On the Political Economy of Sovereign Wealth Funds

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A thesis submitted for the degree of

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Siegen, 2016

First reviewer:

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To my loving family

– *Shoghik, Lyova, Anna* and *Nonna* –

This work would not have been written without their support.

Նվիրվում է ընտանիքիս՝

Լյովային, Շողիկին, Աննային և Նոննային:

Առանց նրանց աջակցության ինձ համար շատ դժվար կլիներ ավարտին
հասցնել այս աշխատանքը:

Acknowledgements

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List of Acronyms

ADIA   Abu Dhabi Investment Authority

ADICO   Abu Dhabi Investment Council

AuM   Assets under Management

CDC   Caisse des Dépôts International – France

CFIUS   Committee of Foreign Investment in the United States

CIC   China Investment Corporation

CNOOC   China National Offshore Oil Corporation

CPI   Corruption Perception Index

EBITDA   Earnings Before Interest, Taxes, Depreciation and Amortization

EFI   Economic Freedom Index

FSI   Fondo Strategico Italiano

GIC   Government Investment Corporation (Singapore)

GIF   Global Infrastructure Facility

GPF–G   Government Pension Fund–Global (Normay)

IFSWF   International Forum of Sovereign Wealth Funds

IMF   International Monetary Fund

IPIC	International Petroleum Investment Company
IWG	International Working Group (for SWFs)
KIA	Kuwait Investment Authority
KIB	Kuwait Investment Board
KIC	Kuwait Investment Company
LMI	Linaburg-Maduell Index
MDB	Multilateral Development Bank
MIGA	Multilateral Investment Guarantee Agency
OECD	Organization for Economic Co-operation and Development
PPIAF	Public-Private Infrastructure Advisory Facility
PPRF	Public Pension Reserve Funds
QIA	Qatar Investment Authority
RDIF	Russian Direct Investment Fund
SAFE	State Administration of Foreign Exchange (China)
SAMA	Saudi Arabia Monetary Authority
SOE	State-Owned Enterprise
SWF	Sovereign Wealth Fund
UAE	United Arab Emirates

Chapter 1

Introduction

1.1 SWFs and the Global Financial System

In the article with the intriguing title "Who holds the wealth of nations?" Rozanov (2005) drew readers' attention to a particular type of public sector players whom he referred to as sovereign wealth managers or sovereign wealth funds (SWFs). It took some time until this moniker became popular, but today SWFs are commonly discussed both in mass media and academic literature and represent an important class of institutional investors in the global financial system.[1]

Even though SWFs are well-discussed and a considerable amount of research on this topic has been accumulated during the last decade, one has to recognize that the term "Sovereign Wealth Fund" is very broad and vague. Still, academic and political literature cannot agree on what to consider as a SWF. In fact, these funds represent a very heterogeneous group. According to Schwartz (2012),

> *"This nominal label lumps apples (Norway's Government Pension Fund–Global, or GPF–G), lobsters (Singapore's Temasek) and bliss potatoes (the Gulf SWFs) together on the grounds that they are all colored red. But these organizations have different essential political and economic logics and should not be lumped together...".*

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[1]A search of the *Financial Times* website shows that the term was first used on May 24, 2007, two years after the Central Banking Journal's issue with Rozanov's article was published. Compare also Megginson and Fotak (2014).

While analyzing specific aspects of SWFs, one has to be aware of differences in particular funds' strategies and purposes. Nevertheless, it is helpful to use a broad definition by describing the entire community of these state-led investors. This thesis relies on one of commonly used SWF definitions provided by the SWF Institute.[2] SWF Institute defines a SWF as

> *"...a state-owned investment fund or entity that is commonly established from balance of payments surpluses, official foreign currency operations, the proceeds of privatizations, governmental transfer payments, fiscal surpluses and/or receipts resulting from resource exports"[3] (Sovereign Wealth Fund Institute, 2015c).*
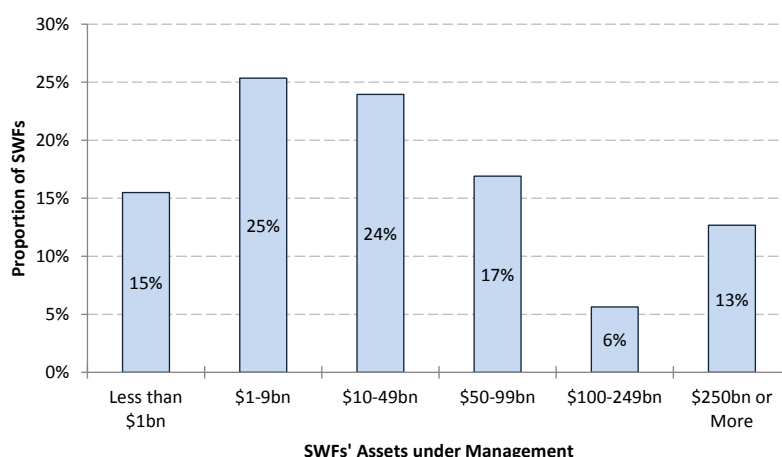
Figure 1.1: SWFs by size (2015)
Source: Based on own calculations, Sovereign Wealth Fund Institute (2015a) and Preqin (2015a).

Historically SWFs were present in the world economy since 1953, but the role they play in the global economy has evolved dramatically during the last decades. Today, about 50 national and local governments are sponsoring SWFs which control more than \$7 trillion of invested assets. Table 1.1 lists the 20

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[2]For detailed analysis of different SWF definitions see Rozanov (2011).

[3]This definition excludes, among other things, foreign currency reserve assets held by monetary authorities for the traditional balance of payments or monetary policy purposes, state-owned enterprises (SOEs) in the traditional sense, government-employee pension funds (funded by employee/employer contributions), or assets managed for the benefit of individuals (Sovereign Wealth Fund Institute, 2015c).

Country	Fund name	Founding date	AuM ($bn)
Norway	Government Pension Fund – Global	1990	824.9
Abu Dhabi (UAE)	Abu Dhabi Investment Authority	1976	773.0
China	China Investment Corporation	2007	746.7
Saudi Arabia	SAMA Foreign Holdings	-	668.6
Kuwait	Kuwait Investment Authority	1953	592.0
China	SAFE Investment Company	1997	547.0
China	Hong Kong Monetary Authority	1993	417.9
Singapore	Government Investment Corporation	1981	344.0
Qatar	Qatar Investment Authority	2005	256.0
China	National Social Security Fund	2000	236.0
Singapore	Temasek Holdings	1974	193.6
Dubai (UAE)	Investment Corporation of Dubai	2006	183.0
Abu Dhabi (UAE)	Abu Dhabi Investment Council	2006	110.0
Australia	Future Fund	2006	95.0
Kazakhstan	Samruk-Kazyna JSC	2008	85.1
South Korea	Korea Investment Corp.	2005	84.7
Kazakhstan	Kazakhstan National Fund	2000	77.0
Russia	National Welfare Fund	2008	73.5
Abu Dhabi (UAE)	Int. Petroleum Investment Company	1984	66.3
Abu Dhabi (UAE)	Mubadala Development Company	2002	66.3
...	...	...	...
		Total Oil & Gas related:	4,057.7
		Total other:	3,135.5
		Total:	7,139.2

Table 1.1: The 20 largest SWFs
Source: Based on Sovereign Wealth Fund Institute (2015a).

largest SWFs. As one can see, the 5 largest funds control more than half and the 10 largest funds more than 75% of all SWF assets under management (AuM). Figure 1.1 sums up and categorizes SWFs by size. It becomes apparent that the entire SWF community is dominated by large players. 13% of all SWFs manage more than $250 billion in assets and about one fourth of all SWFs have more than $100 billion AuM.

Figure 1.2 shows how SWFs' total assets have evolved starting from 2002. In the last two years, SWFs' aggregate assets increased by 28%. Moreover, SWFs total assets more than doubled compared to the pre-crisis level of capital under SWFs' control in 2007. The rapid growth of SWFs' aggregate assets is linked to the prevailing trend of establishing new funds in all countries across the world.
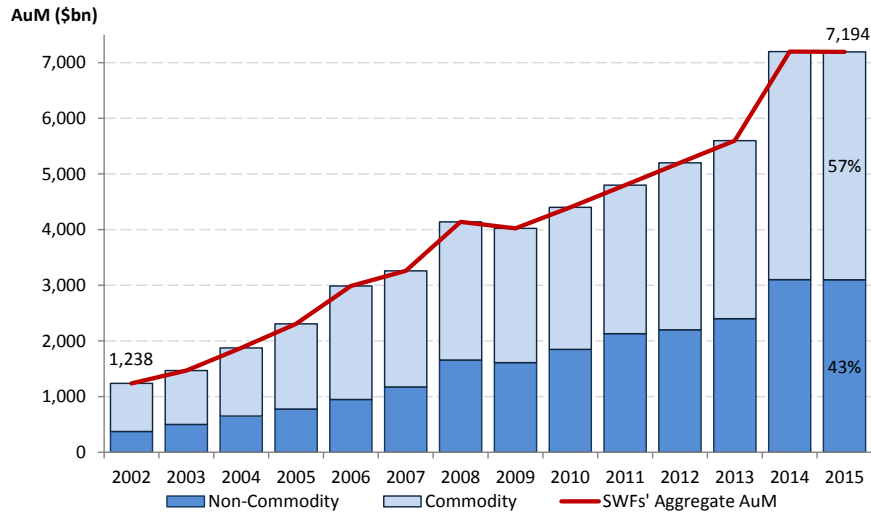
Figure 1.2: SWFs' assets under management
Source: Based on own calculations, Sovereign Wealth Fund Institute (2015a) and TheCityUK (2015).

Figure 1.3 shows SWFs by year of establishment. Since 2010 14 new SWFs were launched. Countries, such as Angola, Ghana, Iran, Mongolia, Nigeria and Panama, decided to set-up these new funds not only for development and stabilization purposes, but also because they recognized SWFs' ability to manage excessive resource revenues more efficiently. Other governments, such as in Kaza-
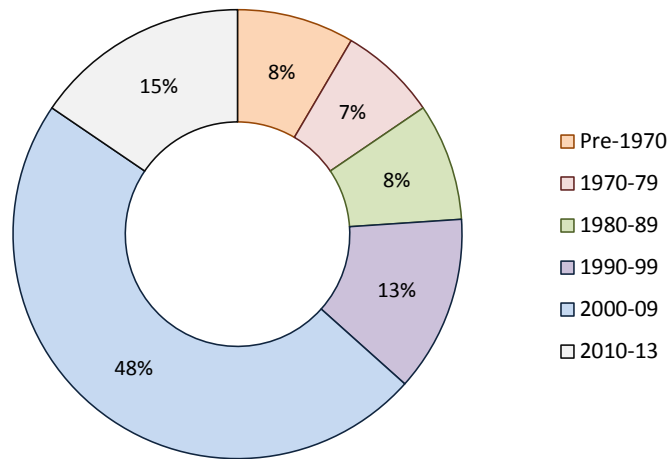
Figure 1.3: SWFs by year of inception
Source: Based on own calculations, Sovereign Wealth Fund Institute (2015a) and Preqin (2015a).

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khstan, Russia or North Dakota (US), have already long-term experience with state-led investment funds and established new entities for special purposes.

Virtually all SWFs are founded either from the sponsoring country's commodity revenues (mostly oil and natural gas, but also minerals and diamonds) or from transfers of excessive foreign exchange reserves. From this point of view one can categorize SWFs as "commodity" or "non-commodity" funds. As figure 1.2 shows, commodity-based funds represented a larger proportion of total SWF assets historically. Figure 1.4 breaks down SWFs by source of founding. It shows that 65% of present SWFs are founded from commodity-related sources and these funds hold 57% of aggregate SWF assets.
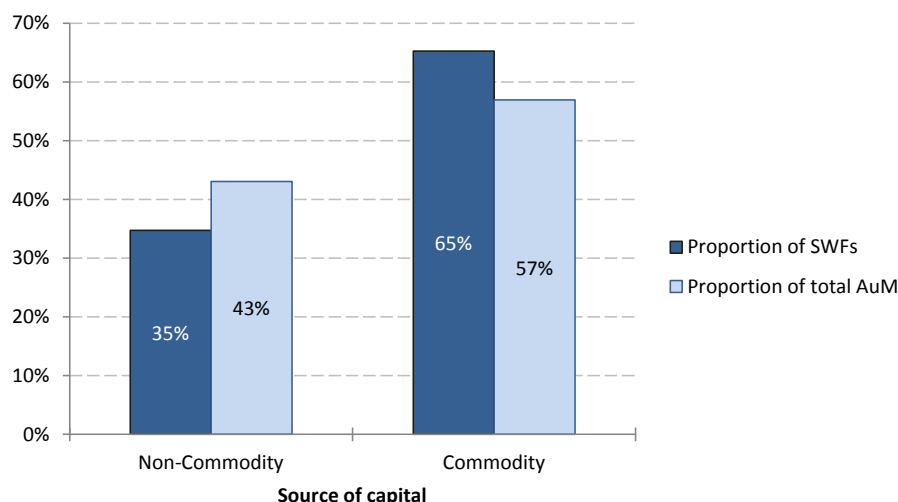
Figure 1.4: SWFs by source of capital (2015)
Source: Based on own calculations, Sovereign Wealth Fund Institute (2015a) and Preqin (2015a).

The growth of SWF numbers and aggregate assets in the last decades was fueled by two economic trends. The first is the accumulation of excessive official foreign exchange reserves. This trend started after the 1997-98 Asian currency crisis and has continued until today. Figure 1.5 demonstrates the magnitude of currency reserve holdings accumulated by world governments. According to the International Monetary Fund (2015), governments have built up about $12 trillion of foreign exchange reserve holdings until the beginning of 2014. Interestingly, a large proportion of these massive reserves belongs to emerging and developing countries. However, the hoarding of such impressive amounts of currency reserves
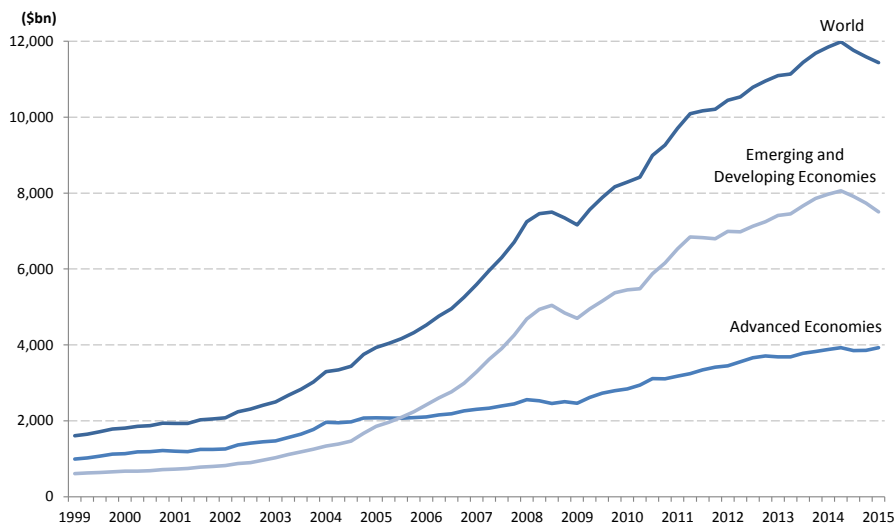
Figure 1.5: Official Foreign Exchange Reserves (1999-2015)
Source: Based on International Monetary Fund (2015).

created incentives for most governments to reallocate parts of their reserves to SWFs to capture forgoing commercial returns.
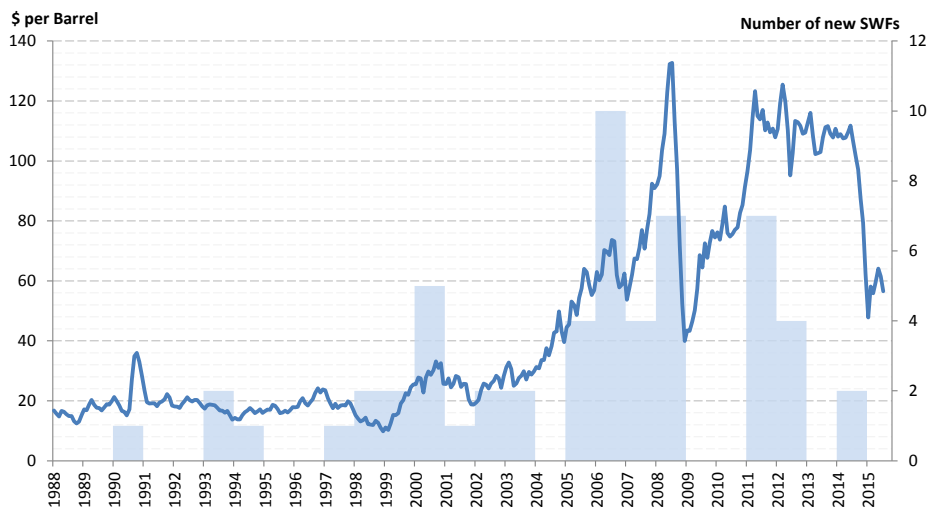
Figure 1.6: The oil price (Europe Brent spot price FOB) and the number of new SWFs
Source: The table is based on own calculations, Sovereign Wealth Fund Institute (2015a) and U.S. Energy Information Administration (2015).

