitate the bundling of projects across jurisdictions to encourage a more integrated infrastructure network and save procurement and other transaction costs across jurisdictions.¹¹³ Overall, certification will enhance the public sponsor's legitimacy as a suitable partner for private investors, which can contribute to reducing the public sponsor's cost of finance in the future.

Finally, the importance of educating the public sector was emphasised in interviews.¹¹⁴ More than educating public employees about the benefits of long-term project finance from a marketing perspective, the architects of the WCX recognise the need to build capacity and skills within the public sector. As one interviewee noted, public employees may never have encountered a large infrastructure project in their careers. 'The exchange will need to educate a whole new workforce in the public sector. This is a paradigm shift and it will take time' (WCX 2012). It is anticipated that the exchange will offer training in the region and education will become an important component of the exchange's work.

¹¹² 1.6.2 Purpose/Rationale for Projects: Every potential project sponsor should provide and quantify in risk adjusted monetary units public benefit, including but not limited to health, network benefits, environmental improvements, etc.

¹¹³ At the time of writing this chapter, the WCX is launching a pilot project to bundle local-level water projects to achieve scale necessary to attract private investors. The project will include screening potential water projects for their viability to be included in a single, long-term contract, structured as a design-build-finance-maintain PPP.

¹¹⁴ Personal interview, 31 October 2013

Summarising the relationship between the WCX and state and local government clients, the exchange is not set up as a passive provider of matching services for public infrastructure projects. Even when fully operational, the WCX will have a role in educating potential clients and in doing so create new demand for its services. Moreover, by certifying projects the exchange seeks to explicitly define what projects can be included in the exchange and functions to provide legitimacy for those sponsors that meet the standards, not only among private financiers but also among the public constituents.

Relationship with institutional investors

This section considers the relationship between the WCX and institutional investors and, more broadly, the financial industry. It begins by considering the relationships involved during the initial phases of setting up the exchange. It then considers the proposed functions of the exchange and considers how this may impact upon the relationship between the exchange and private investors once the exchange is fully operational.

It is important to note that, while government officials convened the WCX, institutional investors were involved in key discussions about its strategic design. In particular, California Public Employees Retirement System (CalPERS) and the California State Teachers Retirement System (CalSTRS) were both involved in WCX meetings to provide the institutional investors' perspective on issues related to expectations on returns, desirable project attributes and preferences and challenges in the asset management industry more broadly. Also early on in its creation, an advisory council was established, including members from asset management, pension funds, labour unions and others represented on the committee to identify collective preferences and provide

guidance on issues such as financing strategy and partnership development on an ongoing basis. At the same time that the WCX discussions were taking place, CalPERS hosted four roundtable discussions on infrastructure to initiate its local investment programme. Participants included state, regional, and local government elected officials and staff, investment professionals and practitioners, CalPERS Board members and staff, academics, and labour representatives. Similar participants were involved in the WCX discussions.¹¹⁵

Looking to the operational phase of the exchange, the first deliverable achieved by the WCX was the creation of project certification standards. The purpose of the certification is to provide quality information that is consistent across member jurisdictions to investors. The Infrastructure Project Certification document was finalised in early 2014, after extensive consultations with industry and public sector experts, including over twenty representatives from infrastructure fund managers, public sector procurement officials, pension funds, and labour unions, among others. ‘Feedback confirmed that creating such standards was important and helpful to building a market and that the proposed standards were on the right track’ (WCX 2014). The feedback was primarily collected through an online platform, hosted on the Exchange’s website, which was open to the public to submit comments. Following the consultation process, changes were made to the final certification standards, including broadening the focus on climate change to include other environmental-related disasters. The certification also includes labour standards, and none of the private investors objected to the inclusion of these standards in the certification.

¹¹⁵ CalPERs Infrastructure Investment Outreach Review, “Laying the Groundwork for Collaboration”.

It is anticipated that certification will enhance the confidence of large investors in individual projects and the bundled projects. Moreover, the business case evaluator (BCE), which is a requirement for project certification, could also be useful for those investors explicitly seeking positive social and/or environmental impact alongside financial returns. It is widely held that social impact metrics have been a significant barrier to impact investors (Monitor Institute 2009). The BCE offers the potential for reducing costs and information asymmetries associated with measurement of impact. It should be noted, however, that the exchange is not intended to explicitly attract impact investors and emphasis is instead placed on attracting long-term investors that will contribute to a sustainable infrastructure that achieves value for public money.

Once fully operational, it is envisioned that the WCX will develop a pipeline of investible projects and a virtual database that would allow investors to search and compare projects. In the early phases, emphasis will be placed on actually creating these opportunities in the first instance. Moreover, it is anticipated that this virtual platform will allow investors to search and compare projects efficiently from a distance. Such common resources make investment in the region more appealing, particularly for investors that do not have the capacity or resources to conduct this analysis or bundle projects on their own. In interviews it was stressed that it is critical that investors have a single point of contact. The WCX currently has three staff members based in Portland, Oregon. Staff travel frequently to meet face-to-face with potential clients. In the short and medium term, the exchange may not be attractive for large investors with sophisticated in-house infrastructure teams. In particular, it was suggested in interviews with institutional investor that the projects offered on the exchange in the initial phases may be

too efficient for their teams of sophisticated investors to consider and it is expected they will continue to search for deals in more exotic markets.¹¹⁶

Considering the relationship between the exchange and the financial industry more broadly, the WCX architects recognise that to achieve their objectives of attracting the right type of investors they must engage with asset managers in addition to the asset owners they are hoping to attract. ‘One obstacle to institutional investors and matching certain kinds of projects is the asset managers themselves. We need to be in touch with the people who advise the pension funds. There’s a disconnect between investment managers and pension funds and institutional investors and the projects themselves’ (WCX 2012). That said, the WCX provides the basis for collective action needed to re-define investors’ relationship with the asset management industry. In particular, standard legal contracts and performance measures underlying the infrastructure product will allow investors to better monitor asset managers.

Summarising the relationship with investors and the financial industry more broadly, engagement was critical for the WCX’s early success and achieving its first deliverable of reaching consensus on its project certification standards. While in the future the flow of information related to deals from the exchange will be virtual, feedback from investors will continue to play an important role. In particular, the advisory committee is anticipated to guide the activities of the WCX going forward.

¹¹⁶ Personal interviews, August 2013

IMPLICATIONS AND CONCLUSION

International financial centers remain dominant in an era of virtual communication and information flow. Complementarities between financial service firms make co-location of new financial service providers and producers an efficient option for extending the market (Clark 2002; Knox Hayes 2009). It is not only financial services and products that benefit from agglomeration and economies of scale and scope, but market systems themselves. By leveraging expertise and existing market infrastructure, new markets can develop efficiently and quickly (Knox Hayes 2009). But this compromises the innovative potential of new markets since they become embedded in existing institutional arrangements. In the financial industry, it is widely held that institutional arrangements that favour high fees are entrenched given the influence of asset management firms as a result of their positional and informational advantages (Judge 2014).

This chapter has considered how exchange platforms as intermediaries can transcend this tension between innovation and efficiency. It found that exchange platforms do much more than bring sellers and buyers together. The WCX reflects the intentions of architects to establish new norms, social conventions and rules that have been negotiated by its members. To be sure, it is still early days and drawing conclusions about the performance of the exchange is premature. That said, the WCX represents an attempt to build a market that will allow institutional investors to circumvent the asset management industry while simultaneously providing a basis for collective action to re-engage with the industry on their own terms. In its early phases, interaction between the WCX and its participants is important for collectively identifying preferences. Even as the exchange moves to a virtualised platform in the later phases of development to allow

investors to search and compare deals, social relationships will remain key to its success in attracting and managing clients on both sides of the exchange.

Given the importance of relationships between the exchange and its clients, there is a premium on the governance of the exchange platform and, in particular, its independence from political interference. While relationships are important for the success of the exchange, they can equally have a negative influence on economic outcomes (Rodriguez Pose and Storper 2006). In particular, relations with government sponsors of infrastructure-defining norms, conventions, or new rules leaves significant room for political interference and conflicts of interest. Moreover, there is often a high degree of public pressure to keep returns to investors within an acceptable range from the perspective of taxpayers, which can undermine the exchange platforms' ability to attract long-term investment partners. Independence of the exchange platform from political influence will be an important consideration going forward.

While the WCX must build the market for long-term finance of public infrastructure from the ground up, leveraging existing service providers, legal and consulting and financial service firms in the region could expedite this process. These resources are likely to be concentrated in California, serving two of the largest pension funds in the United States. Indeed, the rise of institutional investors with massive pools of capital and resources to attract talent to periphery locations has the potential to re-balance financial centres (Faulconbridge 2010). Moreover, the WCX would benefit from links to academic centres and other infrastructure networks to establish legitimacy. That is, while it is important for its innovative potential to remain a coherent network in its own right, the WCX must be able to attract new clients.

The analysis presented in this chapter has focused on the function of the exchange platform. Future attention should be paid to the form of primary exchange platforms, including ownership and fee structure. A second important area for future research is the performance of the WCX. Performance should be measured not only by the number of successful matches but also on the basis that the projects achieve value for money. Finally, the chapter has not addressed the possibility of horizontal integration; but collaboration and cooperation between institutional investors in the form of syndicates and consortiums to share high upfront costs is becoming increasingly prevalent as a means to go around the market (OECD 2014). More broadly, primary specialised exchange platforms will be critical to support institutional investors as they seek to shift to long-term investment strategies that require investment in opaque assets. That said, international financial centres like London and New York loom large, particularly for those regions that do not have a strong basis of inter-jurisdictional cooperation on which to convene a diverse range of private sector actors to identify shared interests and build new institutional arrangements.

VII. CONCLUSION

INTRODUCTION

Institutional investors have the potential to affect positive change in the relationship between finance and society but many challenges stand in the way. Public and private decision-makers are inherently biased toward the familiar and immediate. Organisational incentive structures and institutions reward short-term results. At the same time, financial markets are becoming more complex. The conventional response to complexity is decentralisation to locate decision-making closer to the facts. This thesis has argued that this paradoxically reinforces the problems facing long-term investors. As such, the first aim of the thesis has been to re-frame the governance challenge for institutional investors seeking to implement a long-term investing strategy. Second, the thesis has aimed to reconcile ambiguity with legitimacy in a world that rewards clear-cut solutions to clearly defined problems. Third, it has provided specific examples of the constructive properties of ambiguity for long-term investors.

While the substantive chapters draw on a variety of themes in pursuit of these aims, three core concepts underlie them all: ambiguity is a permanent feature of organisational life; delegation problems have temporal and spatial dimensions and they must be addressed together with incentive problems; and SWFs have the potential to address the long-term challenges facing society. Each of these core concepts are elaborated below in the context of their relevance for each of the four substantive chapters. This is followed by a summary of the proposed changes to SWF governance structures and broader policy frameworks suggested by this research. While specific

recommendations vary across the four chapters, the broad theme that unites them is that governance must seek to manage ambiguity rather than engage in futile attempts to eliminate it. The next section considers implications of this thesis for theory, including organisational economics, relational economic geography and new approaches to finance. The chapter concludes with suggestions for further research that follow from the findings of this thesis.

The permanence of ambiguity

Ambiguity has been the conceptual backbone of the thesis as a whole. The targeted literature review in Chapter II showed that conventional rational choice theories in economics, finance and law treat ambiguity as something that can be resolved with more information. Some go so far as to suggest that ambiguity does not exist in the first place. Principles and norms guide decision-makers to the right answer when the social facts run out and relational contracts absorb any residual ambiguity. In contrast, this thesis has argued that ambiguity is a permanent feature of organisational life and can only ever be managed.

The presence of ambiguity was explored in each of the substantive chapters. Chapter III considered the ambiguity inherent in a SWF's inter-generational equity mandate and its consequences for political interference in the management of Alberta's oil and gas royalties. Chapter IV explored ambiguity in the Norwegian Fund's ethical investment policy and the unique challenges it presents for delegation of tasks and functions related to its implementation. In particular it observed that an ambiguous policy requires significant resources to justify decisions to the public, which undermines the

ability of the Fund to actually implement its policy in a meaningful way. The second half of the thesis was concerned less with policy design and more with ambiguity as it manifests in the management of assets. Chapter V interrogated ambiguity in the form of a home bias problem in an investor's corporate engagement programme. There is no right choice about which corporate engagement targets to choose to maximise returns to engagement efforts. The final substantive chapter considered the ambiguity inherent in the evaluation of investment opportunities in public infrastructure.

In each of these four chapters, the thesis demonstrated that the problems raised by ambiguity for effective long-term management of SWFs cannot be solved; they can only be managed. While the *principle* of inter-generational equity is seen as capable of absorbing ambiguity (see Woods 2011b), Chapter III showed how some sub-national SWFs lack the institutional arrangements (constitution and social contract) necessary to commit to managing wealth in the interests of future generations. Similarly, Chapter IV illustrated that while norms and principles are often assumed to serve as guidelines for decision-making when it is not possible to write complete contracts, these norms and principles are themselves ambiguous and open to interpretation. Relational contracts cannot absorb or resolve ambiguity because the underlying promise is itself ambiguous and therefore open to interpretation. In the context of engagement with companies explored in Chapter V, delegation to portfolio managers can provide better access to local information and the ability to leverage existing relationships with target firms to transcend the home bias problem. But there is an irreconcilable conflict between incentives to induce competition and cooperation on different tasks between agents within an investment management institution. Finally, while intermediaries such as

exchange platforms can reduce ambiguity in new asset classes such as infrastructure through the creation of new norms, performance benchmarks, evaluation tools and contracting standards, intermediaries must continuously manage relationships with clients on both sides of an exchange to maintain legitimacy and avoid negative lock-in.

Having established that ambiguity is not reducible either with more information or by appealing to underlying norms and principles, each of the four substantive chapters considered how ambiguity can be managed on an ongoing basis. Some chapters provided more specific recommendations while others addressed broader theoretical issues that could extend to institutional investors in general. The permanence of ambiguity is an opportunity for those that are willing to integrate it into their governance frameworks to reconcile seemingly irreconcilable conflicts (Chapter III), adapt to a rapidly changing environment (Chapter IV), identify synergies where others only see trade-offs (Chapter III and V) and overcome collective action problems (Chapter VI).

Spatial and temporal consequences of delegation

This thesis has emphasised that the spatial and temporal consequences of delegation pose a dilemma for long-term investing in an increasingly complex environment. On the one hand, delegation of authority is necessary as increasing complexity in global financial markets increases the premium on expertise and the rapid pace of decision-making. On the other hand, delegation can undermine decisions that require a long-term perspective. Moreover, delegation to specialised experts often results in emphasising the local context at the expense of the global imperatives facing institutional investors operating in global financial markets, raising serious problems of coordination at the organisational level.