The second driving force of SWFs' growth has been the rising price for oil and related commodities. Figure 1.6 combines the evolution of oil prices with the numbers of new SWF establishments. Starting from $20 per barrel in 1990, the

oil price increased to \$130 in June 2008 and dropped again during the financial crisis.[4] About 25 new funds have been set up in the high price period between 2005 and 2009.

In the academic literature, there are different approaches to classify SWFs. SWFs have been classified not only according to the source of founding, but also based on purposes for which these funds were set up.[5] However, Bortolotti et al. (2014b) stress another interesting way of classifying SWFs. These authors focus on whether SWFs are sponsored by democratic or non-democratic countries. And in fact, most of the funds are sponsored by rather non-democratic nations. Figure 1.7 demonstrates that about half of all SWFs are sponsored by countries with authoritarian regimes and only 21% of all funds are set up by nations with full democracy.
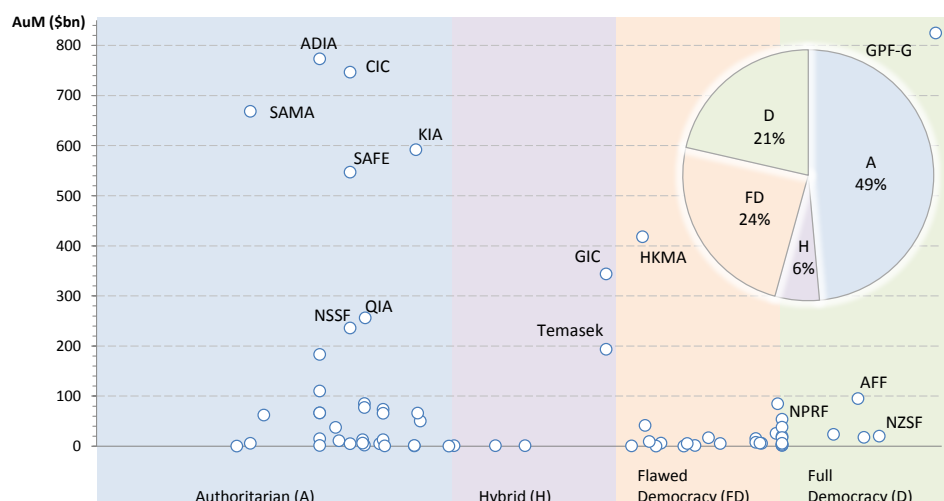
Figure 1.7: SWFs and the sponsoring country's political regime
Source: The table is based on own calculations, Sovereign Wealth Fund Institute (2015a) and Economist Intelligence Unit (2014).

The existing academic literature analyzing governments' intentions for setting up SWFs does not pay enough attention to the fact whether the prevailing regime in the sponsoring country is democratic. However, empirical evidence reveals

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[4]The drop in oil prices starting 2014 is caused by global oil oversupply (Growitsch and Leschus, 2015).

[5]More on this issue can be found in Allen and Caruana (2008), Griffith-Jones and Ocampo (2012), Bagattini (2011) and Bortolotti et al. (2014a). In general, one can distinguish between stabilization, saving, development and reserve investment funds.

two rather puzzling facts. First, several developing countries hold SWFs which should rather invest resource revenues in the domestic economy instead of parking these overseas.[6] Second, many countries sponsor more than one fund, sometimes even with similar objectives. In the light of the fact that most SWF sponsors are countries without electoral democracy, the question arises if further political motives for setting up SWFs exist in these countries. The traditional normative theory emphasizes SWFs' high potential for managing resource revenues. These funds' ability to reduce various resource-related risks, such as price and revenue volatility, "Dutch disease" and the "resource curse", as well as risks generated by different macroeconomic shocks (1997-style crises, ageing population etc.) is often mentioned as another important factor. Chapter 2 of this thesis focuses on the empirical evidence summarized in figure 1.7 and delivers a political economic explanation of SWFs. It argues that in the case of some countries there could be an additional motive for seting up a SWF. These are countries dominated by a ruler and at the same time by an influential elite (independently of whether these are ethnic, economic or political elites). The key factor is that the elite's loyalty is crucial for the ruler. By engaging elite members in the management of the SWF, the ruler links their interests to the regime's existence and gains their support. In these countries SWFs may have small or even negative social surpluses from the society's point of view but they provide a political advantage to the ruler.

1.2 Political and Strategic Concerns Raised by SWFs

Politicians in countries all over the world perceived the growth in SWFs' foreign investment in the last decades with suspicion. Especially the developed world suspected that by acquiring large stakes in advanced economies' key sectors, such as the financial sector, infrastructure and industry, SWFs may open a door for sponsoring governments to advance their policy objectives in host countries. This concern was fueled mostly by two facts. First, SWFs are government-owned and

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[6]More on this issue in Venables (2010), van der Ploeg and Venables (2011a,b) and Collier and Venables (2008).

fully government-controlled investment entities so that their investment objectives were thought to be in line with political objectives of sponsoring governments. Second, at the beginning of these discussions SWFs were characterized by their opaque nature and by a lack of transparency about their investment purposes. The mysterious nature of SWFs, combined with the fact that these entities invest for the benefit of respective sovereigns, led politicians, governments, researchers and commentators to question whether these funds intend to achieve purely commercial objectives or rather political and strategic goals of their sponsoring governments. In a July 2007 article in the Financial Times Summers (2007) emphasized that SWFs' investment strategies may be politically motivated and thus in conflict with national interests of host countries. In fact, some anecdotal evidence exists that SWFs used their financial power and investment policy to pursue political objectives of sponsoring states. For example, the Chinese State Administration of Foreign Exchange (SAFE) played an active role in a deal between China and Costa Rica which initially was intended to be secret. China promised to buy \$300 million Costa Rican bonds if Costa Rica gave up the diplomatic recognition of Taiwan.[7]

However, wide public discussions about SWFs' investment purposes and motivation triggered interesting developments in the international financial landscape. On the on hand, a number of host countries developed new or boosted existing foreign investment review mechanisms on the national level. France, China, the United States, Japan, Korea, Russia, Canada and Germany reviewed national security investment regulations and defined investments and sectors which should be subject to in-depth review (Gordon and Niles, 2012). On the other hand, in contrast to national legislative actions, supranational level reactions in form of guidelines and voluntary code of conducts emerged. On the side of recipient countries the Organization for Economic Co-operation and Development (OECD) started an intergovernmental dialogue between its member states and non-OECD governments which resulted in a guidance on SWFs.[8] SWF sponsoring states responded by establishing the International Working Group for SWFs (IWG) with

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[7]More on this topic in Gordon and Niles (2012).

[8]For details see Organization for Economic Co-operation and Development (2008a) and Organization for Economic Co-operation and Development (2008b).

support from the International Monetary Fund (IMF). As a result, IWG produced the well-known "Santiago Principles", a set of Generally Accepted Principles and Practices.

The debate about SWFs' transparency and governance is reflected in the academic literature as well. Truman (2008) developed a scoreboard to measure SWFs' transparency and accountability. The scoreboard became a well-established tool for assessing SWFs' governance and is still widely used by academics and politicians. Bagnall et al. (2013) refined and published an updated version of the scoreboard. It evaluates funds in four categories: structure, governance, transparency and accountability as well as behavior. The authors compare the scoring of individual funds and their compliance with "Santiago Principles". They show that the rankings of funds are very similar. However, Truman's Scoreboard is not the only tool for evaluating SWFs' transparency. The Linaburg-Maduell Index (LMI) represents another instrument for evaluating SWFs that is widely used by politicians and SWF representatives (Sovereign Wealth Fund Institute, 2015b).

SWF Transparency and Accountability

a. The Santiago Principles

The Santiago Principles represent a set of 24 generally accepted principles and practices. This principles were designed, formulated and voluntarily agreed by IWG member SWF sponsoring states with the support of IMF's International Monetary Financial Committee in 2008. After IWG evolved into the International Forum of Sovereign Wealth Funds (IFSWF), all members endorsed this principles as a precondition of achieving and retaining membership. The compliance with this principles demonstrates that SWFs act as economically and commercially oriented investors. The intention of the SWF community is to support global financial stability and enforce free flow of capital in the world. The fact that SWFs invest according to clearly defined principles and rules increases the transparency about SWFs' investments reducing thereby protectionist pressures by potential host countries.

The Santiago Principles include rules in three areas: (i) legal framework, objectives, and coordination with macroeconomic policies; (ii) institutional framework and governance structure; and (iii) investment and risk management framework (International Working Group on Sovereign Wealth Funds, 2008). Appendix A.1 lists the Santiago Principles in detail.

b. The SWF Scoreboard

Truman (2008) developed a scoreboard to assess SWFs' transparency and accountability and refined it subsequently (Bagnall et al., 2013). The scoreboard is widely used by academics and politicians. It evaluates funds in four categories – structure; governance; transparency and accountability; and behavior – with 33 principles formulated as questions. If the answer is *yes* the principle is scored with 1. If the answer is *no*, the principle is scored with 0. Sometimes, partial points, such as 0.25, 0.50 or 0.75 are possible.

Appendix A.2 lists the elements of Truman's SWF Scoreboard in detail.

c. The Linaburg-Maduell Transparency Index (LMI)

The Linaburg-Maduell Transparency Index was developed by the Sovereign Wealth Fund Institute. It allows to rank SWFs by their transparency. The index consists of ten simple principles in form of simple questions which depict a fund's public openness and transparency. A positive answer to each of these questions adds one point to the transparency index (Sovereign Wealth Fund Institute, 2015b).

Appendix A.3 lists the components of the LMI in detail.

At first glance LMI measures SWFs' transparency very roughly. It consists only of ten points and is somewhat superficial at particular points.[9] However, a comparison shows that LMI and Truman's Scoreboard give results that are widely similar. Overall, both indices describe SWFs' transparency, even if from different points of view. Figure 1.8 demonstrates the correlation between LMI and Truman's scoring for 44 SWFs. The simple correlation coefficient is 0.62 and is significant at the 1% level.

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[9]The index consists of components such as: *"A fund manages its own web site"* or *"Fund provides main office location address and contact information such as telephone and fax"*. Details in Appendix A.3.
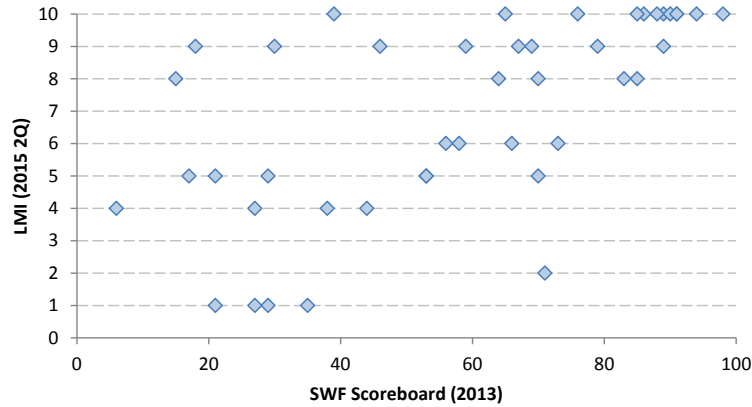
Figure 1.8: The Linaburg-Maduell Index and Truman's Scoreboard
Source: Based on Bagnall et al. (2013) and Sovereign Wealth Fund Institute (2015b).

(a) CPI vs. SWF Scoreboard

(b) EFI vs. SWF Scoreboard
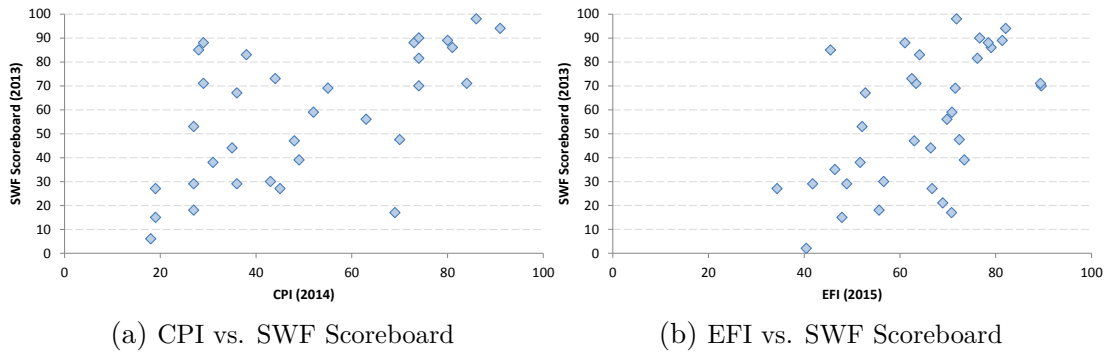
Figure 1.9: The Corruption Perception Index, the Index of Economic Freedom and the SWF Scoreboard
Source: Based on Bagnall et al. (2013), Transparency International (2014) and The Heritage Foundation (2015).

Interestingly, both LMI and Truman's Scoreboard of assessing SWFs' transparency are broadly comparable with indices that are used to evaluate countries' governance and economic freedom. Figure 1.9 compares the Transparency International's well-known Corruption Perception Index 2014 (CPI) and the Heritage Foundation's Economic Freedom Index 2015 (EFI) with Truman's 2013 scores for 35 respective countries' SWFs.[10] The simple correlation coefficients between these indices are 0.59 and 0.57, respectively and are significant at the 1% level.[11]

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[10]A similar comparison can be found in Bagnall et al. (2013) and Megginson and Fotak (2014).

[11]As in Bagnall et al. (2013), before calculating the correlations the scores for SWFs from the same country are averaged.

(a) CPI vs. LMI   (b) EFI vs. LMI
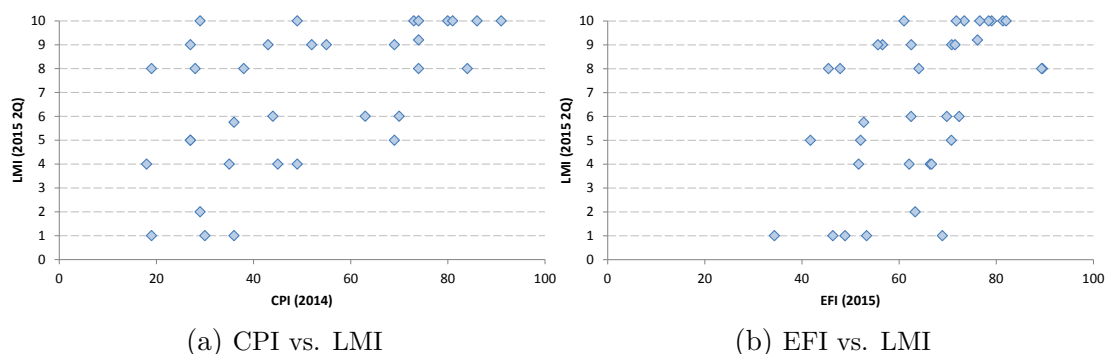
Figure 1.10: The Corruption Perception Index, the Index of Economic Freedom and the Linaburg-Maduell Index
Source: Based on Sovereign Wealth Fund Institute (2015b), Transparency International (2014) and The Heritage Foundation (2015).