Delegation has consequences explored in this thesis for asset owners and asset managers. These consequences are becoming more acute as asset managers and owners become more decentralised themselves.

With respect to asset owners, Chapter III elucidated the effects of fiscal decentralisation for the management of the Alberta Heritage Fund's assets and liabilities. While conventional theory has it that delegation to local politicians for spending and taxation leads to enhanced accountability and efficiency, none of the fiscal federalism literature has explicitly considered how windfall revenues from natural resource wealth fit into this framework. The temporal consequences of decentralised fiscal management in the context of sub-national SWFs manifests as a conflict between the short-term interests of local politicians and long-term wealth management on behalf of current and future generations. Fiscal decentralisation also has spatial consequences for sub-national SWFs. In particular, local politicians may seek to use the SWF to advance local interests of their own electorate, while ignoring the negative consequences of using the investment revenues in a way that does not align with national macro fiscal and monetary policies. While Chapter III served as a cautionary tale for the design of other sub-national funds, Chapter VI considered a unique example in which local governments are seeking to cooperate to overcome the perverse effects of decentralised fiscal management. This cooperation is remarkable given the strong competition between sub-national jurisdictions that fiscal decentralisation is intended to induce.

On the asset management side, Chapter IV considered delegation to the Norwegian Central Bank and Council on Ethics for implementing two separate tasks associated with its ethical investment policy. The chapter highlighted the challenges of

this division of labour for hollowing out the capacity of the Fund in an increasingly complex external environment. Recent changes to the structure of the Fund have seen the exclusion of companies from the Fund's universe on the basis of ethical violations integrated with the engagement process and the dissolution of the Council on Ethics. The chapter reviewed the evolution of the ethics policy over the past decade and drew attention to the conflict with the Fund's long-term wealth management mandate. Chapter V considered delegating a long-term task (corporate engagement) to portfolio managers that are incentivised by short-term performance on their primary investment task. Locating engagement decisions and tasks closer to those in the investment management firm who have access to firm-specific knowledge and relationships can contribute to overcoming the home bias problem in selecting engagement targets (Bauer *et al.* 2013); however, such decentralisation poses significant challenges broadly conceived as a multi-task incentive problem. The chapter highlighted the trade-off between the benefits of assigning the engagement task to portfolio managers and the potential for shirking on the task leading to an engagement programme that is even less efficient than if it was managed solely by a centralised engagement unit.

The point emphasised across all substantive chapters is that delegation cannot be optimised when there is no optimal or ideal outcome in the first instance. This reflects the context of tasks and functions associated with long-term investing. That is, when the outcome requires balancing conflicting interests of diverse groups and individuals across spatial and temporal dimensions, there is no one right answer to the division of labour. In contrast, the delegation literature emphasises the role of incentives for complex tasks when effort or outcome cannot be directly measured or observed. But, as demonstrated in

the substantive chapters of this thesis, incentives linked closely to performance only work for specific and localised tasks. Once the time horizon and broader context are taken into account, delegation problems must be solved together with incentive problems.

Sovereign wealth funds and the ‘new’ NFA

Sovereign wealth funds are essential to the concern of this thesis with long-term decision-making in global financial markets. This thesis has emphasised the importance of rethinking conventional financial wisdom entrenched in the New Financial Architecture to accommodate the unique governance challenges of SWFs. It is difficult to overstate the importance of SWFs in financial markets looking forward. While most recent projections of their growth put them somewhere around US\$ 9 trillion by 2020,¹¹⁷ depending on how they are defined, they do not come close to matching the assets held by pension funds, which surpassed US\$ 30 trillion at the end of 2013 (Towers Watson 2014). That said, SWFs can lead the way to new investment opportunities that could also open new opportunities for pension funds and other institutional investors.

Taken together, the four substantive chapters provide an account of the unique governance challenges SWFs face given the many principals and many agents involved in the management of their liabilities and assets. Chapter III elucidated the political nature of SWF liabilities. Beyond the ambiguous liability of future generations that characterises many SWFs, political sponsors of the Alberta Heritage Fund have carved out a number of endowment funds for social and economic goals over the years and the Fund’s investment income has been used to directly fund budget deficits. The chapter

¹¹⁷ Estimates of SWF by 2020 in, *Asset Management 2020: A brave new world* (2014) PricewaterhouseCoopers.

found that these liabilities are shaped by ideas about the SWF as a source of autonomy from the Canadian federal government, regional equality and competition with other sub-national governments to attract business investment. These ideas directly conflict with the Fund's liabilities to future generations. Chapter III set the scene for the rest of the thesis by framing the unique asset management challenges facing SWFs, noting that asset management policies are intricately linked with liability management. In particular, it considered how a long-term investing policy could discipline political interference in liability management.

The other three chapters focused on decisions related to asset management. Chapter IV reinforced the perspective underlying this thesis that the goals of SWFs do not represent the unambiguous interests of political elite but rather a diverse coalition of interests, which is demonstrated in the context of the Norwegian Fund's ethical investment policy. The chapter drew attention to the conflict between the Fund's ethical investment policy and the long-term wealth management necessary to meet its liabilities to future generations. While the empirical focus of Chapters V and VI did not directly relate to SWFs, the implications were drawn bearing SWFs in mind. Chapter V considered the corporate engagement programme of an investment manager with responsibility for managing the assets of a large fund. Despite initial recommendations to limit their rights to active ownership, many SWFs are engaging with companies in their public equities portfolio on their environmental, social and governance performance to manage long-term risks in their portfolios (Megginson and Fotak 2014). But resource constraints pose a significant challenge to implementing an effective engagement programme in the context of a global portfolio.

While the thesis started out by emphasising differences between pension funds and SWFs, it has finished by considering their similarities in terms of their interests in new asset classes such as infrastructure and challenges related to transcending agency problems endemic in the financial industry. Chapter VI considered new institutional arrangements necessary to match capital held by SWFs and pension funds with long-term investment opportunities in public infrastructure. Indeed, matching the growing deficit in public infrastructure with private long-term capital held by pension and sovereign wealth funds ranks high on policy agendas around the world. From the investor perspective, direct investment in infrastructure can provide liability protection through inflation-linked returns and a predictable source of cash flows. But SWFs and pension funds have been reluctant to invest in infrastructure, due to problems with scale and the lack of reliable information necessary to identify and mitigate risks and benchmark performance. These challenges are beginning to give way to new platforms of collaboration and cooperation between institutional investors themselves (OECD 2014). Chapter VI examined more closely one of these platforms, the West Coast Infrastructure Exchange.

FINDINGS AND PRACTICAL IMPLICATIONS

Exploration of these three core concepts (ambiguity, delegation, and sovereign wealth funds) has led to a number of conclusions about specific changes to incentive design and governance structures that leverage the constructive properties of ambiguity to achieve long-term objectives. The proposed changes and implications identified in this section cut across the four substantive chapters of this thesis and are organised by theme. The thesis has focused on the perspective of the institutional investor and the unique incentive

structures and delegation challenges across the many principals and many agents that constitute SWFs and their interactions with the asset management industry; but it is also well positioned to draw out the wider implications for international policy and regulatory frameworks. Finally, it should be noted that the conclusions presented in this section do not constitute a comprehensive solution to the problem of managing ambiguity. The focus of this section is on specific problems and questions raised in each chapter.