Figure 1.10 compares CPI 2014 and EFI 2015 with LMI 2015 for 35 SWFs. The simple correlation coefficients here are 0.57 and 0.60, respectively and are significant at the 1% level. In general, SWFs reflect the quality of sponsoring sovereigns' institutions. Funds from democratic, transparent and free market-oriented countries rank highly on both, LMI and Truman's Scoreboard.

In the light of the debate about SWFs' investment motivation, some politicians and researchers argued that by investing through external asset managers SWFs could signal the purely commercial nature of their investments. Thereby SWFs could mitigate all risks caused by the lack of information about these funds. Rozanov (2009) emphasizes the outsourcing of SWFs' management as a way to increase the transparency of their investments. Summers (2007) mentions that investing through intermediary asset managers could make SWF investments more understandable for recipient countries. Both, the Truman's Scoreboard and the LMI, include the involvement of external managers as a point that delivers positive scores for a SWF and makes it less opaque. And in fact, more and more SWFs allocated considerable portions of their funds to external managers or pooled resources with private funds. Today, 52% of all SWFs make use of external managers' services (Preqin, 2015a). Chapter 3 of this thesis examines the underlying incentives for a politician to decide on delegating the management of a SWF to an independent external manager. The theoretical model developed in this section allows to compare the increase in SWF's investment possibilities as

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a consequence of management outsourcing and higher transparency with the loss of decision-making power. The analysis maps the conflict of interests between the politician and the manager and institutional changes caused by delegation. In addition, it accounts for politicians with different chances to be reelected and shows how decision to delegate depends on the incumbent's competence level. In general, delegating can improve SWFs' output. Moreover, the conflict of interest between the politician and the manager may help to solve the existing asymmetric information problem between citizens and the politician.

1.3 Co-Investment Alliances and SWFs' Investments in Infrastructure

Over the last years, an increasing number of SWFs started to invest in alternative assets, such as private equity, real estate, commodities and infrastructure. Infrastructure assets play a central role in these funds' portfolios. SWFs' growing interest in infrastructure is explained by the fact that infrastructure assets are less correlated with other asset classes and thus represent a good diversifier for SWFs' rather conservative portfolios mostly consisting of fixed income and equity investments. Moreover, infrastructure delivers relatively stable return flows and can act as a hedge against inflation over long term (see chapter 4). According to Preqin (2015b), 60% of all SWFs actually invested in infrastructure and another 3% are considering a first allocation in this asset class. These funds invest in infrastructure either through intermediary fund managers or through direct acquisition of assets.

At the same time, SWF observers witness an interesting trend towards teaming-up and investing jointly in large infrastructure project (Bortolotti, 2014). On the on hand, SWFs have not developed enough experience and know-how in infrastructure investing yet. Building co-investment alliances with like-minded peers allows to share knowledge and combine resources. It facilitates investing in large-scale projects that are difficult to handle for a single investor.[12] On the other hand, there exist numerous barriers for SWFs' investment in infrastructure. The

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[12]Details in Bortolotti et al. (2014a).

problem of political risk, including regulatory uncertainty, corruption, political instability, sovereign theft, expropriation and nationalization of infrastructure assets is especially challenging in developing countries characterized by weak institutions. Chapter 4 argues that investing jointly can help SWFs to overcome expropriation and contract renegotiation problems when investing in infrastructure of weakly institutionalized economies. SWFs are state-owned investors so that there is the possibility for sponsoring states' intervention in case of expropriation. Building a co-investment alliance allows to accumulate enough sanctioning power to discipline host governments and makes the threat of punishment more credible under certain circumstances. A group of SWFs will imply high enough expected costs of punishment for the host country so that it may solve the hold-up problem. However, an alliance entails strategic action problems among members. The model developed in this chapter analyzes how asymmetric information and potential partners' uncertainty about each other create strategic interaction problems. Taking into account the theoretical findings from the model, the chapter recommends that SWFs take the chance provided by the current trend of teaming-up and establish clear rules and guidelines for co-investment among institutional investors. This would reduce uncertainty about each other's objectives and facilitate communication among potential partners. Reduced uncertainty in turn would facilitate SWF investments in global infrastructure.

Chapter 2

The Ruling Bargain: Sovereign Wealth Funds in Elite-Dominated Societies[†]

2.1 Introduction

The past two decades have been characterized by a significant growth in the number of states setting up SWFs (Sovereign Wealth Fund Institute, 2014). Especially, resource-rich developing countries form a large majority among new sponsors of SWFs.[1] During the last years, a considerable volume of research, both theoretical and empirical, has been directed towards explaining this phenomenon. The existing literature gives some answers to the question why so many countries are setting up SWFs. The traditional normative theory sees a high potential for managing resource revenues in these funds and links the rise of SWFs to the "resource curse" literature (van der Ploeg, 2008). The core idea being that SWFs can be used to mitigate negative effects of the "resource curse", at least if they are designed properly and governed well. For instance, the short-term oriented and highly risk-intolerant stabilization funds are widely used to absorb high price volatility and resulting changes in resource revenues (Bagattini, 2011). If as-

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[†]This chapter is based on Grigoryan (2016) with permission of Springer.

[1]The list of SWF-sponsoring countries includes among others Angola, Ghana, Mongolia, Nigeria and Panama.

sets are parked overseas, currency appreciation and closely related Dutch disease problems are minimized. The widely discussed experience of Chile shows that SWFs combined with clearly defined funding and withdrawal rules can be used as institutions improving fiscal discipline and reducing the fiscal procyclicality bias of governments in resource abundant economies (Frankel, 2011).

In summary, the reason of setting up SWFs is not only to establish a new resource revenue management tool but also to reduce risks generated by different macroeconomic shocks. For instance, the general purpose of commodity funds is to abate commodity price volatility risks; reserve investment corporations provide insurance against 1997-style crises; and pension reserve funds combat the risks of an ageing population (Dixon and Monk, 2011).

In this chapter, I argue that in the case of some countries there could be an additional motive to set up a SWF. These countries' societies are dominated by a ruler and an influential elite so that the loyalty of the elite is crucial for the ruler. Independently of whether these are ethnic (tribes, ethnic groups), economic (oligarchy) or political elites (ruling party), the ruler will need the elite's support to remain in power. By letting elite members participate in the management of the SWF, the ruler will be able to link their interests to the existence of the regime and gain their support. For these countries SWFs represent some kind of "white elephants" which have small or negative social surpluses but provide a political advantage to the ruler (Robinson and Torvik, 2005). The idea of the chapter is similar to the study of Pistor and Hatton (2011). Paying attention to the fact that many SWFs come from non-democratic countries, they consider these funds as autonomy-maximizing institutions for the sponsor country's ruling class. By using case studies, they show that the ruler can use SWFs to obtain domestic political dominance. Under certain circumstances, the ruler is able to pacify the elite's ambitions using the SWF and thereby maximize his autonomy against domestic opponents. Dixon and Monk (2012) explain a similar idea from a wider point of view analyzing the link between the financial power of a state and sovereignty relative to powerful states. In this case, SWFs can be considered as tools providing the possibility of increasing a state's sovereignty in general.

Taking into account the nature of SWFs as long-term oriented and strongly institutionalized investment vehicles, I show that in weakly institutionalized po-

litical systems they can be used to partly solve the ruler's commitment problem. Given the fact that it can be costly to withdraw funds from an existing SWF, the ruler will use the SWF to credibly promise to compensate the elite if he remains in power. The assumption that a coup d'état would lead to political instability and might end with a non-elite group in power, reinforces this argument. Consequently, even though the ruler would like to invest the resource rents and then consume a fraction of the output, he is forced to use a part of the resource rents in form of a SWF to buy the support of the elite.

As a starting point, a simple theoretical model partly based on the framework of Caselli (2006) and Caselli and Cunningham (2009) is constructed. In the political economy literature, many papers analyze the economic policy under elite domination and are related to the framework presented here. Some of them are worth being mentioned. Acemoglu and Robinson (2000) consider the decision of a ruling elite to increase the political power of non-ruling citizens in order to prevent revolutions. This happens because the elite has no credible tools of commitment for future redistribution. The idea of the model in this chapter is close to that of Acemoglu and Robinson (2000). However, the model in this chapter analyzes the decision of a ruler in the presence of two groups – non-ruling elite and citizens – and introduces additional political uncertainty in the case of a coup d'état. Acemoglu et al. (2010) analyze the role of a strong military in autocratic regimes. Here the military helps the ruler via repressions to remain in office. However, if the ruler is not able to compensate the military sufficiently, they will stage a coup and replace the ruler. Padró i Miquel (2007) presents a model of an ethnically divided society. The weakly institutionalized succession process allows the ruler to gain support from a considerable part of the population while extracting rents both from his own and other ethnic groups. The model analyzes the use of patronage and the existence of ethnic bias in taxation. The uncertainty about the outcome of succession is driving the results. Hodler (2012) provides a model of the Arab Spring where dictators either belong to the ethnic and/or religious majority or not. He shows that the power of the elite plays an important role as to whether the ruler is able to repress protests and remain in power. Depending on whether the country is oil-rich, dictators may concede power, bribe the population or pay their own group for repressions.

This chapter combines the theoretical findings from political economics with specific features of SWFs to illustrate how these funds can be used in weakly institutionalized economies to ensure the power of ruling elites. It makes a contribution to the existing literature on SWFs analyzing why so many countries set up SWFs from a positive point of view. The rest is structured as follows. Section 2.2 provides evidence from Abu Dhabi's SWFs and the ruling Al Nahyan family to motivate the theory. Section 2.3 describes the model framework, discusses results and presents some additional anecdotal evidence. Section 2.4 provides concluding remarks.

2.2 Abu Dhabi's SWFs and the Ruling Al Nahyan Family

After the discovery of several considerable oil fields since the 1970s, the United Arab Emirates' (UAE) economy has been based on the well-developed petrochemical industry and on its revenues, as well as on the enormous oil-financed investments all over the world. Nowadays, the hydrocarbon economy generates roughly 80% of government revenues and more than half of the country's goods exports.[2] At the helm of the UAE, Abu Dhabi plays an important role as it possesses about 94% of total oil reserves of the federation: about 98 billion barrels which amount to 6% of the world's proved oil reserves.[3] Although the UAE's gas reserves are not so large compared to other Gulf countries, it nevertheless controls some sizable reserves of more than 6 trillion cubic meters which makes the United Emirates the country with the seventh largest proved natural gas reserves in the world (U.S. Central Intelligence Agency, 2013). Most of the gas fields, both onshore and offshore, belong to Abu Dhabi.

The beginning of rapid development and modernization of Abu Dhabi's domestic economy dates back to the 1970s and the formation of the UAE. One of

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[2]According to the International Monetary Fund, the UAE's hydrocarbon export revenues were about $118 billion in 2012 (International Monetary Fund, 2013).

[3]Emirates Ajman and Umm al-Quwain do not have oil reserves worth exploiting commercially. The other emirates Dubai, Sharjah, Ras al-Khaimah and Fujairah account for 6% of the UAE's crude oil reserves (U.S. Energy Information Administration, 2013).

the important prerequisites of this development is the relative political stability and the apparent peace between ruling families and tribes both within and between different emirates. SWFs seem to play a key role in this "ruling bargain" as economic tools which help the ruler to pacify potential rivals and reward his allies. To understand the current status quo and the role SWFs play, one has to consider different power groups in Abu Dhabi in more detail.

The family Al Nahyan which is in power in Abu Dhabi since the second half of the 18th century, originates from the al-Bu Falah group of the greatest Bani Yas tribe in Abu Dhabi. Over more than two centuries Al Nahyan rulers managed not only to hold power within Bani Yas but also to be recognized among other sizable tribes in Abu Dhabi. The support of clans from large tribes such as Manasir and Dhawahir has always been crucial for rulers from al-Bu Falah (Heard-Bey, 2001). Today, the most influential member of the ruling family is the ruler of Abu Dhabi and president of the UAE Shaikh Khalifa bin Zayed Al Nahyan. However, the political power in Abu Dhabi is concentrated mainly among the ruler's 18 brothers, called Bani Zayed.[4] Particularly, Bani Fatima, a bloc of six full brothers, have collectively gained substantial power and control over military, foreign affairs as well as important institutions linked to national security (Davidson, 2006). All brothers from Bani Fatima hold influential positions in different ministries and governmental agencies in Abu Dhabi or on the federal level. However, the most powerful individuals of this group are Mohammed, the Crown Prince of Abu Dhabi and Mansour.

Historically, another branch of the greater Al Nahyan family, Bani Mohammed bin Khalifa, have had great influence on the politics of Abu Dhabi and continue to act as a balancing force in the family against Bani Fatima.[5] Although the group's power declined during the last decades, mainly suppressed by rising Bani Fatima, several members continue to hold different positions and still have some influence, especially in the influential eastern region with the capital of Al-Ayn.

The city Al-Ayn and the emirate's eastern provinces used to play a crucial role for the rulers of Abu Dhabi. Rulers of the Al Nahyan family who managed to

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[4]"Bani Zayed" is translated as "Zayed's sons" (Davidson, 2006).

[5]Distant cousins and uncles of contemporary ruler Shaikh Khalifa bin Zayed al Nahyan, another branch of the family starting from sons and grandsons of Zayed the Great. For more details see Anthony (1999).

sustain the loyalty of the hinterland tribes and get support of tribal elders from this region were mostly successful and managed to reach stability throughout their reign (Zahlan, 1978). It is for this reason that during the last century massive investments were channeled into Al-Ayn, modernizing the city and making it into a booming center. The Dhawahir tribe controlled this region in the past and continues to have strong positions there. Similarly, the Mazariah and Awamir tribes have essential authority in emirate's eastern parts. Also, Mohammed and the Bani Fatima are strongly linked to Al-Ayn's influential Bani Qitab tribe because of their blood relationship (Davidson, 2006).

Given the massive revenues from oil and gas industries, it is not surprising that the UAE is one of the largest SWF-sponsoring countries. Especially in Abu Dhabi, four different SWFs exist with the objective to channel excessive oil revenues into long-term investments, both at home and overseas. These funds play a key role in Abu Dhabi's economic development by buffering the domestic economy against the risk of volatile oil prices and diversifying the economy through investments in important non-hydrocarbon industries.

Today, the combined assets of Abu Dhabi's SWFs amount to about $1 trillion which represents roughly 16% of the world's total SWF assets of approximately $6,5 trillion. The largest and most prominent of Abu Dhabi's SWFs, the Abu Dhabi Investment Authority (ADIA), was created in 1976 by the first president of the UAE. It is now the second largest SWF in the world with $773 billion assets under management.[6]   The most recent fund and the second largest sovereign wealth manager of Abu Dhabi, the Abu Dhabi Investment Council (ADICO), was established in 2006 and is managing some $90 billion in assets (Sovereign Wealth Center, 2014a). The International Petroleum Investment Company (IPIC) was initially established in 1984 as a joint venture between ADIA and the Abu Dhabi National Oil Company and is now responsible for all foreign investments in the oil and chemicals sectors. Its assets under management amount to some $68,4 billion (Sovereign Wealth Fund Institute, 2014). Abu Dhabi's apparently most dynamic and fastest-growing SWF, Mubadala was created in 2002 and currently holds $60,9 billion assets under management. Mubadala aims to facilitate the

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[6]Following the Government Pension Fund-Global of Norway with its $838 billion assets under management (Sovereign Wealth Fund Institute, 2014).

growth and diversification of Abu Dhabi's economy. Its mandate is not limited geographically or by sectors and it invests in different domestic firms and sectors (including even energy and oil which is in the mandate of IPIC) as well as overseas (Sovereign Wealth Fund Institute, 2014).

A brief glance at the structure of the SWF's boards of directors allows to identify the ruling family members who participate in the management of these funds and to show how the power distribution and the society's tribal structure is reflected in the management of the emirate's SWFs.[7] A few aspects are worth mentioning. First of all, the Al Nahyan family retains control over all SWFs in Abu Dhabi. Second, within the Al Nahyan family Shaikh Khalifa bin Zayed Al Nahyan controls the management of ADIA and ADICO. His half brother and the Crown Prince of Abu Dhabi Mohammed has full control over Mudabala's investment strategy and Mansour dominates IPIC. The latter are the most influential brothers from Bani Fatima. Third, most positions in all SWFs' boards of directors are shared by Al Nahyans' powerful tribal allies such as al-Bu Mahair, Qubaisat, Sudan, Hawamil sections of Bani Yas as well as Dhawahir and Awamir tribes.

There has always been a conflict of interests inside the ruling family and between the power groups in Abu Dhabi. Over centuries different rulers tried to balance the power distribution. Albeit this brief description neither claims to be a comprehensive analysis of the power distribution in Abu Dhabi, nor offers a complete and exhaustive picture of the Al Nahyan family, it still provides several insights into the links inside the ruling family and relationships among influential power groups in the emirate.[8] This allows to analyze the role of SWFs in the contemporary "ruling bargain" as valuable economic instruments used in the context of the ruler's strategy to buy the powerful claimants' support and recompense potential rivals. This has always been a time-proven method and a well-working practice in political reality. Outside the economic dimension, there have been sev-

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[7]One can find this information on the particular SWF's web-pages. Compare, for instance, Abu Dhabi Investment Authority (2014), Abu Dhabi Investment Council (2014), International Petroleum Investment Company (2014) and Mubadala Development Company PJSC (2014).

[8]Another important dimension in the analysis of power sources in Abu Dhabi which is not considered here, is Al Nahyan's connection to Dubai's ruling family. For more details on this and on further issues see Anthony (1999) and Davidson (2006).

eral episodes in the Abu Dhabi politics which could be explained with the ruler's attempt to offer consolation prizes to potential opponents preventing them from posing serious political threat. For example, most observers agree that Khalifa's decision to deviate from the habit of primogeniture and declare Mohammed bin Zayed as his new Crown Prince despite having two sons and additionally promoting him from deputy chair to chair of Abu Dhabi Executive Council was driven by the desire to pacify Mohammed's and his Bani Fatima allies' ambitions (Davidson, 2006).

I argue that the creation of multiple SWFs and distinct investment entities provides the ruler with a new degree of freedom within the economic dimension. This enables him to perform an even more precise adjustment of different interests within and outside the ruling family. SWFs serve as appropriate instruments for this purpose because of their highly institutionalized and long-term oriented nature that makes the ruler's promises of resource transfers more credible. Pistor and Hatton (2011) discuss this idea and show that SWFs could be used as tools to maximize the autonomy of the ruler both against potential external and domestic rivals. They consider the possibility that placing different members of the royal family into boards of directors of distinct SWFs could be seen as a way to reward these members for their loyalty.

2.3 The Model

In this section, I construct a simple model which formalizes the ideas mentioned above. It illustrates how, in societies dominated by a politically powerful elite, a SWF can be used by the ruler to link the elite's interests to the regime's existence and to maintain control over the economy. Under certain circumstances, the ruler will be able to gain the elite's support by the use of a SWF and to overcome the danger of possible coups d'état. The aim of the model is to generate new results on the creation and use of SWFs as tools for maximizing political power of the autocrat and the ruling class.

2.3.1 The Framework

Consider a simple economy with 2 periods inhabited by a set of identical *non-elite citizens* (NE) with mass normalized to unity, a *ruler* (R) and a *non-ruling elite* (E) consisting of one member.[9] Both the ruler and the elite are not productive. The output of non-elite and hence, the total output of the economy y_t in period $t = 1, 2$ is given as follows

$$y_t = \int_j y(g_t, e_t{}^j), \tag{2.1}$$

where g_t is the stock of public capital (infrastructure) and $e_t{}^j$ is the effort (investment) of each citizen j. Since the model is constructed to focus on the problem of the ruler's investment in the domestic economy, the simplest technology is assumed which allows to analyze this problem. I assume that production depends linearly on public capital and that non-elite citizens exert effort inelastically (normalizing the level of effort to one so that $e_t{}^j = 1$ for each j). As a consequence,

$$y_t = Ag_t, \tag{2.2}$$

where A is a technology parameter.[10]

Infrastructure in the first period g_1 is exogenously inherited from the past and normalized to zero so that no output can be produced in the first period. However, g_2 is determined by public investment i made by the ruler in the first period. Thus, the level of infrastructure goods in the second period is given by

$$g_2 = i. \tag{2.3}$$

This formulation captures the idea that some level of state investment in infrastructure (for example, building schools or roads) is needed for citizens to produce. The infrastructure is to some degree complementary to private investments by citizens. Hence, the lack of public capital in developing countries and the politi-

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[9]With this specification, the relative size of different groups and distributional issues within the elite do not play any role.

[10]Certainly, this is a very reduced form of a production function, but it simplifies the analysis of the problem without any loss of generality. By using a usual production function, for example of Cobb-Douglas type, and allowing the non-elite to choose effort as a reaction to the ruler's behavior, one would get the same results.

cians' inability or reluctance to invest explain the prevailing low levels of output in these countries to some extent.

In each period, there is an exogenous flow of natural resource rent R which accrues to the government and can be invested or consumed by the ruler. Furthermore, the ruler obtains the fraction $\gamma \in (0, 1)$ of the output produced by non-elite citizens. This reduced-form formulation of taxation implies the existence of some form of a Laffer-curve and a revenue maximizing tax rate for the ruler. I do not concentrate on details of taxation, but rather assume that the parameter γ captures the benefits of being in power because the tax revenue is not redistributed but completely consumed by the ruler.

Given that some fraction of the income is taxed away, non-elite citizens will always have an incentive to overthrow the ruler and install democracy. I assume that they are not able to start a revolt and overthrow the ruler as long as the elite supports him. This reflects the idea that in elite-dominated societies the ruler very often needs the elite's support in order to survive. In other words, the elite has considerable political power and may replace the ruler together with non-elite citizens. This places a constraint on the ruler's actions. Once initiated by the elite, the coup d'état succeeds automatically and the ruler is replaced. However, ruler replacement causes political instability and may lead to a switch of power between elite and non-elite. Hence, the result of a coup is uncertain. With probability $\pi \in (0, 1)$ the elite manages to become a new ruler and with probability $(1 - \pi)$ democracy is installed. Here, the parameter π captures the relative strength of the elite compared to the group of non-elite citizens. This probability is common knowledge.

Furthermore, the ruler has an option to create a SWF and let the elite participate in the management of this fund. In the previous section, the example of Abu Dhabi's SWFs where royal family members are heavily represented within boards of directors and retain control over the management of these funds was discussed. The members of the elite obtain benefits from participating in the management of a SWF in different forms. These benefits may come from the possibility of investing in areas of the elite's interest or from the autonomy to pursue their own idea of developing the domestic economy. In the model it is assumed however, that the elite shares the benefits from the SWF with the ruler

so that their benefits are given by

$$B^E(s) = B^R(s) = \frac{s}{2}, \tag{2.4}$$

where s is the size of the SWF and the gross return of the fund is normalized to 1.

After the threat of a coup disappears in the second period, the ruler may decide to withdraw funds from the SWF. Taking into account the fact that SWFs usually have a very long-term investment horizon, I assume that the withdrawal is costly after investments have been made so that the ruler only receives $(1 - c)s$. In fact, storing resource revenues in form of a SWF could be costly for the ruler in case of early withdrawal. Setting up a SWF requires a certain level of institutionalization. The domestic legal system must be adapted for creating a fund. Rules of funding and withdrawal should be established, different domestic actors (for example, ministries and central banks) and international institutions (IMF, World Bank, etc.) have to be incorporated into this process. Moreover, SWFs and their foreign investments attract international attention. Since early withdrawal of funds from a SWF would mostly require changes in existing rules or disinvestment from existing projects, it will not only imply economic and transaction costs but also additional reputational costs for both the sponsoring country and the ruler. However, for reasons of simplicity the cost variable c is assumed to be unknown in period 1 and is only observed in period 2 so that

$$c = \begin{cases} 0, & \text{with probability } p, \\ 1, & \text{with probability } (1-p). \end{cases} \tag{2.5}$$

Given that the non-elite has no benefits from a SWF, they will withdraw all funds once they are in power, independently of the costs. Thus in the case of a coup, the elite will lose its benefits from the SWF if the non-elite comes into power. In contrast, the ruler will withdraw funds only if the costs of doing so are not too high, i.e. with probability p. This indicates that letting the elite participate in the management of the SWF links its interests to the regime's existence and serves as a tool for the ruler to keep the elite on his side and overcome the

danger of a coup.

The timing of events in the model is as follows:

- The economy starts in period 1 with $g_1 = 0$ and with the revenue from natural resources R.

- The ruler chooses the amount to invest in next period's infrastructure i and whether to set up a SWF s.

- At the beginning of the second period, the elite decides whether to stage a coup d'état. $\sigma = 1$ denotes that the elite has started the coup and $\sigma = 0$ otherwise.

- The coup takes place if $\sigma = 1$. With probability $(1 - \pi)$ the non-elite comes into power and with probability π the elite becomes the new ruler.

- The cost c is observed and the group in power decides whether to withdraw funds from the SWF.

- The second period resource revenue R occurs.

- Non-elite citizens exert effort, second period's output is produced and consumption takes place.

There are details embedded in the game's structure that are worth mentioning. First, the ruler is able to remain in office and extract rents if he has the support of the elite. This reflects the idea that in weakly-institutionalized developing countries the ruler who ensures the support of the existing elite has substantial political power and cannot be removed from office by non-elite citizens only. However, the position of the ruler is weak in the sense that support of the elite is crucial for the survival of the regime. In the example of Abu Dhabi mentioned above, we have seen that different members of the ruling family or elite control political, economic and military institutions and thus, their support is very important for the ruler. The same idea underlies the assumption of the model that the ruler has no access to repression instruments and that he is replaced without any explicit cost if the elite's backing is lost (Acemoglu et al., 2004). Second, the

non-elite always tries to overthrow the ruler. This is a simplifying assumption which allows to focus on the analysis of the SWF's role as an appropriate instrument for attracting the elite's interests (Padró i Miquel, 2007). The fact that the ruler has benefits from the SWF combined with possible costs of withdrawal makes SWFs acting as conditional commitment tools which link the elite's benefits to the existence of the regime. Third, succession always implies uncertainty and political instability. When institutions are weak and the process of replacing the ruler is realized via coups or revolutions and not via well-established political institutions, the result of this transition lies beyond the control of the elite.

2.3.2 Analysis

The policy in equilibrium will be derived by backward induction. Note that, after the cost c is observed, the withdrawal decision depends on the identity of the ruler. Once in power, the non-elite will withdraw all funds from the SWF and the incumbent or a new ruler from the elite will withdraw only if $c = 0$.

Now, let us consider the elite's decision to initiate a coup d'état. If the elite starts a coup, it receives the following expected pay-off

$$\pi \left(R + \gamma y_2 + s \right). \tag{2.6}$$

This is the second period's expected revenue for the case that the elite-agent becomes a ruler. In this case, he receives the resource rent, the tax revenue and all benefits from the SWF independently from the realization of c. If the non-elite comes into power, the elite is excluded from all benefits. However, if the elite does not start a revolt, it obtains the benefits from the SWF given by (2.4) with probability $(1 - p)$. Comparing these two expected benefits and rearranging, one can see that the elite initiates a coup if and only if

$$R + \gamma A i > \left[\frac{1 - p}{2\pi} - 1 \right] s. \tag{2.7}$$

Note that higher investment increases the likelihood of a coup as it raises output and makes the office more attractive for the elite. In contrast, the size of the SWF has two opposite effects on the likelihood of the coup. First, it increases the

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opportunity cost for the elite in the case that it fails to become the ruler which makes the coup less likely. Second, it increases the expected benefit of the elite as a ruler and raises hereby the likelihood of the coup.

The ruler's problem is to maximize the expected pay-off with respect to infrastructure investment i and the size of the SWF s.

$$\max_{i,s} \ R - i - s + (1 - \sigma) \left[R + \gamma A i + ps + (1-p)\frac{s}{2} \right], \tag{2.8}$$

for σ as an indicator function

$$\sigma = \begin{cases} 1, & \text{if (2.7) holds,} \\ 0, & \text{if (2.7) does not hold,} \end{cases} \tag{2.9}$$

and subject to

$$R \geq i + s. \tag{2.10}$$

The first three terms in the objective function represent the ruler's first period revenue after investing in infrastructure and in the SWF. The second period's expected revenues depend on whether a coup takes place, described by the indicator function σ, and whether the funds are withdrawn from the SWF. The ruler will share the benefits from the SWF with the elite if $c = 1$, but withdraw and consume all funds otherwise. There is no borrowing in the model, hence the budget constraint (2.10) applies.[11]

In order to describe the ruler's decision, note that one unit of resources invested in infrastructure in the first period yields γA units to the ruler if there is no coup ($\sigma = 0$) and nothing if a coup is expected ($\sigma = 1$). Investing in a SWF is worthwhile from the ruler's point of view only because it affects the likelihood of a coup.

Assumption 1 $\gamma A > 1$.

This parametric assumption describes two important features of the economy. First of all, the marginal product of public investment is sufficiently high, and

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[11]Allowing for government debt would not change the results of the model qualitatively as long as one assumes that there are increasing costs of debt.

second, the ruler has enough power to tax away substantial fraction of domestic output. At least one of these features is always convenient for most of the SWF-sponsor developing countries which very often lack investment in infrastructure and/or are characterized by weak institutions and a powerful ruler. The assumption implies that the ruler would like to invest all resource rents available in the first period in domestic infrastructure and not in assets overseas via a SWF if there was no threat of coup. However, it should be noted that under this assumption the ruler will always prefer to prevent the coup d'état because it simply results in higher present revenues. And the fact that the ruler's investment decision affects the likelihood of a coup makes things more interesting.

Consider the ruler's decision problem in detail. There are two possible cases with respect to a coup. Either condition (2.7) does not hold if there is no investment in infrastructure and all first period resource rents are channeled into the SWF, or it holds.

The first case represents, a more interesting situation and is described by the following condition

$$4\pi < (1 - p). \tag{2.11}$$

Condition (2.11) represents a restriction on the relative magnitude of π and p. Both the probability of the elite winning the coup against the non-elite and the probability of funds being withdrawn from the SWF are required to be sufficiently small. First, there should be at least some uncertainty about the result of the coup from the elite's point of view, otherwise the expected pay-off from a coup will be so large that there will be no possibility for the ruler to prevent the coup. Second, it must be sufficiently difficult for the ruler to withdraw funds from an existing SWF in order to make a commitment through SWFs work properly. If this condition holds, there is a threat of coup even if the ruler does not invest in the domestic economy. Figure 2.1 illustrates this case. The left part of the figure depicts the left hand side of condition (2.7) depending on investment i (solid line). The right part shows the right hand side of this condition depending on the size of the SWF s (dashed line). As one can read from the x-axis, the ruler's budget constraint from the first period should hold.