Incentive structures for ambiguous tasks

The most practical implications drawn from this thesis are related to incentive design to promote long-term investing. The thesis has highlighted two ways in which ambiguity can be constructive for the design of incentives for ambiguous tasks considered in the substantive chapters. First, ambiguity can be used to induce complementarity between irreconcilable tasks by allowing for more subjective evaluation of performance. In particular, the thesis considered incentive structures to transcend home bias in the selection of corporate engagement targets (Chapter V).

In particular, the thesis considered specific incentive structures to induce complementarity between the engagement task and financial return on investment. It found that an audit that rewards or penalises performance on the engagement task that is made conditional on good financial performance could contribute to inducing complementarity. A second option considered drew inspiration from innovation literature, which requires tolerance for early failure and delayed incentives. Both of these incentive structures rely on integrating ambiguity in the form of subjective criteria into performance measurement of the employee. Chapter V concluded by cautioning

investment management firms against making changes to their incentive structures without understanding the logic of their existing ones, including the influence of peer effects, competing group identities and the potential to crowd out intrinsic motivation with extrinsic rewards. Investors seeking to change their incentive structures should consider rolling out new programmes on a trial basis.

The second way that ambiguity can be constructive for incentive problems considered in this thesis is through self-reflexivity, to allow agents to identify synergies between long-term investing and their own self-interest. This is particularly important in the context of sub-national funds that lack a commitment mechanism in the form of social contract or a formal constitution. Chapter III observed that local politicians face perverse incentives to spend and borrow against the assets of the sub-national SWF, which ultimately undermines both current and future generations. The chapter found that a long-term investing policy that commits the sub-national SWF to investing in illiquid assets could serve to subvert political incentives to spend rather than save. The challenge is that it requires political agents to commit to a long-term investing policy in the first place, which undermines their ability to use the SWF as a ‘slush fund’. The chapter concluded by suggesting some reasons why politicians might be willing to commit to a policy of long-term investing, noting that ideas can be used to extend possibilities for long-term incentives and not only constrain them.

While Chapter VI did not address specific incentive design issues within the context of SWFs, it provided a commentary on the perverse incentives of the asset management industry as a whole. In particular, it suggested changes at the institutional

level that are required to support new performance benchmarks for financial products that match the long-term interests of asset owners.

Managers and their discretion

This thesis has found that managers are given discretion for reasons beyond the need to access and process more and complex information. Through their communication with those at senior levels in the organisation and with the public, managers are engaged in constructing narratives and not simply reporting and recording information. Moreover, through their interpretation and negotiation over the meaning of rules and policies and guidelines among the various interests within and outside of the organisation, managers elaborate on and attribute meaning to the ambiguous goals of the organisation. This enlightened view of discretion was explored across all the substantive chapters but was most explicitly considered in Chapter IV. The thesis found that if organisations recognise the ambiguity inherent in their goals rather than act as if there is one unambiguous objective function guiding all their decisions, they can implement more intelligent communication and evaluation systems necessary to effectively implement a long-term investing strategy. Moreover, if managers themselves are self-reflexive, they can interpret policies and goals to adapt to changes in the organisation's environment.

Chapter IV found the NGPF-G was able to shift its ethical investment policy in a way that aligns more closely with the Fund's long-term wealth management mandate by learning from ambiguous past experiences and communicating tacit information. In particular, taking into account the ambiguity in its policy allowed the Fund to identify overlaps between the Council and NBIM's activities and identify opportunities for

sharing resources and collaborating. Moreover, allowing for a degree of ambiguity in the Fund's communication system between the Council, NBIM and the Ministry enabled the Fund to adapt to external complexity. Individual managers self-reflexive of their own interpretive discretion were able to shape accounts of events. Similarly, Chapter V found that granting discretion to portfolio managers to interpret the engagement policy could contribute to better selection of corporate engagement targets given their superior relationships and intimate knowledge of firms.

Chapter VI demonstrated the value of ambiguous communication and evaluation systems in the context of a market for public infrastructure that could lead to more meaningful price discovery and efficient allocation of risk. More specifically, the WCX provided a unique example of an explicit attempt to integrate consideration for climate change adaptation and concern for labour issues into the lifecycle analysis of infrastructure project. In particular, the exchange platform has established a business case evaluator tool that seeks to ensure project goals are transparent while at the same time allowing the incorporation of qualitative criteria that cannot be easily reduced to terms of economic value commonly used to evaluate projects.

Of course the challenge with granting agents discretion for policies and goals that are ambiguous is that it exposes the organisation to an increased risk of agents pursuing their own interests and ultimately undermining the organisation's legitimacy. In the case of the WCX, granting discretion to the intermediary (exchange platform) raises the risk of unwarranted political interference. Independence from political interference was emphasised as key to the success of the exchange platform. Chapter IV found that appealing to the democratic system in which the Fund was intentionally embedded could

be used to reconcile legitimacy to the public with granting discretion to non-elected agents for interpreting the Fund's ethical investment policy. But at some point, the chapter also noted, structural changes may be needed to transcend this tension.

Intermediaries and collective action problems

While the first three substantive chapters focused on the investment organisation, the penultimate chapter shifted to consider the market level of interaction between these organisations. The market was broadly conceived as an organisation itself, taking organisation to mean 'any collection of individuals or groups whose actions are coordinated and for which there is some criterion for evaluating the collective outcome' (see Garciano and van Zandt 2013:606). The chapter provided a unique look at the internal dynamic of a new market for unlisted equity in public infrastructure. Like other organisations, the thesis conceived of the market as both enabled and constrained by institutions, consistent with the relational view of the economy (Berndt and Boetlecker 2009; Bathelt and Glückler 2011). The thesis found that the invention of new markets to support new transactions between buyers and sellers for public infrastructure assets required intermediaries to manage the ambiguity inherent in the new asset class.

In particular, the chapter focused on an intermediary exchange platform – the West Coast Infrastructure Exchange – and the role that it played in shaping the interactions between buyers and sellers for public infrastructure. The chapter drew together themes in earlier chapters related to perverse incentives and agency problems to consider how new institutional arrangements can be created to transcend these problems and promote new behavioural patterns among institutional investors. More specifically,

the chapter illustrated the ways in which intermediaries such as exchange platforms function to facilitate the change in micro-level behaviour necessary for the development of new institutional arrangements that support new market in a periphery region. It found that ambiguity managed in the form of negotiation provided the space necessary for different actors to realise their shared interests necessary for transcending collective action problems. That is, the intermediary did more than simply bring buyers and sellers together as usually is assumed in conventional economic literature. The intermediary actively engaged with potential clients on both sides of the exchange, provided space to discover their shared interests and education and ultimately contributed to transcending the collective action problem to create new institutional arrangements necessary to match the growing need for long-term capital for public infrastructure with the growing supply of capital held by SWFs and pension funds. Even as technological advancements and the exchange platform shifts to an automated and electronic system, face-to-face interaction will continue to play a strong role in the function of the exchange platform.