In this case, the ruler has three possible strategies. First, if all revenues of
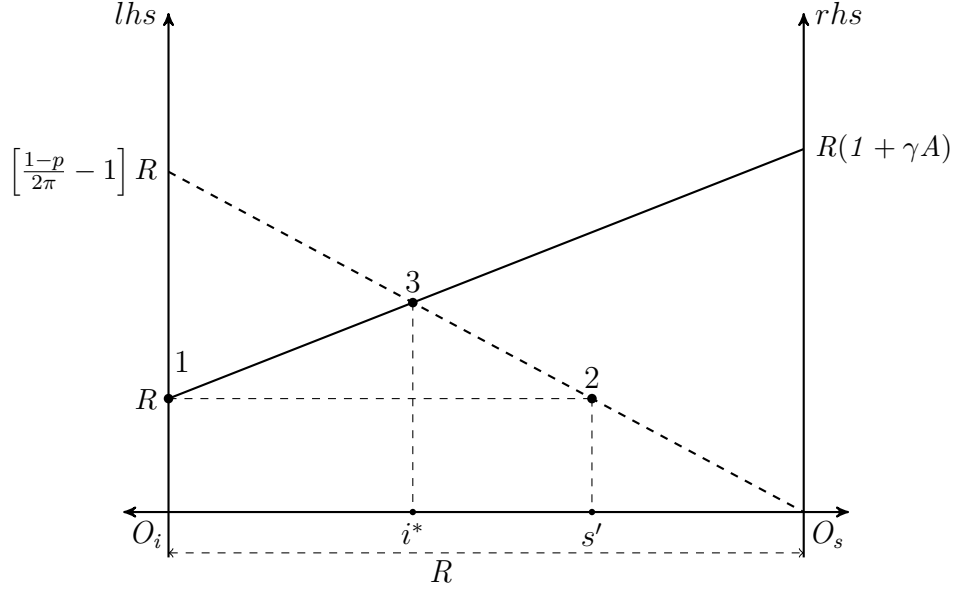
Figure 2.1: Analyzing condition (2.7) for $4\pi < (1-p)$.

period 1 are consumed (point 1), there will be a coup. The ruler's expected total revenue (ER) for this case is given by

$$ER_1 = R. \tag{2.12}$$

Second, in order to prevent the coup, the ruler could set up a SWF s' (point 2) so that

$$s' = \frac{2\pi}{1-p-2\pi}R. \tag{2.13}$$

The ruler's expected total revenue for this strategy is given by

$$ER_2 = 2R - \frac{1-p}{2}s'. \tag{2.14}$$

Comparing both expressions for the expected total revenue, one can see that it would be worthwhile for the ruler to set up a SWF if

$$\frac{2\pi}{1-\pi} < 1-p. \tag{2.15}$$

Condition (2.11) implies that this inequality always holds so that the ruler is

better off by setting up a SWF.

As a third possibility, the ruler could increase the investment up to level i^* (point 3). Here a SWF of size s^* is needed to compensate the effect of higher investment on the risk of a coup and prevent it (such that the budget constraint holds $s^* = R - i^*$). Appendix B.1 analyzes if and under which conditions this strategy is worthwhile for the ruler. It is shown that the ruler is better off by investing in domestic infrastructure and increasing the size of the SWF, respectively if

$$\gamma A > \frac{1 - p - 2\pi}{1 - p - 2\pi - \pi(1 - p)}. \tag{2.16}$$

The ruler's expected total revenue in this case is given by

$$ER_3 = R + \gamma A(R - s^*) + \frac{1 + p}{2} s^*, \tag{2.17}$$

with

$$s^* = \frac{2\pi(1 + \gamma A)}{1 - p + 2\pi(\gamma A - 1)} R. \tag{2.18}$$

Summarizing this analysis leads to the following proposition.

Proposition 1 *If condition (2.11) holds, the ruler's optimal policy entails that there will be no coup. Furthermore,*

- *if condition (2.16) does not hold, $s = s'$ and $i = 0$ where s' is given by (2.13);*

- *if condition (2.16) holds, $s = s^*$ and $i = R - s^*$ where s^* is given by (2.18).*

Note that the ruler will prevent the coup whenever possible (i.e., if condition (2.11) holds). Nevertheless, the ruler is able to prevent the coup only if he has a credible instrument to promise resource transfers to the elite (i.e., small p) and if the coup is risky enough from the elite's point of view (i.e., small π). In this case, there are two possible scenarios. First, a SWF is established without any investment in infrastructure. Second, resource rents are partly invested in the domestic economy and partly used to set up a SWF. Which scenario is optimal for the ruler depends on the parameters. By examining condition (2.16), one

can prove that the chances of potential public investment in the domestic infrastructure decrease both with p and π.[12] The intuition is the following: The more risk a coup caries from the elite's point of view (the lower π), the smaller is the size of the SWF needed to restrain the elite from initiating a coup. Note that in general the SWF represents a loss for the ruler and lowers its expected pay-off. Consequently, a lower π increases the attractiveness of the public investment for the ruler. A similar logic applies for the probability of withdrawal p. Higher p reduces the credibility of the resource transfer to the elite via a SWF so that a larger fund is required to prevent the coup. This reduces the ruler's benefits and his willingness to invest.

Note that whether condition (2.16) holds also depends on the ruler's benefits from investing in the domestic economy γA. Recall that γ describes the ruler's ability to tax domestic agents and captures his benefits of being in power, whereas A is the technology parameter in the production function of the domestic agents' output. In general, the ruler's willingness to invest increases with his benefits from domestic output during the incumbency period.

By differentiating expressions for s' (2.13) and s^* (2.18) with respect to R, p and π, one can easily show that the size of the SWF depends positively on the resource rent R, the probability of withdrawal p and the probability of the elite's success in the coup π. An increase in the resource rent R makes the coup more attractive for the elite so that the ruler is forced to establish a larger SWF to compensate for this effect. The credibility of the SWF decreases with the probability of withdrawal p. This implies that the elite's expected pay-off from the SWF will be high enough only if the size of the SWF is large enough. The probability π also affects the elite's expected pay-off from a coup positively so that only a larger SWF can restrain the elite from staging a coup.

The effect of the ruler's benefits from investing in the domestic economy γA on the size of the SWF in optimum is particularly interesting. First, the ruler tends to invest more if γA is higher. Hence, given his first period budget constraint, the SWF will be smaller. Second, higher γA (with a given level of investment) makes the coup more attractive for the elite and thus, a larger SWF is required to prevent the coup. One can show that the latter effect dominates so that the

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[12] For details see Appendix B.1.

overall effect of γA on the size of the SWF is positive in optimum.

In the second case, condition (2.11) does not hold. This represents a situation where the elite's expected pay-off from the coup is so high that the ruler cannot prevent it. Figure 2.2 illustrates this case.
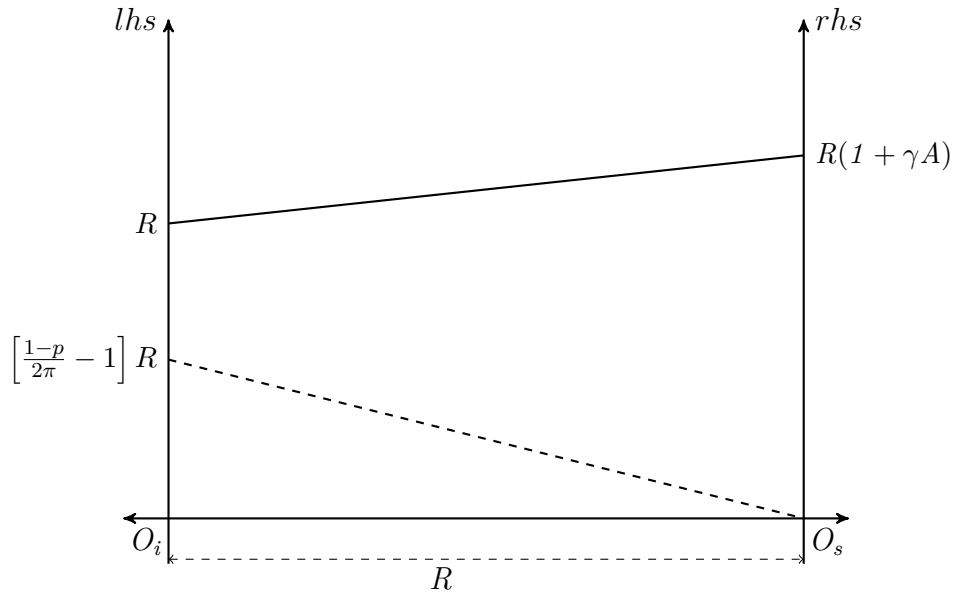
Figure 2.2: Analyzing condition (2.7) for $4\pi \geq (1 - p)$.

Recall that condition (2.11) does not hold when p and π are both sufficiently high. A high p means that the ruler is going to withdraw funds from the SWF if he stays in power. This makes the transfer of resource rents to the elite via a SWF not credible. Hence, the elite will initiate a coup. A high π means that there is only a small risk for the elite to start a coup because the probability that the non-elite will manage to come into power is small. Thus, if condition (2.11) does not hold, the elite will replace the ruler independently of his investment decision. The following proposition summarizes the analysis.

Proposition 2 *If condition (2.11) does not hold, the ruler does not invest in the domestic infrastructure at all and the elite always initiates a coup d'état and replaces the ruler.*

2.3.3 Discussion and Some Evidence

The model developed in the chapter is highly stylized but gives an additional explanation why it might be in the interest of the ruler to create a SWF and reflects the political reality in different countries. The main message of the model is summarized with condition (2.11) and proposition (1). The authoritarian ruler will be able to pacify the elite's political ambitions and buy its support using a SWF as a commitment mechanism for future redistribution if the elite is constrained by the threat of political instability from coups d'état. Two factors matter for this result. First, the early withdrawal from the SWF has to be costly for the ruler. Given the fact that SWFs are highly institutionalized and mostly make long-term investments internationally, it implies not only additional economic, but also reputational costs of withdrawal compared to gold, private bank accounts and other possibilities to store wealth. Second, a coup d'état should imply high political uncertainty for the elite. This happens in societies with divided multilayer elites and different influential groups. Below, I will briefly discuss a number of cases to illustrate the ideas developed in this chapter.

As it has been shown in section 2.2, the political space in Abu Dhabi is dominated by different influential actors and power groups. Along with the ruler, his most powerful half brothers from Bani Fatima play a key role in the country's politics. Inside the Bani Yas tribe from which the Al Nahyan family originates, tribal groups Sudan, Qubaisat, Hawamil and al-Bu Mahair have enough political power to influence the ruler's decisions. Furthermore, the tribal groups from the emirate's eastern provinces, Dhawahir and Awamir, are important allies of Al Nahyan rulers. Having the loyalty and the support of all these elite groups is crucial for the ruler. Although the model considers only one elite actor, the message is clear. The ruler is able to gain the elite's support only if he has a credible commitment instrument and if the elite is constrained by the threat of political instability in the case of violent succession. In Abu Dhabi, the presence of different almost equally influential actors makes the outcome of a coup d'état incalculable and gives the ruler the possibility to divide the elite by delegating supervisory positions at ministries and SWFs. The most powerful elite groups are not only incorporated into the political decision-making of Abu Dhabi, but also

dominate the emirate's economy. Especially, the SWFs are controlled by members of the aforementioned groups. SWFs help the ruler to maintain control over the elite because of their specific features. These funds are highly institutionalized and have a very long-term investment horizon which allows the ruler to make a commitment and to bind his future actions. By placing the elite members on the boards of directors of SWFs and giving them decision-making power, the ruler is able to pacify the political ambitions of his potential opponents.

Despite the echo of the Arab Spring which recently reached Kuwait, this surprisingly wealthy state is characterized with incredible political stability. The Al Sabah family has successfully and peacefully ruled the country since the mid-18th century. The Al Sabah rulers have survived the Ottoman and British Empires and managed to pacify their tribal allies' and politically influential merchants' interests to ensure royal autonomy. After discovering oil in the 1940s, the "ruling bargain" mainly switched towards allocating oil rents (Crystal, 1995). The creation of the Kuwait Investment Board (KIB) in 1953, which was replaced by the Kuwait Investment Company (KIC) after the independence in 1961, played a central role in this "ruling bargain".[13] SWFs helped to manage excessive oil revenues and redirect a portion of oil rents into loyalty-building public investments to buy the support of the citizens and the merchant elite. Today, the Kuwait Investment Authority (KIA) manages the Future Generations Fund and the General Revenue Fund with $548 billion total assets under management. In contrast to SWFs of Abu Dhabi, the KIA's board of directors is not characterized by a significant representation of the ruling family. However, the fund's institutional structure is designed to support the Al Sabah family in power. Moreover, KIA invested historically in businesses of prominent merchant families and presently still plays a pivotal role in the domestic economy (Pistor and Hatton, 2011). In the aftermath of the financial crisis, KIA started to invest heavily in the domestic private sector to support the local stock market. It also helped the government to bail out the domestic financial and industrial sectors (Sender, 2009). Pistor and Hatton (2011) interpret these investments as acts of providing protection against political unrest by pacifying the owners of domestic companies which are mainly held by

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[13] Historical details on the creation and development of Kuwait's SWFs can be found in Bazoobandi (2013).

members of influential merchant elite or tribal leaders. In summary, the existence of a SWF in Kuwait and its history of investments and strategy indicate that it has been used successfully by the ruling family to increase its autonomy against political opponents such as influential tribal groups or the merchant elite.

Historical developments in the post-Soviet period of oil- and gas-rich Kazakhstan also represent an interesting illustration of the "ruling bargain" between the president and the multilayer political elite.[14] The relative political stability of Kazakhstan is mainly based on president Nazarbayev's ability to create a balance of interests among different elite groups by not giving them enough power to increase their political and economic influence. After independence, former soviet, party-executive nomenclature and related groups formed Kazakhstan's political elite and played an important role in the redistribution of state property. During the first decade of independence, an influential class of the business elite arose which posed a serious threat to existing power structures (Murphy, 2006). However, the main dimension which defines today's political elite of Kazakhstan is the relationship to the president. Satpaev (2007) divides Kazakhstan's elite into the president's *inner* and *outer circles*. The inner circle mainly consists of the president's family and of individuals with access to president Nazarbayev, including some powerful politicians who have been holding different positions in the government as well as influential bankers and investors. The outer circle consists of the national business elite and regional elite groups. As suggested by the model in this chapter, SWFs are of particular importance for the "ruling bargain" in Kazakhstan. The eldest fund is the Kazakhstan National Fund, a stabilization and savings fund which was created in 2000 and manages about $77 billion in assets. By far the most prominent SWF of Kazakhstan is Samruk-Kazyna JSC which was created in 2008 by merging two existing joint-stock companies – Samruk and Kazyna – and has approximately $77.5 billion assets under management.[15] The most recent SWF, the National Investment Corporation, was set up in 2012 and

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[14]More information on the political situation and on the formation as well as the structure of post-independence Kazakhstan's elites can be found in Murphy (2006), Satpaev (2007) and Ostrowski (2010).

[15]Samruk included the five large state monopolies, KazakhTelecom, KTZh, KazMunayGaz, KazPost and KeGoc. Kazyna JSC was holding regional Social-Entrepreneurship Companies focused on economic development (Kemme, 2012).

manages \$2 billion in assets. Besides the fact that the most influential positions in all of the funds' boards of directors and management boards are held by well-connected relatives and different elite members, their investment strategies and institutional structures support the current "ruling bargain". During the 2008-2009 financial crisis, Samruk-Kazyna helped to bail out some insolvent banks and provided loans to other state companies which are often held by members of the business elite. Moreover, Kazakh SWFs have faced criticism over huge bonus payments to top managers and important staff appointments based on kinship and political loyalty (Khamidov, 2014). To sum up, Kazakhstan's SWFs do not only stabilize the domestic economy and manage savings for future generations, but also play the role of the ruling family's bank. They often fund Nazarbayev's loyalty-building pet-projects and initiatives to support his power within different circles of the multilevel elite.

2.4 Conclusion

The existing economic literature offers different theories explaining why resource-rich countries are setting up sovereign wealth management entities. In general, SWFs are either used for intergenerational saving purposes or to reduce different types of macroeconomic risks, such as resource price volatility, currency crises or risks connected with an ageing population. There is even empirical evidence that creating a SWF can be a part of an identity building process and is based on simple imitation and emulation behavior (Chwieroth, 2010). However, the fact that SWFs are government-owned and fully government-controlled investment entities has provoked wide public discussions about their investment purposes and motivation. Nevertheless, political economic aspects of this important class of investors lack theoretical foundations.

A short glance at the list of SWF-sponsoring countries reveals two puzzling facts. First, there are several developing countries holding SWFs which should rather invest resource revenues in the domestic economy instead of parking these overseas.[16] Second, many countries sponsor more than one fund sometimes even

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[16]Venables (2010), van der Ploeg and Venables (2011a,b) analyze this problem in several papers and show that developing countries must weigh the benefits of domestic public invest-

with similar investment mandates. Given that most SWF sponsors are countries without electoral democracy, the question arises if there are political motives of setting up SWFs in these countries. Some observers characterize SWFs as institutions maximizing the autonomy of sponsoring country's ruling elites or the country's sovereignty relative to other powerful states.[17] Taking into account that the privileged position of a ruler depends, among other things, on the domestic stability, the chapter concentrates on societies dominated by a powerful elite and models incentives of the ruler to set up a SWF. The model shows that in such societies, the ruler can use a SWF as an instrument to link the elite's interests to the regime's existence and to maintain control over the economy. Under certain circumstances, the ruler will be able to gain the elite's support by the use of a SWF and overcome the danger of possible coups d'état. SWFs are appropriate instruments for such "ruling bargain" because they are long-term oriented and strongly institutionalized investment vehicles so that the ruler can credibly promise to transfer some part of resource rents to the elite via a SWF.

From the ruler's point of view, another advantage of creating a SWF is that wealth remains partly under his control and does not fall into citizens' hands. Several funds can be used to buy the support of potential opponents, to divide the existing elite and link their interests to the reign of the ruler as well as to finance different investment projects which stabilize the domestic political situation in general. Additionally, SWFs may protect the country against different economic crises which destabilize the domestic political situation and jeopardize the ruler's position.

The understanding of individual countries' motivation to set up SWFs is crucial to evaluate the role of these institutional investors in the global economy. Modeling SWFs, one should take into account political aspects of the decision to establish such a fund in order to be able to understand the fund's behavior both in the domestic and international area.

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ment against the benefits of a SWF. It should be a priority for these countries to use resource rents to promote growth and increase consumption (Collier and Venables, 2008). Although, Sovereign Development Funds exist which invest domestically, it is not clear how their investment priorities and objectives are defined and whether this is the best strategy for a given country.

[17]For details compare Pistor and Hatton (2011), Dixon and Monk (2012) and Monk (2009).

Chapter 3

Delegation in Sovereign Wealth Funds[†]

3.1 Introduction

SWFs are not a new phenomenon in the global financial system, even though this term has been introduced only recently (Rozanov, 2005). However, global imbalances, emerging countries' current account surpluses and the US twin deficits as well as the financial turmoil of recent years supported varying beliefs and understandings of SWFs.[1] The change in perception of these government-owned investment vehicles, which are managed separately from official reserves, and the adjustment of the public opinion about this phenomenon is remarkable. While not so long ago SWFs were seen as one of the vicious instruments of state-owned capitalism, in times of financial crisis and global depression they became "white knights" for cash-strapped companies or countries and attractive buyers of last resort (Couturier et al., 2009). Presently, SWFs are interpreted as a symbol of a shift in global power. This again raises questions about the possible abuse of markets and fears that SWFs will be used for political and strategic purposes

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[†]This chapter is based on Grigoryan (2015) with permission of Springer.

[1]The IWG defines 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" (International Working Group on Sovereign Wealth Funds, 2008).

(Hassan, 2009). At the early stages, the most meaningful arguments for justification of these concerns were the lack of transparency and the opaque nature of most funds. As a result, fear and doubt materialized in protectionist actions against this important class of financial market participants and their investments.

Gilson and Milhaupt (2008) argue that SWFs have to give up their shareholder voting rights to avoid the influence of their strategic behavior on governance of firms they hold. Two prominent examples of the protectionist practice against SWFs' investments are the Dubai Ports World and Committee of Foreign Investment in the United States (CFIUS) controversies[2] and the failed bid for Unocal by the government controlled China National Offshore Oil Corporation (CNOOC) in 2005.

On the one hand, these incidents led to the establishment of institutions like IWG and to the attempt to develop some rules for both SWF hosting ("Santiago Principles") (International Working Group on Sovereign Wealth Funds, 2008) and investment-recipient countries (Organization for Economic Co-operation and Development, 2008a). On the other hand, they motivated concerns about the legitimacy of SWFs and their governance (Monk, 2009). Indices, like the Linaburg-Maduell Transparency Index (SWF Institute) or the Truman's scoreboard for SWFs (Truman, 2008), were developed to measure transparency and governance of SWFs. Both include the involvement of external managers as a point that delivers positive scores for a SWF and makes it less opaque. The academic literature emphasizes the outsourcing of the management of SWFs as a way to signal the commercial nature of their investments (Rozanov, 2009). The practice shows that more and more SWFs allocate some of their funds to external managers or pool resources with private funds.

According to Rozanov (2009), the outsourcing of SWFs' management and thus the compliance with the "Santiago Principles" increases transparency of a particular SWF and eliminates concerns about strategic behavior. In turn, this improves investment possibilities and results in higher returns. These logical implications seem to give an answer to the important question: Why do politicians give away some decision-making power and delegate policy tasks to an independent external manager?

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[2]For more information on the Dubai Ports World controversy see Zunes (2006).

I use a simple model to describe the incentives which underlie the politician's decision to delegate the management of a SWF. A simple cost-benefit analysis of the delegation from the office-holding politician's perspective forms the basis of the theoretical framework. I formalize the motives for delegation. The first is the increase of SWF's expected return due to the management outsourcing and improved portfolio diversification options. This represents the innovative building block of the model. The second is the possibility for the politician to make use of the prevailing status quo and depends on the quality of existing institutions. Additionally, I introduce two disciplining mechanisms for the politician under alternative management regimes – elections and separation of powers (Persson et al., 1997). The role of elections as a mechanism which controls the officeholder and helps achieve accountability of elected politicians is analyzed in theoretical works by Barro (1973), Ferejohn (1986) as well as Persson et al. (1997) and Berganza (2000). In models following the Barro-Ferejohn-tradition, politicians are identical and thus voters are ex post indifferent about which candidate to vote for. In this case, the reelection motive controls moral hazard on the side of the incumbent inducing him to act on behalf of voters' interests. Modeling policy tasks delegation combines components used by Eggertsson and Le Borgne (2007) and Alesina and Tabellini (2007). The delegation decision made by the politician trades-off the costs of losing decision-making power and having an incompetent manager against the benefits from transparency effects and the possibility to mitigate the threat of being replaced by forcing the manager to exert additional effort.

The idea of the chapter is also related to the study of Fedele and Mantovani (2008) discussing the use of delegation as an indirect mechanism to reduce information asymmetries. The authors model a moral hazard problem between a bank and a firm and show how delegating the hidden task to a third agent can act as a commitment to exert high effort and mitigate moral hazard. The fact that delegation reduces information asymmetry also plays a central role in the analysis presented in this chapter.

I find that the increase of SWF's investment possibilities as a consequence of management outsourcing and higher transparency improves expected output. Moreover, the conflict of interests between the politician and the manager with

agenda setting power disciplines both policy-makers and results in an equilibrium with higher expected output. However, the politician's delegation motivation is strongly linked to his competence level. Incumbents with lower competence are basically more prone to delegate the management of the SWF. Another interesting finding is that delegation occurs if existing political and economic institutions are extractive which allows the incumbent to get non-zero status quo rents in case of delegation. Higher private benefits from the political office and a higher discount factor deliver incentives for the politician to delegate the policy task in order to get a reelection chance even if he loses some decision-making freedom.

Thus, the chapter combines well-elaborated theoretical components with some aspects characterizing SWFs. This allows a suitable application of the policy task delegation theory to highly discussed SWFs. The intention of the analysis is to stimulate interest in the management outsourcing issues in SWFs and to deliver some formal arguments and explanatory statements that will facilitate further academic debate and provide policy decision-makers with helpful background.

The chapter is structured as follows. Section 3.2 presents the model. Section 3.3 describes the politician as a manager of a SWF and the output generated under this regime. Section 3.4 characterizes the output of a SWF produced with an external manager. Section 3.5 compares both regimes and derives the conditions under which delegation takes place. Section 3.6 concludes. The Appendix contains technical details.

3.2 The Model

Consider a simple economy with identical and infinitely living agents. The total output of the economy is defined as the result of the SWF run by an officeholder. The output y_t of the period t is given by (based on Persson et al. (1997))

$$y_t = \theta_t \left(e - r_t \right), \tag{3.1}$$

where θ_t describes the competence level or ability of an officeholder to manage the SWF in each period; e characterizes the stock of assets initially held by the SWF at the beginning of each period t; and r_t represents personal rents extracted

by the officeholder who manages the fund.

The parameter θ_t is a non-negative random variable which is serially un-correlated and identically distributed over time. I assume that θ_t is uniformly distributed over the interval $[0, a]$. The fact that the officeholder has different competence levels in different periods describes the reality of the modern financial world where the frequently changing environment defines how competent or good one is at the certain point of time. Each elected candidate observes his own ability but nobody else does.

The officeholder has a possibility to extract personal rents r_t by manipulating the investment policy of the SWF and investing in "pet" projects. Since investing in political "pet" projects is not based on output maximization of the SWF, it is a strategy that diverts SWF's resources. The levels of rents extracted in each period are publicly unobservable so that if the SWF performs badly, voters are not able to find out whether it is because of lack of manager's competence or his resource-diverting behavior. The expression for output (3.1) together with $y_t \geq 0$ implies that $r_t \leq e$. This is a sort of budget constraint limiting the maximum amount that can be diverted by the officeholder.

The stock of assets initially held by the SWF at the beginning of each period e together with the ability of the officeholder results in output.[3] In reality, investment funds can and do incur losses because of financial risks. There is always risk associated with different types of assets. In the model, the possibility of losses is captured by the parameter θ_t. The more competent the manager is, the better he manages risks and the less are losses. Given that the systematic risk which cannot be eliminated is the same for everyone, the difference in competence levels explains the difference in outputs. The fact that the minimum value of θ_t is assumed to equal zero implies that in the worst situation the entire stock of assets initially held by the SWF will be lost.

A large number of identical voters are interested in maximizing the sum of SWF's expected outputs

$$u_t(y) = E \sum_{i=t}^{\infty} \delta^{i-t} y_i, \tag{3.2}$$

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[3]A SWF run by the officeholder with an average competence level of $\theta_t = a/2$ who is not diverting any resources would produce an output of $y_t = ea/2$.

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where E is the expectation operator and $0 < \delta < 1$ is the discount factor.

The politician's expected utility at time t is denoted by v_t and depends on future personal rents extracted from being in office and on ego rents R which he receives after reelection

$$v_t(r) = E\left[r_t + \sum_{i=t+1}^{\infty} \delta^{i-t}\left(r_i + \Pi_i R\right)\right], \tag{3.3}$$

where $\Pi_i = 1$ if the incumbent is reelected for the period $i + 1$ and $\Pi_i = 0$ otherwise.

Both the politician and voters are risk neutral so that risk sharing problems do not arise.

The timing of the repeated two-stage game is as follows. At the first stage, the politician decides whether to delegate the management of a SWF to an external manager. At the second stage, two alternative subgames take place depending on the delegation decision. In the case of no delegation (*political management – PM*), the politician picks his level of personal rents. Observing the output, voters decide whether to reelect the politician. In the case of delegation (*external management – EM*), the manager makes an investment plan proposal and the politician can accept or reject it. Voters evaluate the resulting output and decide whether to reelect the politician. The game is solved backwards: Sections 3.3 and 3.4 analyze the two alternative subgames of the second stage and section 3.5 considers the politician's decision at the first stage.

3.3   Politician as the Manager of the SWF

Once the politician decides to manage the SWF by himself, the only relevant choice variable for each period, given his competence level that he observes, is r_t. At the beginning of period t, voters define the threshold level of output $\tilde{y}$ (determined below). I assume that voters are able to solve their coordination problem and the politician knows the reappointment rule.[4] The officeholder picks

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[4]In reality, voters could evaluate the success of the fund using some benchmarks and comparing the SWF to funds with similar portfolios. Of course, politicians who manage the fund know this and take this into account.

the period's level of personal rents r_t which in combination with his competence gives the SWF's output y_t. Elections are held at the end of each period. If the SWF managed by the politician produces at least the reference level of output, the politician is reelected for the next period. Otherwise voters randomly select a new politician from a pool of identical candidates. So the challengers are available to be elected but play no active role in order to compete against each other or against the incumbent.[5] Once reelected, the politician obtains an ego rent R with the possibility to choose r_{t+1} and to produce the output y_{t+1}.

3.3.1 Politician's Decision

In each period, the incumbent observes his own competence level θ_t and knows the required level of output $\tilde{y}$. The politician produces exactly the required level of output only if he realizes that θ_t is high enough. Otherwise, it is optimal for him to divert everything and be thrown out of office. In the case that the incumbent decides to produce $\tilde{y}$, he has to choose

$$\tilde{r}_t = e - \frac{\tilde{y}}{\theta_t}. \tag{3.4}$$

The incumbent selects $\tilde{r}_t$ if and only if his expected utility from this action is greater than the expected utility from diverting all and being thrown out of office

$$\tilde{r}_t + \delta \left(R + EV_t \right) > e, \tag{3.5}$$

where EV_t is the expected value of reelection at time t depending on what the incumbent can obtain in the future under different realizations of θ.

Combining (3.4) and (3.5) produces the threshold level of competence θ^* which divides the pool of possible incumbents into two groups. "Bad" incumbents with $\theta_t \leq \theta^*$ divert the maximum possible amount of resources and therefore are not reelected. There are also some "good" politicians with $\theta_t > \theta^*$ who have incentives to divert resources, but are still reelected because they are able to produce the

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[5]Here, I refer to the similar assumption made by Persson et al. (1997, p. 1171) in order to keep the modeling of elections as simple as possible. The elections merely discipline the incumbent, and the candidates provide an alternative to the officeholder.

required level of output. This critical level of ability is given by

$$\theta^* = \frac{\tilde{y}}{\delta\left(R + EV_t\right)}. \tag{3.6}$$

One can see that higher expected benefits from holding the office (i.e. R and EV_t) lead even less competent politicians to choose $\tilde{r}_t$ and to generate the required level of output. Nevertheless, higher required levels of output $\tilde{y}$ can be produced with more competent politicians which implies a higher θ^*.

3.3.2 Voters' Decision Rule

Now the decision rationales of voters are formalized. By choosing the critical value $\tilde{y}$, voters have an interesting decision to make. On the one hand, if the output threshold is too low, politicians with low competence are reelected. On the other hand, if the output threshold is too high, more types of politicians are encouraged to divert the maximum possible amount of resources. Therefore, voters set the required level of output $\tilde{y}$ so that their expected utility over all periods is maximized.

Proposition 3 *Voters implement the following decision rule. Reelect the politician if and only if $y_t \geq \tilde{y}$. If $\theta_t > \theta^*$, then $r_t = \tilde{r}_t$, $y_t = \tilde{y}$ and the politician is reelected. If $\theta_t \leq \theta^*$, then $r_t = e$, $y_t = 0$ and the politician is thrown out of office. The threshold levels $\tilde{y}$ and $\tilde{r}_t$ are given in equations (3.8) and (3.9), respectively.*

One can prove this by solving the voters' maximization problem

$$\max_{\tilde{y}} \ Prob\left(\theta_t > \theta^*\right) \sum_{i=t}^{\infty} \delta^{i-t} y_i. \tag{3.7}$$

Appendix C.1 contains the remaining details. For the special case of the uniform distribution $\theta^* = a/2$, the output threshold and the competence-depending rents are given by

$$\tilde{y} = a\delta\left(\frac{e + R + \delta R ln2}{2 - \delta\left(1 - ln2\right)}\right) \tag{3.8}$$

and

$$\tilde{r}_t(\theta_t) = e - \frac{a\delta}{\theta_t}\left(\frac{e + R + \delta R ln2}{2 - \delta\left(1 - ln2\right)}\right). \tag{3.9}$$

The voting rule described above makes it possible to optimally discipline the officeholder. The incumbent is disciplined by voters due to the fact that he faces an intertemporal trade-off: If he diverts too much today, he will be removed from office and will not have a possibility to extract rents tomorrow.

3.4   External Manager in the SWF

Now the output of the SWF is analyzed for the case when it is managed by a professional external manager. The engagement of an external manager increases transparency of the SWF in the eyes of the rest of the world and eliminates concerns about non-commercial or politically influenced behavior of the fund.[6] This has a positive impact on investment possibilities and portfolio diversification options of a particular SWF because it eliminates the protectionist resistance from the rest of the world and opens new investment markets (Rozanov, 2009).[7] This effect is modeled by describing the output of a SWF run by a professional external manager as

$$y_t = \theta_t^m \left(e^m - r_t - r_t^m \right), \tag{3.10}$$

where the parameter θ_t^m is the competence of the external manager who is now responsible for the daily investment operations of the SWF and r_t^m is the amount of resources diverted by the manager. The parameter $e^m \geq e$ captures the positive effect of delegation on the effectiveness of SWF-technology due to improved transparency of the SWF managed by an external manager.[8] Here, I assume that the manager is randomly picked from the pool of available agents in the economy so that his competence is drawn from the same distribution of θ as the politi-

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[6]For more information about transparency issues in general, compare the Linaburg-Maduell Transparency Index (SWF Institute) or the Truman's scoreboard for SWFs (Truman, 2008), especially the governance as well as transparency and accountability components.