Ambiguity in international policy frameworks

While this research has largely focused on the perspective of the institutional investor, either from inside the fund or through the lens of its external relationships, it is worth drawing out the implications of this thesis and its focus on constructive ambiguity for the international policy framework. The existing policy framework for SWFs is captured in the Santiago Principles, which are based largely on the aim of promoting transparency. But, as noted by many observers, transparency can induce perverse incentives by promoting an over-emphasis on quarterly reporting and condensing complex information

that paradoxically leads to the concealment of information that is material in the long-term (Dixon and Monk 2013; Dixon 2014). To be sure, it has not been the intention of this thesis to disparage transparency initiatives nor to dismiss wholeheartedly the challenges that a lack of transparency present to investors and regulators alike. Initiatives such as country-by-country reporting (see Wójcik 2012) and the Corporate Sustainability Reporting Coalition's global corporate sustainability reporting framework initiative launched at the Rio +20 Earth Summit can make important contributions to providing investors with better information. Investment institutions themselves should be open about their intentions, procedures and performance. Their legitimacy depends on this transparency, both domestically and in global financial markets (Monk 2009). The problem is that transparency of numbers allows us to 'escape the obscurities of language' (Best 2008: 362). That is, by only focusing on transparency we are lulled into seeing the illusion of accountability, as noted in the introduction to this thesis. Moreover, applying the insights of this thesis – that organisations such as SWFs do not have goals but people do – leads to the conclusion that imposing a single unified objective function can be misleading, as it distracts from the complex negotiations that are often involved in investment decision-making. Transparency is only one of a whole range of mechanisms necessary for accountability.

To be useful, information must be understood by those that monitor and use information to make decisions. But transparency as a governance mechanism on its own does not address more fundamental issues, such as how this information is interpreted and processed by its users, or the underlying interests of those communicating information. As global financial markets become increasingly complex, continued

reliance on transparency as a financial market governance mechanism will lead to equally complex reporting frameworks. This is because transparency is a blunt instrument. For example, it is estimated that it will require over 30,000 pages of regulation to fully implement Basel III in the US (Haldane 2012, cited in Goldin and Mariathasan 2014). Relying on transparency and its resulting complexity in designing regulation opens up more loopholes for exploitation than it closes (*ibid* 2014).

Ambiguity, managed in the form of self-reflexivity, negotiation and flexibility, offers an alternative approach to an international financial policy framework based on transparency. To be sure, ambiguity is not the opposite of transparency, nor is it inconsistent with transparency. Ambiguity provides the space for conveying more information than what is known by the sender and can provide the basis for dialogue on issues that are otherwise considered resolved. For example, a regulatory framework that uses ‘comply or explain’ provides room for subjective reporting and disclosure that inspire further dialogue and can lead to a deeper understanding. Transparency on its own, in contrast, would emphasise reporting only that information which can be codified. Moreover, transparency does not account for the process of interpretation. Ambiguity can lead to meaningful debate and dialogue that forces us to question assumptions and interpretations rather than blindly accept information as presented; or, as James G. March (1987) has envisioned, will lead to a day when accounting statements would be debated with as much rigour by students as poetry. That said, ambiguity provides the scope for those with resources to interpret rules and policies to reflect their own interests, raising the spectre of distortionary distributional consequences. But such distortions are already prevalent. Acknowledging the presence of ambiguity, rather than assuming that text and

financial data are clear and can only be interpreted in one way, can expose the attempts of those who manipulate information in their favour, rather than allow them to continue to do so under the veil of certainty.

IMPLICATIONS FOR THEORY

While specific chapters provided targeted practical implications for governance structures and policy frameworks, the main contributions of the thesis are theoretical when taken as a whole. In particular, there are three ways in which this thesis contributes to theory, which are elaborated in the sections below. First, by drawing attention to how ambiguity manifests itself in organisations through incentive structures, contracts, mandates and policy goals, the thesis has elucidated the value of returning to the behavioural roots of organisational economics for analysing financial organisations. The second contribution is to relational economic geography. Ambiguity can address some of the gaps that currently stand in the way of the relational view being granted status as a theory in its own right. Third, ambiguity provides a common banner for the growing coalition of academics from diverse backgrounds calling for an inter-disciplinary discourse on the concepts that constitute finance theory.

Ambiguity and organisational economics

The thesis is inter-disciplinary and as such it does not identify with one particular field or discipline. That said, its approach can broadly be framed as organisational economics, which uses economic logic to understand the nature, design and performance of organisations. Much of the organisational economics literature has developed as

extensions from transaction cost economics, a field that draws on insights of Ronald Coase (1937) and Oliver Williamson (1975; 1985) among others, to understand the nature and boundaries of the firm. Clark and Monk (2013a; 2013b; 2014) have engaged in a research programme that seeks to critically extend the insights from this literature to analyse governance structures and the decision-making of institutional investors.

Inspired by the nature of Clark and Monk's research, this thesis has focused on extending insights of the behavioural theory of the firm (Cyert and March 1963) to institutional investors. The main insight from this literature relevant for this thesis is that individuals have goals but organisations do not. As such, organisations such as SWFs can only be understood as a coalition of interests and not as a single objective function. The theoretical contribution of this thesis has been to revive the insights from the behavioural theory of the firm that have largely been eschewed in favour of formalised models, and to highlight the importance of integrating consideration of ambiguity into existing models of organisational economics. Ambiguity also opens the literature to a range of questions that have previously been assumed to be resolved. For example, Gibbons and Henderson (2013) recently made an important challenge to a key assumption of formalised relational contracting models, which is that parties may not share an understanding of the underlying promise of the contract. This lack of clarity problem (ambiguity) is distinct from the credibility problem that is the concern of most relational contracting models. Indeed, as organisations continue to delegate decisions to deal with the increasingly complex environment in which they operate, ambiguity will have relevance for a wide range of existing topics in organisational economics; from strategic models of

communication, delegation, incomplete and relational contracts where the underlying promise is itself ambiguous, to incentive design for ambiguous tasks.

Ambiguity and relational economic geography

The relational view of economic geography presented by Bathelt and Glückler (2003; 2011) has contributed to shaping the approach to this research. Chapter III and IV drew on the relational view to explain interests of SWFs and their political sponsors. Interests cannot be understood as individual. They must be understood with reference to their social context. Chapter V has focused on the way that social relationships affect economic outcomes in the context of the interaction between firms and institutional investors. Chapter VI has explored the relationship between different investors in a network that gives shape to new institutional arrangements necessary to transcend collective action problems. This thesis has provided several examples of how ambiguity might contribute to strengthening the relational perspective.

First, the thesis has suggested that the concept of relational depth be added as a second dimension to the strength of ties that currently informs the perspective's approach to interrogating social relationships in economics. In particular, Chapter V developed a concept of relational depth that can be used to distinguish those relations that are consequential for economic outcomes from those that are observed and embedded in them. Drawing on Granovetter's insights on the strength of weak ties, relationship depth is proposed as a second dimension to allow investors to map relationships with firms on the basis of both their intensity of their engagements but also their salience for achieving intended outcomes. This concept of depth could be extended to explain other

relationships both inside and outside the firm and could be used to distinguish those relations that are consequential for shaping economic outcomes from those that are simply present.

Second, the thesis suggested some ways in which the concept of ambiguity responds to the paradoxes raised by the relational perspective. For example, ambiguity could be used to complement existing explanations for how organisations that operate in a global market context bridge local information from branch offices and their supply chain with global imperatives, or what Bathelt and Glückler (2011) and Glückler (2007) have identified as the expansion-coherence dilemma. Ambiguity provides space for combining local context-specific information about risks in a framework that would otherwise overlook this tacit knowledge. Similarly, ambiguity might be extended to explain how organisations overcome negative lock-in effects in networks (for example, see Grabher 1993; Glückler 2007). Ambiguity manifests in the form of multiple interpretations of the same information. As such, even if an organisation is cut off from access to new flows of information that can be gained from participation and connections to new networks, new interpretive frames may provide an endogenous source of new knowledge.