[7]The "Constrained Foreign Investor Hypothesis" mentioned by Bortolotti et al. (2010) reflects a similar idea in the context of SWF's investment patterns and delivers empirical evidence that: *"relatively transparent funds [...] will be less constrained in their investment targets and might be able to generate positive long run returns from their investments."*

[8]At this point, one can think not only about involvement of an external manager but also about transparency improving events in general, for example compliance with the "Santiago Principles". This increases the average return on investment in the same manner as described in the model.

cian's competence. This allows to rule out systematic differences in competence between politicians and "technocrats".[9]

It is assumed that the manager is also able to extract personal rents by investing in his "pet" projects that probably do not comply with the SWF's objectives. The utility of a manager at time t is denoted by ω_t and is defined by personal rents extracted while being in office

$$\omega_t(r^m) = E \sum_{i=t}^{\infty} \delta^{i-t} r_i^m. \tag{3.11}$$

Furthermore, I analyze an institutional framework where the manager needs the approval of the politician to implement his investment strategy (Persson et al., 1997). The politician is still in charge of the general investment policy of the fund and has to decide whether the manager's investment plans comply with the SWF's broad objectives. This reflects the reality insofar that most SWFs are highly political and their objectives are often determined or at least influenced by politicians.

I assume that after hiring the manager, voters still do not observe his competence level but the politician can do so without any cost. Then, before the beginning of period t, both the manager and the politician separately and simultaneously announce the ability level θ_t^m. One can think of this announcement as a public debate or press conference where the politician and the manager present their vision of the SWF's performance or give their estimations of the investment environment and thereby indirectly signal the ability of the manager. Another explanation of this announcement could be the existence of some formal requirements on the manager's education, previous work experience etc. After the announcement, the sequence of events is the following: At the beginning of each period, the manager makes an investment plan proposal to the politician stating the amount of resources to be diverted by the politician and by the man-

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[9]In fact, the most competent individuals might be attracted by market activities, where remuneration is generally more sensitive to ability. This would imply that the population of politicians is characterized by a lower maximum level of ability than that of managers due to ex-ante self-selection. As it will become apparent in section 3.5, allowing for these differences in the model would increase the expected output under EM (equation (3.22)), but would not change the arguments for delegation (compare conditions (3.26) and (3.27)).

ager $\{r_t, r_t^m\}$. The politician must either accept or reject it and cannot make any amendments. If the politician accepts the proposal, the policy is realized. Otherwise, a status quo investment strategy is implemented where both decision-makers get predetermined rents

$$r_t = \alpha e^m, \tag{3.12}$$

$$r_t^m = \beta e^m, \tag{3.13}$$

with $\alpha + \beta \leq 1$, where α and β are parameters describing the diversion of resources under the status quo policy.[10] Note that the status quo rent given by expression (3.12) represents a kind of participation constraint for the politician. All proposals with lower rents for the politician will be rejected. In the subsequent discussion the nature of status quo and therefore the interpretation of these parameters will be linked to some institutional aspects of the country. I will assume for instance that in a country with extractive political and economic institutions, the politician is able to divert more resources with the status quo investment policy so that α is close to 1 (Acemoglu et al., 2002).

Depending on the implemented policy, the output in each period is generated. Finally, at the end of the period elections are held. Voters observe the output and whether the politician has accepted or rejected the proposal. Based on this information and on their expectations about the manager's competence, voters decide whether to reelect the politician. In the case that the politician is not reelected, the manager is removed from office as well, and the new politician decides who manages the SWF in the next period. The manager keeps the job if the politician is reelected.

The announcement of the manager's competence level plays an important role. The conflict of interests between both policy-makers forces the politician to make a true announcement. On the one hand, if the politician lied and announced $\bar{\theta}_t > \theta_t^m$, it would reduce his reelection chances because voters condition the reelection on output so that they would set a higher threshold level of output.

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[10]One can set $\alpha = 0$ and $\beta = 0$, assuming that the status quo policy is the one with no diversion of resources. This does not change the general line of argumentation.

On the other hand, announcing $\bar{\theta}_t < \theta_t^m$ would give the manager the possibility to propose an investment plan more favorable to himself which would allow him to divert more by fixing the politician on the status quo rent. Thus, the politician does not strictly benefit from lying.[11] Voters anticipate this and condition the threshold level of output $\bar{y}$ on the competence level announced by the politician. The announcement of the manager is considered as cheap talk.

Since voters know the competence level of the manager, they must let him divert the minimum amount $\tilde{r}^m$ (determined below) at which he still prefers to be reappointed and define the critical level of output as

$$\bar{y} = \theta^m(e^m - \alpha e^m - \tilde{r}^m). \tag{3.14}$$

Demanding an output higher than $\bar{y}$ would make the manager divert as much as possible before being replaced. Hence, one strategy of the manager could be to propose $\{\alpha e^m, \tilde{r}^m\}$. This investment strategy would be accepted by the politician and would lead to reelection. The politician would reject all proposals with $r_t = \alpha e^m$ and $r_t^m > \tilde{r}^m$ in order to ensure the reelection. Another option could be to give the politician enough in order to compensate him for the loss of office. Let ρ^* be the minimum rent which forces the politician to accept the loss of office. In this case

$$\rho^* = \alpha e^m + \delta\left(R + \tilde{EV}_t\right), \tag{3.15}$$

where $\tilde{EV}_t$ represents the politician's expected value of being in office. Hence, the politician is indifferent between accepting the proposal and being thrown out of office or rejecting it and being reelected.

Taking into account that $\tilde{EV}_t = (\alpha e^m + \delta R)/(1 - \delta)$ results in

$$\rho^* = \frac{\alpha e^m + \delta R}{1 - \delta}. \tag{3.16}$$

Offering ρ^* to the politician reduces the amount which the manager can divert for himself. However, the minimum rent $\tilde{r}^m$ is implicitly defined by the equation

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[11]The argumentation is driven by the assumption that the manager has full agenda setting power and the politician must either accept the manager's proposal or reject it and cannot make any amendments. Otherwise it would be possible for the politician to announce a lower ability level for the manager and divide the resulting rents between them both.

balancing short-run gains of diverting as much as possible and being thrown out against long-run benefits of being in office in future

$$e^m - \rho^* = \tilde{r}^m + \delta EV_t^m, \tag{3.17}$$

where EV_t^m represents the manager's expected value of being in office.

Since $EV_t^m = \tilde{r}^m/(1 - \delta)$, the combination of (3.16) and (3.17) defines the manager's minimum rent as

$$\tilde{r}^m = e^m - (\alpha + \delta)e^m - \delta R. \tag{3.18}$$

One can see that the value of $\tilde{r}^m$ depends negatively on parameters α, δ and R and can be even negative. Negative rents can be interpreted as effort. The intuition is that the compensation for the loss of office must increase with the value of being in office for the politician. But this means that the manager's short-run benefits will be so small that he will even be willing to exert additional effort in order to be reappointed and obtain next period's rents.

Proposition 4 *There exists an equilibrium with the revelation of private information about the manager's competence and with a proposal $\{\tilde{r}^m, \alpha e^m\}$. The politician accepts this proposal which produces exactly the output threshold and leads to reelection.*

One can easily verify that this is an equilibrium by showing that neither of the policy-makers is strictly better off in the case of deviation. Since the proposal satisfies voters' requirements and leads to reelection, the politician has no incentive to reject it because in the case of rejection he would obtain the same rent. In order to force the politician to accept a more extractive proposal and hence the loss of office, the manager must offer a higher rent for the politician. But the way $\tilde{r}^m$ is defined leaves him no incentives to make such an offer. This proposal produces exactly the required output given by

$$y_t = \bar{y} = \delta \theta_t^m (e^m + R). \tag{3.19}$$

The politician's expected utility over all periods is defined by his status quo

rent possibilities and is given by

$$v_t(r) = \frac{\alpha e^m + \delta R}{1 - \delta}. \tag{3.20}$$

The analysis of this section is based on Persson et al. (1997). I model the delegation of decision-making in the SWF as institutional "improvement" with separation of powers. In this case, the manager has agenda setting power because he is the one who makes the policy proposal and thereby forces the politician to accept it. The separation of powers between the manager and the politician allows voters to make use of policy-maker's conflict of interests. First, voters gain information about the competence of the manager by exploiting the announcement. Second, the conflict of interests disciplines both policy-makers and results in an equilibrium with higher output.[12]

One can show that even in the case that the politician does not observe the manager's competence, voters would be able to discipline the manager with the choice of an appropriate voting rule. In this case, the utility of the politician would depend on the competence of the manager. Managers with high-enough competence level would propose an investment plan which diverts less and produce the required output. This would fix politician's rents on the status quo level. Although the low-competence managers would divert the maximum and thus offer higher rents for the politician in order to get his approval, the overall expected utility would be driven by the status quo rent and be similar to the one derived in the previous analysis.

3.5 Delegation of the Decision-Making Power to an External Manager

In this section, the expected output levels generated in the SWF under two alternative managerial regimes (PM and EM) are compared. It is shown what

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[12]In a more general context, Persson et al. (1997) show that separation of powers with full agenda setting power of one of the policy-making bodies induces information revelation and enforces efficiency. What plays an important role in this result is that one decision-maker is given *full* agenda setting power over a well-specified decision.

defines the incumbent's incentives to delegate his policy decision in the SWF to an external manager.

There are two possible cases to be examined in order to describe the expected output of the SWF with a politician as a manager. First, if the competence level of the officeholder is higher than the critical level required to produce the output threshold, he diverts just as much as necessary in order to produce the desired output level. Second, if the incumbent identifies that his competence is low and he is not able to generate the output required to be reelected, he extracts the highest possible level of personal rents and is replaced by a new politician through elections. Hence, the expected output of the SWF with a politician as manager in each period is given by[13]

$$E(y_t^{PM}) = Prob\left(\theta_t > \theta^*\right)\tilde{y} = \frac{1}{2}a\delta\left(\frac{e + R + \delta R \ln 2}{2 - \delta\left(1 - \ln 2\right)}\right). \qquad (3.21)$$

The output of the SWF with an external manager depends explicitly on the manager's competence (compare (3.19)). However, the expected output in the case of an external management is the output which would be produced by a manager with an average competence level

$$E(y_t^{EM}) = \delta E(\theta_t^m)\left(e^m + R\right) = \frac{1}{2}\delta a\left(e^m + R\right). \qquad (3.22)$$

The socially optimal choice of the managerial regime would maximize the expected output of the SWF. By comparing the expected outputs generated under both alternative regimes given by equations (3.21) and (3.22), one can easily show that a SWF run by an external manager performs better than a SWF with the politician as the manager ($E(y_t^{EM}) > E(y_t^{PM})$) for two reasons. First, the separation of powers and the conflict of interests between both policy-makers result in disclosure of private information about the manager's competence. This enables voters to make the required output threshold depend on the manager's competence level which in turn eliminates informational rents of the manager and therefore increases the output of the fund. Second, the existence of transparency

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[13]The results presented hereafter are based on the assumption that θ_t is uniformly distributed over the interval [0,a]. This simplifies the algebra but does not change the general line of argumentation.

effects improves the SWF's performance.

Now, I analyze whether the incumbent has any incentives to delegate his policy decision in the SWF to an external manager. The delegation decision made by the politician compares his expected utility from being in office $v_t(r^{PM})$ with his expected utility from the SWF under external management $v_t(r^{EM})$. Thus, delegation takes place if

$$v_t(r^{PM}) \leq v_t(r^{EM}), \tag{3.23}$$

where $v_t(r^{EM})$ is given by equation (3.20) and $v_t(r^{PM})$ depends on politician's competence level θ_t. In the case of a "bad" politician ($\theta_t \leq a/2$), it is given by

$$v_t(r^{PM}) = e, \tag{3.24}$$

and in the case of a "good" one ($\theta_t > a/2$), by (compare Appendix C.1)

$$v_t(r^{PM}) = \tilde{r}_t + \delta\left(R + EV_t\right) = e + \delta\left(2 - \frac{a}{\theta_t}\right)\left(\frac{e + R + \delta R \ln 2}{2 - \delta\left(1 - \ln 2\right)}\right). \tag{3.25}$$

Comparing expected utilities from (3.20) and (3.24) one can see that the "bad" incumbent is more willing to delegate if the ego rent from being in office is higher and the transparency effect of delegation is stronger

$$e \leq \frac{\alpha e^m + \delta R}{1 - \delta}. \tag{3.26}$$

The intuition is simple. Higher ego rents and higher status quo rents as a consequence of increased average output are components of the expected future benefits in case of EM, whereas the utility in case of PM consists only of the current period's rent. This is the reason why their influence on the delegation decision depends on the politician's degree of patience. If the politician is less patient (δ is small), the effect of future rents on the delegation decision is weaker. For example, in the case of $\delta = 0$ which means that the incumbent does not consider the utility from future rents, only current period's rents are compared under two alternative regimes ($e \leq \alpha e^m$). Here, one can see the importance of the parameter α reflecting the share of average output which will be given to the politician in the case of status quo policy. If α is high enough it will be worth for the politician to

give away his decision-making power in order to get the status quo rent under EM because the latter will compensate (or in the case of strong enough transparency effect even overcompensate) him for foregone rents. Recall that one can interpret the parameter α as a proxy for the institutional quality of the country. A higher α indicates more extractive political and economic institutions.

In order to sum up first results, one can state that under extractive institutions with more possibilities to obtain rents from being in office, it is better to delegate from the point of view of the incumbent. This helps mitigate the threat of being replaced by forcing the manager to exert additional effort and allows to make use of transparency gains which probably come into appearance.

Things become less trivial if the case for the "good" incumbent is considered. By use of (3.20) and (3.25), condition (3.23) becomes

$$
e + \delta \left(2 - \frac{a}{\theta_t} \right) \left(\frac{e + R + \delta R \ln 2}{2 - \delta \left(1 - \ln 2 \right)} \right) \leq \frac{\alpha e^m + \delta R}{1 - \delta}. \tag{3.27}
$$

A first look reveals that for the incumbent with $\theta_t \in (a/2, a]$ the second term on the left-hand side of the condition is positive. Comparing this with condition (3.26) shows that the incumbent's benefits under PM increase with the competence of the politician. This means that incumbents with higher competence are in general more prone to manage the SWFs themselves. In order to characterize circumstances under which the PM is better for the "good" incumbent, condition (3.27) must be rearranged

$$
e \left(1 + \frac{\delta \left(2 - \frac{a}{\theta_t} \right)}{2 - \delta \left(1 - ln2 \right)} - \frac{\alpha e^m}{e \left(1 - \delta \right)} \right) \leq R \left(\frac{\delta}{1 - \delta} - \frac{\left(1 + \delta ln2 \right) \delta \left(2 - \frac{a}{\theta_t} \right)}{2 - \delta \left(1 - ln2 \right)} \right). \tag{3.28}
$$

Appendix C.2 shows that the right-hand side of the condition is positive for all values $0 < \delta < 1$ and the left-hand side is negative if $\alpha e^m \geq e$. Hence, independently of how competent the incumbent is, the EM is better from his point of view if the transparency gains are high enough and the existing political and economic institutions allow him to get non-zero status quo rents in case of delegation. However, if α is small and/or the transparency effect is not so pronounced so that $\alpha e^m < e$, maintaining the decision power under PM can be more favor-

able for the incumbent. This is more likely when the incumbent's competence is higher because the rents he can extract while being in office depend positively on the competence level. Low ego rents from office make the delegation less advantageous from the politician's point of view. The reason is that a considerable part of the benefits under EM consist of the ego rents the politician obtains each time he is reelected. Another relevant dimension which plays a key role in the decision on delegation of SWF's management is the politician's degree of patience given by the discount factor. The attractiveness of the delegation decreases with the incumbent's impatience (smaller δ). The following proposition summarizes this analysis.