The third contribution this thesis makes to the relational perspective is to provide an explanation for how relational resources such as knowledge, legitimacy and power are produced. The relational view argues that these resources cannot be possessed by an individual or a firm, nor produced in isolation. It is only through interaction that they can be understood to exist (Bathelt and Glückler 2011). But the relational perspective lacks an explanation of the conditions that promote the production of these resources and the

conditions that inhibit them. Ambiguity provides the conceptual space for the interaction between different actors to take place as it does not require rigid forms of communication or scripted interaction. Ambiguity could be exploited by those with power and, as such, become a source of power in itself. Moreover, ambiguity can be a source of misinterpretation that in turn leads to new discoveries and new knowledge (see Gertler 2003). Taken together, ambiguity could serve similar purposes as complexity has for evolutionary economic geography by animating the micro-level behavioural patterns that constitute macro-level outcomes.

New approaches to finance

The third significant theoretical contribution of this thesis has been to draw attention to the relevance of ambiguity to finance. While concepts such as diversification on the basis of Modern Portfolio Theory and the equation of risk with volatility remain deeply entrenched in financial practice and academic research, many are calling for new concepts to navigate the increasingly complex and interdependent world of finance. Ambiguity provides a parsimonious way to discuss those aspects of risk that cannot be calculated and as a result are often left out of models entirely. Drawing ambiguity into the realm of possible decision states forces the finance world to articulate their own conceptual understanding of risk and uncertainty to refute the claims made in this thesis about the permanence of ambiguity. While this might seem trivial, in practice this is rarely done. As Fraser-Sampson (2014) points out, there is no equivalent to jurisprudence in finance. To be sure, risk as conceived in Modern Portfolio Theory has served practitioners well. But, as the investment world in which these investors participate

becomes more integrated and complex, new concepts are desperately needed to understand and evaluate decision problems that do not fit neatly into the dichotomy often drawn between risk and uncertainty (Goldin and Mariathasan 2014).¹¹⁸

Second, ambiguity lends itself to an inter-disciplinary approach that is needed in finance given that financial data used in sophisticated risk calculations are, at base, the result of human interpretation and judgement. This approach is already underway in fields such as economic sociology and behavioural finance. Other disciplines such as computer programming can assist these efforts by providing sources of experimental research on decision-making under ambiguity using bi-stable images (e.g. dancing silhouette). Law and psychology have long been occupied with ambiguity and its relevance for decision-making. For example, Hayek's (1952) early work in psychology, *The Sensory Order*, which he claims informed much of his later work in economics, was premised on the idea that 'every act of classification was, in effect, an act of interpretation (Caldwell 2004: 247). Studies of poetry and language also have much to offer finance. Ambiguity in the form of metaphor not only shapes our language but also how we think and act (see Lakoff and Johnson 1980). Indeed, the use of metaphor is pervasive in finance (Clark 2005). Ambiguity stretches across all these disciplines and in doing so provides a parsimonious and unifying concept necessary to form a truly inter-disciplinary approach to finance.

¹¹⁸ More specifically, the point I wish to make here is that while specific aspects of terrorism, geopolitical risks, environmental and social disasters and climate change can be integrated into sophisticated equations, the full scope of each of these problems cannot be quantified in any meaningful way and attempts to do so are insulting to their significance.

Looking forward, ambiguity is a useful concept for continuing to advance the responsible and sustainable investment research agendas. The concept provides a frame for taking into account the broader context necessary to avoid becoming indistinguishable from conventional approaches to investment (Eccles 2010; Richardson 2013). That is, where financial implications cannot be established, the issue becomes irrelevant for responsible and conventional investors alike. Ambiguity provides the tools to integrate sustainability issues into investment decision-making, even when the immediate financial implications cannot be clearly established. Ambiguity forces us to deal with subjective reality but also gives us a framework to do so.

FUTURE RESEARCH

This thesis has raised a number of questions, some of which have only partially been addressed in the substantive chapters. This partial response to some of the questions raised is justified based on the opportunity that four stand-alone chapters provide for demonstrating the relevance of ambiguity for decision-making across a diversity of contexts, not to mention the value of exposing the researcher to a range of topics and methods of inquiry at the early stage of her career. Understanding the causes and consequences of ambiguity in the finance world is a massive research project. This thesis has focused on the organisational level. It has considered specific incentive structures and governance issues to manage ambiguity for long-term investing. The most important areas for future research at the organisational level identified by this thesis are highlighted below. It is the hope that it will inspire further research on ambiguity and its implications for financial decision-making.

New incentive structures: empirical evidence

While incentive structures have been a strong theme throughout this research, the thesis has only scratched the surface of how to encourage various principals and agents of SWFs and other institutional investors to adopt long-term horizons and to effectively implement ambiguous goals and objectives. The substantive chapters have focused on isolated cases of incentives to encourage agents acting on behalf of SWFs to extend their time frames and reconcile local information with global imperatives. Chapter V has dealt most directly with these incentive questions and has raised some avenues for future research elaborated on below.

First, the assumption in most principal-agent models and in this thesis is that agents are motivated by extrinsic rewards, which are usually defined in monetary terms. But it is also possible that agents have an intrinsic motivation. Politicians may genuinely care about inter-generational equity as suggested in Chapter III and portfolio managers may have their own reasons for wanting to engage with companies in meaningful dialogue on issues related to the environment that extend beyond financial rewards. Surveys and experimental research are required for moving beyond the speculative discussion in this thesis presented on this topic. Moreover, case studies comparing different incentive structures between institutional investors could provide valuable insight for successful engagement programmes. The model in Chapter V could also be extended to consider another layer of conflict between different portfolio managers within the same investment management firm.¹¹⁹ For example, fixed income portfolio

¹¹⁹ This was a potential conflict pointed out to me by Michael Viehs.

managers may have different interests with respect to engagement than portfolio managers of the fund's public equities.

Outside of the employee-employer relationship, this thesis has also raised questions about incentive design to implement contracts between firms for ambiguous tasks, or what Gibbons and Henderson (2013) have referred to as the clarity problem in relational contracting. More research on how ambiguity is managed in the context of the clarity problem, raised in the context of relational contracting, is needed to understand how institutional investors outsource ambiguous tasks such as corporate engagement programmes, and what influences their decisions to maintain other tasks in-house.

Finally, while not the focus of this research, the thesis has raised some important questions related to the consequences of fiscal decentralisation for effective resource wealth management and, in particular, the perverse incentives it creates among political sponsors of these funds. Chapter III found that an independent management structure is not enough to buffer the Alberta Heritage Fund from the perverse and short-term political incentives to spend and borrow against their SWF. This concern is amplified in the context of Canadian provinces, which lack constitutions to entrench any commitment to future generations. Chapter VI has drawn attention to the perverse incentives among local and state governments in the US to misrepresent their pension funding ratios to access favourable credit terms on the municipal bond market. More research is needed to consider the implications and solutions to the perverse incentives facing local and state politicians to use their public pension and SWFs to advance other objectives. In the US context, this is particularly important in light of the *Chapter 9* municipal bankruptcy

framework that provides no protection for state pension funds against the claims of creditors (SEC 2011).

Sub-national funds

This leads to the second topic for future research identified in this thesis: the consequence of sub-national SWFs for national fiscal and monetary policies. As Chapter III noted, the number and size of sub-national funds is increasing due to new resource development projects and the price boom in natural resources that has left many state governments with an abundance of wealth, coupled with the increasing trend of delegating authority for spending and taxation to local and state governments. In Canada, Saskatchewan has recently announced the creation of a new fund to manage excess provincial revenues from potash, and the Province of British Columbia has announced intentions to establish a ‘prosperity fund’ to invest the government’s projected revenues from liquefied natural gas development. There are currently eight US state-sponsored SWFs listed in the SWF Institute database.

While many sub-national funds are small, some have grown to a substantial size; the Alaskan SWF has over US\$ 50 billion in assets under management and Alberta’s fund is anticipated to reach CAN\$ 100 billion by 2020 under the government’s new allocation policy. The recent Scottish independence movement has drawn attention to the potential creation of a SWF to capture royalties from North Sea oil and may inspire other regional governments with strong urges towards independence to consider establishing their own SWF as a means of assuring economic independence. Resource wealth patrimony and its consequences for national fiscal and monetary policies is an

increasingly important topic in the era of austerity. More research is needed to understand the legal frameworks necessary to align incentives across federal and local governments for effective resource wealth management in the context of fiscal decentralisation and to distinguish where, as Barry Eichengreen puts it, ‘devolution ends and dysfunction begins.’¹²⁰

Power asymmetries between asset managers and owners

An underlying theme throughout the thesis has been why funds that have long-term investment horizons are not investing in assets that match their competitive advantage. Chapter IV noted that the Norwegian Fund has stuck to conventional assets, now owning more than 1% of every public company. Even for those funds that have the mandate to invest in alternative assets, their investment management is often outsourced or their access is restricted by intermediaries that extract high management fees and prevent investors from gaining direct exposure to the benefits of the underlying asset. Elsewhere it is suggested that the asset management industry has a strong degree of influence over regulatory and legal frameworks and that it encourages policies that favour high fees (see Lakonishok *et al.* 1992; Judge 2014). Moreover, the investment management industry is reluctant to offer services and products that meet the investor’s needs and interests. Significant resources and time are required to build the capacity in-house to access these assets.

Given this context, the penultimate chapter of this thesis has taken up the question of how investors can exercise control over contract and re-engage with the asset

¹²⁰ Eichengreen, B 2014. The evolution of devolution, Project Syndicate.

management industry on terms that are more favourable to them. More research is needed to explain how funds in these periphery regions attract the talent and resources necessary to access new asset classes. This is necessary in order to match their long-term horizons and to coordinate their action in ways that allow them to circumvent the asset management industry while creating new contract standards, norms and performance benchmarks to re-engage with the industry.

LEARNING TO MANAGE AMBIGUITY

This thesis has been an exposition of how SWFs and institutional investors more broadly manage ambiguity so as to implement substantive long-term investment programmes. This has first required demonstrating the permanence of ambiguity in the context of organisational decision-making, which is not a trivial task. This thesis has called for abandoning the search for the one right and unambiguous answer, for no such thing exists in finance. As the investment world becomes increasingly complex, this thesis has suggested that ambiguity will undermine the best intentions and most sophisticated attempts to calculate and manage risk. Decentralisation can create as many problems as it resolves. This thesis sees itself as part of a much larger research programme. Its contribution has been to suggest that ambiguity is a banner that is at once broad enough to gather separate strands of work to form an inter-disciplinary approach to finance, but also specific enough to make a concrete contribution to improving decision-making. In a world where unambiguously rational decision-making is highly prized and handsomely rewarded, leveraging the constructive properties of ambiguity will continue to be a challenge. That said, I remain optimistic that as those claiming to have the one right

answer are increasingly proven wrong, ambiguity will earn its rightful place in the study and practice of finance.

Appendix A: Sub-national SWFs

Alberta Heritage Fund	Oil and gas: \$17.5 billion	1976
Alabama Trust Fund	Oil and gas: \$2.5 billion	1985
Alaska Permanent Fund	Oil and gas: \$51 billion	1976
Louisiana Education Quality Trust Fund	Oil and Gas: \$1.1 billion	1986
New Mexico State IC	Oil and Gas: \$19.8 billion	1958
North Dakota Legacy Fund	Oil and Gas: \$1.7 billion	2011
Texas Permanent University Fund	Oil and Gas: \$19 billion	1876
Texas Permanent School Fund	Commodity: \$30.3 billion	1854
Permanent Wyoming Mineral Trust Fund	Mineral: \$5.6 billion	1974
Saskatchewan Futures Fund	Potash and uranium	*
British Columbia Prosperity Fund	Natural Gas	*
North West Territories	Minerals	*
Quebec Generations Fund	Hydropower royalties and Minerals	*
Western Australia Future Fund	Minerals \$0.3 billion	2012
UAE- Abu Dhabi Investment Authority	Oil \$ 773 billion	1976
UAE- Investment Corporation of Dubai	Oil \$70 billion	2006
UAE- Mubadala Development Company	Oil \$60.9 billion	2002
Ras Al Khaimah Investment Authority	Oil \$1.2 billion	2005
International investment Petroleum Investment Corporation	Oil \$ 68.4 billion	2006
UAE-Abu Dhabi Investment Council	Oil \$ 90 billion	2007

Source: SWF Institute as of 2014.

*announced or under consideration. The Quebec Generations Fund was established in 2006 and it was recently announced that the fund will begin collecting royalties from mining in 2015/16.

Appendix B: William Empson's 7 Types of Ambiguity

Ambiguity Type	Example (Empson)	Relevance for long-term investing/constructive property
1. Metaphor, where two or more things are alike but have different properties.	Bare ruined choirs, where late the songbirds sing	Analogy of conventional financial reporting is used by the Global Reporting Initiative to achieve legitimacy necessary for sustainable reporting (Etzion and Ferraro 2010).
2. Two or more metaphors resolved into one to produce a new idea.	<u>Swiftly</u> the years beyond recall, Solemnly the <u>stillness</u> of this spring morning. Two different metaphors of time used here to produce a new idea of apprehension. The reader is forced to invent the relationship between the two ideas about time and in doing so, forms a new idea.	Metaphor can also hide meanings (Lakoff and Johnson 1980). Bringing together two or more different metaphors can reveal these hidden meanings, because it invokes reflexivity. In Ferraro and Etzion, differences from the analogical source (conventional financial reporting) were emphasised to lead the way to a more substantive 'sustainable' reporting framework. Chapter III shows how politicians that are reflexive of their own ideas about the long-term can form a new idea that allows for extending realm of what is possible. Long-term as indefinite abstract concept and long-term as embodied in an illiquid asset over 20-30 years combine to produce a new idea of the long-term.
3. Pun: when two or more ideas, which are connected only by being relevant in the context, can be given in one word simultaneously.	'That specious monster, my accomplished snare.'	N/A (Puns are considered as frivolous use of analogy). That said, they are frequently used to colour accounts. In an article on investment opportunities in livestock (cows specifically), the author introduces the topic with 'people are usually bullish about milking investments and finding cash cows.' Coretelli, J. 2013.

		‘Cows as safe assets’, <i>Financial Times</i> September 23.
4. Two or more meanings of a statement do not agree among themselves, but combine to make more clear a complex state of the author’s mind.	Unintentional use of a pun, that when realized after the fact, reveals an unconscious level of thought.	‘Investing for sustainable growth’ (pun unintended) but then realised after the fact to reveal a deeper level of consciousness (<i>sustainable</i> taking on two different meanings: sustainable financial returns but also sustainable in the sense it has come to be used to refer to environmental and social well-being across generations).
5. Words lead to discovering meaning: the author discovers what he means through the act of writing, or the author does not hold all ideas at once in their head, as Empson calls it, ‘a fortunate confusion’.	‘Our natures do pursue, Like rats that ravyn downe their proper Bane, A thirsty evil, and when we drinke we die.’	A contract or policy that evolves in meaning over time. This can be observed in the context of the NGPF-G’s ethical investment policy, as outlined in Chapter IV. Ethical investment was originally conceived of as negative screening but recent events suggest this is evolving.
6. A statement that says nothing, by tautology, contradiction or irrelevant statements, so that the reader is forced to invent meanings (interpretation).	‘Zulieka was not strictly beautiful’	Rhetoric in ethical investment policy (Chapter IV) The NGPF-G policy evokes interpretation of its meaning by managers and Norwegian public and is constructive as it allows for interpretation to adapt to changing environment (combines with Type 5 ambiguity).
7. Two words that are opposites that expose fundamental divide in author’s mind. Empson notes the reader’s desire for reconciliation but that the concept only exists because of the irreconcilable tension.	Sumerian fighters get their meaning through being locked in a fight that never ends.	Inherent conflict between current and future: intergenerational equity (Chapter III) Inherent conflict between competition and cooperation (Chapter V and VI)

Appendix C: Alberta Savings Management Act

Chapter S-2.5

Preamble

WHEREAS Albertans place a high priority on using accumulated provincial savings to support investments that will benefit current and future generations;

WHEREAS a portion of the provincial savings should be used to encourage innovations that will build on Alberta's existing strengths, develop new opportunities and enhance our capacity to adapt to future developments;

WHEREAS opportunities for innovation should span Alberta's economic, environmental and social sectors;

WHEREAS these opportunities should build on the existing innovation system to support new ideas, risk-sharing and creative collaboration across sectors;

WHEREAS increasing the capacity of Alberta's social and cultural sectors to address the systemic causes of social challenges in new ways will improve the outcomes and long-term sustainability of programs and services for vulnerable Albertans;

WHEREAS enhancing agricultural research, product development and commercialization is essential to a strong economic future; and

WHEREAS supporting excellence in the apprenticeship, trade and technology system will encourage growth in the skilled workforce needed for continued prosperity;

THEREFORE HER MAJESTY, by and with the advice and consent of the Legislative Assembly of Alberta, enacts as follows:

Definitions

1 In this Act,

- (a) "Alberta Future Fund" means the account established under section 3;
- (b) "Heritage Fund" means the Alberta Heritage Savings Trust Fund referred to in section 2 of the Heritage Fund Act;
- (c) "Heritage Fund Act" means the *Alberta Heritage Savings Trust Fund Act*;
- (d) "Innovation Endowment Accounts" means the Social Innovation Endowment Account and the Agriculture and Food Innovation Endowment Account;
- (e) "Minister" means the President of Treasury Board and Minister of Finance;
- (f) "rate of return for the Heritage Fund", for a fiscal year, means the annual rate of return for the Heritage Fund as published in the Heritage Fund's audited annual financial statements for that fiscal year.

Endowment accounts

2(1) Effective April 1, 2014, the following endowment accounts are established as notional accounts within the Heritage Fund:

(a) the Social Innovation Endowment Account, for the purpose of supporting innovation in the social service and support sector and in the cultural sector, including

- (i) research and knowledge dissemination on social and cultural innovation,
- (ii) design and implementation of innovative interventions, and
- (iii) development of new funding models and partnerships;

(b) the Agriculture and Food Innovation Endowment Account, for the purpose of supporting the following:

- (i) basic and applied agricultural research, including knowledge dissemination on agriculture and food innovation;
- (ii) product development and commercialization in agriculture and related industries.

(2) Effective April 1, 2014, \$500 000 000 from within the Heritage Fund is allocated to the Social Innovation Endowment Account, and effective April 1, 2015, a further amount of \$500 000 000 from within the Heritage Fund is allocated to the Social Innovation Endowment Account.

(3) Effective April 1, 2014, \$200 000 000 from within the Heritage Fund is allocated to the Agriculture and Food Innovation Endowment Account.

Alberta Future Fund

3(1) Effective April 1, 2014, the Alberta Future Fund is established as a notional account within the Heritage Fund for the purpose of supporting initiatives to provide long-term benefits to Albertans and the Alberta economy.

(2) Effective April 1, 2014 and April 1 of the subsequent 9 fiscal years an amount of \$200 000 000 from within the Heritage Fund is allocated to the Alberta Future Fund.

Transfers in relation to Innovation Endowment Accounts

4(1) For the following fiscal years, the Minister may transfer up to the following amounts from the Heritage Fund to the General Revenue Fund in respect of the Innovation Endowment Accounts:

- (a) in respect of the Agriculture and Food Innovation Endowment Account, for the fiscal years 2014-15, 2015-16 and 2016-17, a maximum of \$9 000 000 each fiscal year;
- (b) in respect of the Social Innovation Endowment Account,

- (i) for the fiscal year 2015-16, a maximum of \$22 500 000;
- (ii) for the fiscal year 2016-17, a maximum of \$45 000 000.

(2) The Minister may for the 2017-18 fiscal year and subsequent fiscal years, in a manner determined by the Minister, transfer from the Heritage Fund to the General Revenue Fund an amount not exceeding, in relation to each Innovation Endowment Account, 4.5% of the average of the closing balances of that Innovation Endowment Account for the preceding 3 fiscal years as published in the Heritage Fund's audited annual financial statements for those fiscal years.

(3) Notwithstanding subsection (2), for the purpose of determining the 3-year average under subsection (2) for the 2017-18 fiscal year, the amount with respect to the Social Innovation Endowment Account is to be determined as if the closing balance for the fiscal year 2014-15 were \$1 000 000 000.

(4) Amounts transferred into the General Revenue Fund under this section in respect of an Innovation Endowment Account may only be expended for a purpose for which the Innovation Endowment Account was established and only if authorized by a vote of the Legislature.

Transfers in relation to the Alberta Future Fund

5(1) The Minister may, as approved by resolution of the Legislative Assembly, transfer from the Heritage Fund to the General Revenue Fund an amount, not exceeding the balance in the Alberta Future Fund, for a purpose for which the Alberta Future Fund was established.

(2) Amounts transferred into the General Revenue Fund under this section in respect of the Alberta Future Fund may only be expended for a purpose for which the Alberta Future Fund was established and only if authorized by a vote of the Legislature.

Account and Fund adjustments

6(1) In each fiscal year the balances in each of the Innovation Endowment Accounts and the Alberta Future Fund are to be adjusted as follows:

- (a) the closing balances are to be adjusted for the fiscal year as determined under subsection (2);
- (b) the balances are to be reduced by the amounts transferred to the General Revenue Fund in the fiscal year under sections 4 and 5, as applicable.

(2) For the purpose of subsection (1)(a), the adjustment is determined in accordance with the following formula:

$A \times B$ where

A is the opening balance in the fiscal year of the Innovation Endowment Account or the Alberta Future Fund, as applicable;

B is the rate of return for the Heritage Fund for that fiscal year.

Alberta Heritage Scholarship Fund

7 The Minister shall in the fiscal year 2014-15 transfer \$200 000 000 from the Heritage Fund into the Alberta Heritage Scholarship Fund under the *Alberta Heritage Scholarship Act*.

8 and 9 *(These sections amend other Acts; the amendments have been incorporated into those Acts.)*

Coming into force

10 This Act is deemed to have come into force on April 1, 2014.

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