Proposition 5 *The delegation decision depends on the competence level of the politician:*

- *A politician with $\theta_t \leq a/2$ ("bad") delegates if condition (3.26) holds.*

- *A politician with $\theta_t > a/2$ ("good") delegates if condition (3.27) holds.*

Summing up, "bad" incumbents tend to delegate more often. However, depending on the institutional quality, on transparency effects of involving an external management, and on the discount factor, there exists a possibility that the decision-making will be maintained under political management regardless of the politician's competence level. In the model, the institutional quality is approximately described by status quo investment policy under external management and by the possibility of obtaining higher ego rents from reelection. According to the results of the model, one could expect that the management of the SWFs is delegated to an external manager in countries with extractive political and economic institutions, with relatively strong transparency effects of delegation and with a high-enough discount factor of the politician. These characteristics probably depict a developing country with an authoritarian regime where relatively wide areas of the economy are highly influenced by the central government. In such regimes the politician can be relatively sure not to be replaced easily which in turn implies a high discount factor.

The question could be whether elections play any role in authoritarian regimes, but in reality, one observes that even in less democratic countries rulers can be

replaced by voters. In this sense, the elections modeled here have to be considered just as a mechanism disciplining the politician through the threat of being replaced. This does not make any statement about how democratic the country is and how this mechanism works (whether it is the threat of social conflicts and riots or the elections in a democratic sense). The model just assumes that the politician will be replaced if he does not perform well. In this case, the value of delegation is high for the politician given that it is credible enough to create transparency effects. But even if it is not the case, the institutional improvement which results from the separation of powers helps mitigate the threats of being replaced and therefore increases the benefits of the incumbent.

In contrast, the value of delegation is not so high for the incumbent in a developed country where the politician has limited possibilities of extracting rents and is easily replaced by elections and where the investment policy of the SWF is already transparent enough. In this case, the politician can afford to manage the SWF by himself without creating doubt and fear about the objectives of the fund's investments in the eyes of international community.

3.6 Conclusion

In this chapter, I have developed a simple model which allows to examine the incentives underlying the decision of a politician to delegate the management of a SWF to an independent external manager. I formalize the delegation motives. The first is the increase of SWF's expected return due to the management outsourcing. An external manager signals the commercial nature of SWF's investment decisions and improves portfolio diversification options (Rozanov, 2009). The second is the possibility for the politician to make use of the prevailing status quo and depends on the quality of existing institutions. Additionally, I introduce two disciplining mechanisms for the politician under alternative management regimes – elections and separation of powers (Persson et al., 1997). The politician weighs the costs of not being manager of the SWF in the form of forgone personal rents against the benefits from transparency effects and the institutional changes resulting from the separation of powers that allow him to get some status quo rents. The status quo rents are higher under more extractive political and

economic institutions in the country. By delegating the politician loses the possibility to signal his competence to electorate using the SWF's output. However, this turns into an advantage for some incumbents because delegation delivers reelection chances.

Furthermore, several lessons become apparent from the model. One is that the increase of SWF's investment possibilities as a consequence of management outsourcing and fund's higher transparency improves social welfare. Moreover, the conflict of interests between the politician and the manager with agenda setting power, which arises in the case of delegation, solves the problem of asymmetric information between voters and the manager. This allows to eliminate the manager's informational rents and disciplines both policy-makers resulting in an equilibrium with higher expected output. However, whether the SWF's management is delegated depends strongly on the competence of the incumbent. Politicians with lower competence are basically more prone to delegate.

Another finding is that the quality and nature of the existing economic and political institutions play an important role in the delegation motivation. The existence of extractive institutions which allow the incumbent to get non-zero status quo rents even if the operational management of the fund is delegated to the external manager, would deliver additional incentives for external management. In general, higher private benefits from the political office in form of ego rents or possibilities to get positive status quo rents as well as a higher discount factor lead the incumbent to delegate the policy task in order to get a reelection chance even if he loses some decision-making freedom.

To conclude, some suggestions for further work have to be mentioned. Perhaps one of the most important limitations in the framework adopted in this chapter is the assumption that the delegation is a *zero/one* decision. The practice shows that plenty of SWFs allocate only some portions of their funds to external managers or launch new investment vehicles that are managed externally. In respect thereof, one can address the question of optimal degree of delegation from the perspective of a SWF as well as the society. Another limitation represents the assumption borrowed from previous literature that the politician's ability is serially uncorrelated and identically distributed over time. This assumption is introduced for tractability of the model and could be extended by some form of

positive autocorrelation.

I hope that the framework presented in this chapter will stimulate the interest in the management outsourcing issues in SWFs and will be helpful in addressing these important questions in future work.

Chapter 4

Sovereign Wealth Funds and Infrastructure Investment

¡El agua es nuestra, carajo!

– Cochabamba, Bolivia, 2000[†]

4.1 Introduction

The importance of infrastructure investments for long-term economic growth is well acknowledged and documented in the economic literature.[1] At the same time, the challenges of financing infrastructure projects in emerging markets and developing economies are also well discussed. Governments around the world are in an urgent need of new infrastructure or necessitate modernization of existing infrastructure. Especially developing countries' prosperity and competitiveness depend strongly on the infrastructure's potential to generate economic growth. Investment spending for infrastructure in developing countries is estimated to amount to some \$1.8-2.3 trillion per year by 2020, adding up to 6-8% of GDP

[†]"The water is ours, damn it!" from Spanish. A slogan during the "Guerra del agua" (Water War) in the third-largest city Cochabamba in Bolivia. Series of protests between December, 1999 and February, 2000 forced the government to revoke the 40-year concession contract to *Aguas del Tunari*, an international consortium, to supply water and sanitation services. More on this topic in Chávez (2006).

[1]For example, see Straub (2008), Calderón and Servén (2004), Égert et al. (2009) and Bhattacharya et al. (2012).

([Bhattacharya et al., 2012](#)). In times of global financial troubles, especially these countries' governments face problems to finance the required projects. On the one hand, governments are not only fiscally constrained, but also lack appropriate institutional mechanisms, policy and regulatory environment to attract private investment in long-term public projects. Political instability, administrative barriers, corruption as well as the threat of expropriation, contract renegotiation or nationalization of infrastructure assets discourage potential foreign suppliers of long-term capital. On the other hand, new capital constraints and regulations, such as Europe's Basel III requirements or Solvency II charges, hamper the long-term lending by commercial banks and impede the insurers' investment in infrastructure assets. The combination of these factors materializes in a stretching infrastructure gap, although there exists a large supply of long-term capital by institutional investors.

In recent years, academic and financial industry researchers as well as international organizations have been arguing that institutional investors, such as SWFs, Public Pension Reserve Funds (PPRFs) and insurance companies, should have both the willingness and the potential to become considerable providers of long-term financing for infrastructure in the world and especially in developing countries.[2] Among institutional investors, SWFs and PPRFs have ideal characteristics for suppliers of capital for infrastructure projects. First, these funds are mostly not constrained by short-term liabilities so that infrastructure as an asset class represents a perfect match for their liability structure. Second, in accordance with their objective to preserve a nation's wealth, SWFs and PPRFs generally hold portfolios with rather conservative asset allocations consisting of large portion of fixed income and equity investments ([Sovereign Wealth Center](#), [2014b](#)). Infrastructure assets represent a good fixed income diversifier, are less correlated with other asset classes and offer relatively stable long-term return flows which often also exceed fixed income returns. Furthermore, infrastructure can act as a good hedge against inflation ([Castelli, 2014](#)). In times of high market volatility and low interest rates, these type of investment could be very attractive for deep-pocketed investors with virtually no liabilities. It seems that there

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[2]For more details see [World Bank](#) ([2014](#)), [World Economic Forum](#) ([2014](#)), [Della Croce and Yermo](#) ([2013](#)), [Della Croce](#) ([2012](#)) and [Belt and Nimmo](#) ([2013](#)).

has been a growing interest in infrastructure investment among SWFs and other institutional investors in recent years. According to Preqin (2013), 57% of SWFs invested in infrastructure assets in 2013. Almost all funds moved their asset allocation towards alternative investments and are even open to investments in risky greenfield projects.

There exists a huge infrastructure financing gap in the world and developing countries suffer from shortage in infrastructure.[3] Although in theory infrastructure seems to be an ideal asset class for SWFs and PPRFs, the allocation of these funds' assets to infrastructure is currently relatively small. According to data from TheCityUK (2013), SWFs invested about $52 billion in infrastructure between 2005-2012 which amounts to some 1% of total assets of these funds. In the last years, there was an increase in SWFs' investment in infrastructure. Sovereign Wealth Center (2014b) reports that in 2013 about 8% of SWFs' assets were allocated to infrastructure.

Despite the existing potential, there are still numerous barriers to increase SWFs' investment in infrastructure. Della Croce (2011) provides a detailed discussion of challenges for institutional investment in infrastructure. First of all, institutional investors have not developed enough expertise and knowledge in infrastructure assets yet. Several SWFs started to build up expertise and special skills to move assets in-house with the objective to invest directly in alternative assets and especially in infrastructure. However, there exists a huge deficit in high quality data on infrastructure projects. Regulatory barriers and host countries' concerns about SWFs' strategic motives often place a limit on investment in the infrastructure sector. Especially, the problem of political risks, including regulatory uncertainty, corruption, political instability, sovereign theft, expropriation and nationalization of infrastructure assets is the most challenging in developing countries and emerging markets characterized by weak institutions. Based on interviews, the World Economic Forum (2014) emphasizes renegotiation risk as a key worry for infrastructure investors. Given the immense capital costs and the long-term nature of infrastructure investments, political and regulatory framework stability plays a central role in the investment decision. However, political

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[3]The World Economic Forum (2013) estimates the global investment deficit in infrastructure to be around $1 trillion per year.

risks can be covered by risk insurance provided by different Multilateral Development Banks (MDBs) and institutions.[4] One interesting example constitutes the Multilateral Investment Guarantee Agency (MIGA) which is a political risk insurance division of the World Bank Group. MIGA offers coverage for long-term investors in public projects in case of expropriation, breach of contract, war, terrorism and civil disturbance as well as currency inconvertibility and transfer restrictions.[5] Nevertheless, insurance is not free and does not cover every type of political risk. In particular, renegotiation and "creeping expropriation" as a result of different small regulation changes and gradual amendments of government decisions may affect investors' revenues significantly (Sawant, 2010).

This chapter argues that the future of direct investment in infrastructure by SWFs lies in co-investment. It shows that investing jointly can help SWFs to overcome the hold-up problem which hinders large investments in developing countries' infrastructure projects. There is a lot of literature on the hold-up problem starting with the influential work of Eaton and Gersovitz (1981). With Thomas and Worrall (1994), a line of research evolved focusing on the role of direct punishments as a solution for the hold-up problem. A group of papers, including Bulow and Rogoff (1989), Sachs and Cohen (1982) and Fernandez and Rosenthal (1990), analyzes the use of trade sanctions and embargoes. Another strand of literature discusses reputation losses from expropriation (or default).[6] Eaton (1996) and Cole and Kehoe (1998) show that the threat of reputation losses and the expected costs of bad reputation discipline the government and provide a powerful incentive to repay the debt.

The argumentation in this chapter is similar to the idea of Song and Wagner-Brizzi (2013). These authors analyze China's comparative advantage in investing in host countries with both poor institutions (and thus high expropriation risk) and large shares of export to China. They develop a theoretical model that shows how China's buying power as an importer allows to credibly commit to sizable

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[4]Also Regional Development Banks, such as the African Development Bank, the Asian Development Bank, the Inter-American Development Bank Group or the European Bank for Reconstruction and Development, play an important role in providing guidance, funding and insurance for infrastructure projects.

[5]More information provided in Multilateral Investment Guarantee Agency (2012).

[6]The hold-up problem is very often analyzed in the literature in the context of sovereign debt.

trade sanctions as a punishment in case of expropriation by the host country. Using data on Chinese foreign direct investments they find support for results of the theoretical model.

The chapter is also related to the idea of Woodhouse (2005) discussing the fact that having local partners allows to avoid renegotiation in infrastructure projects. However, local partners provide protection from renegotiation only as long as they are favored by domestic politicians. A change in power may reverse the situation quickly. The World Economic Forum (2014) introduces a similar idea pointing out that the participation of MDBs either through providing loans for projects or investing as a partner can help to mitigate political risk. Given that future cooperation and lending will depend on the host government's current behavior, this will provide a powerful incentive not to renegotiate contracts with MDBs. Hence, incorporating more global partners into a given infrastructure investment project would make it much more costly and problematic for the host government to expropriate or renegotiate.

The model developed in this chapter combines the theoretical findings from the literature analyzing the hold-up problem with specific features of SWFs to illustrate that co-investment among these funds can help to overcome the expropriation and renegotiation risk when investing in infrastructure of weakly institutionalized economies. Facing a group of different SWF-sponsoring countries as a counterparty in an investment arrangement disciplines the host government. The anticipation of possible punishments, such as sanctions or embargoes, as well as the expected costs from reputation losses vis-à-vis investor SWFs' sponsor states forces a government considering to expropriate to think twice. Thus, co-investment not only provides a possibility of risk-sharing between investors, but also reduces the investment risk through the disciplining effect mentioned above. The chapter also discusses how the International Forum of Sovereign Wealth Funds (IFSWF) could help to match SWFs' long-term money and willingness to invest in infrastructure with the demand for infrastructure financing in developing countries. The World Bank Group's Public-Private Infrastructure Advisory Facility (PPIAF) and the Global Infrastructure Facility (GIF) provide working practices that could be adapted for the SWFs' community.

The rest of the chapter is structured as follows. Section 4.2 discusses SWFs'

recent investments in infrastructure and provides some anecdotal evidence for the importance of co-investment by institutional investors. Section 4.3 describes the basic analytical framework which illustrates the hold-up problem and allows to analyze the role of a co-investment alliance as a possible solution to this problem. Section 4.4 summarizes the results delivered by the theoretical model and discusses how the SWF community could facilitate the collaboration of institutional investors. Section 4.5 provides concluding remarks.

4.2 Infrastructure Investments and SWFs

The phrase "infrastructure investment" is frequently used in this chapter. Since infrastructure has different facets and investments in infrastructure can be financed in various ways, it is important to explain on what kind of investment this chapter concentrates. Appendix D.1 provides an overview of infrastructure investment categorized by sectors and by project stage. Appendix D.2 gives an overview of main financing instruments available for infrastructure as an asset class. In this chapter, the main focus is especially on the foreign direct investment of SWFs because this source of private finance is still untapped and has a significant potential for infrastructure (World Economic Forum, 2014).[7] Direct investment allows investors with deep pockets, such as SWFs and PPRFs, to invest substantial amounts of long-term capital avoiding fees and conflicts arising from differences in investment horizons with intermediaries.

SWFs vary heavily in their investment objectives and asset allocations. Some SWFs have defined explicit objectives for infrastructure allocation and others have objectives for alternative investments without distinguishing between infrastructure and other alternative assets, such as real estate or private equity. Unfortunately, many SWFs do not provide information on their asset allocation. Table 4.1 summarizes publicly available information.

Over recent years, there have been two interesting trends in SWFs' behavior. First, infrastructure assets have become a relevant part of these funds' portfolios (Castelli, 2014). Second, SWFs have shown an increasing willingness to team-up

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[7]Gelb et al. (2014a) and Gelb et al. (2014b) analyze possibilities for SWFs to invest in domestic infrastructure with high social revenues.

Fund name	Founding date	AuM ($bn)	Infrastructure allocation	Alternative assets
Government Pension Fund – Global	1990	893.0	-	5%
Abu Dhabi Investment Authority	1976	773.0	1-5%	-
China Investment Corporation	2007	652.7	-	50-65%
Kuwait Investment Authority	1953	548.0	-	11-19%
Government Investment Corp.	1981	320.0	5%	-
Temasek Holdings	1974	193.6	-	30%
Australian Future Fund	2006	95.0	2%	-
Korea Investment Corporation	2005	84.7	-	7%
Mubadala Development Company	2002	66.3	-	100%
Mumtalakat Holding Company	2006	10.5	-	100%

Table 4.1: SWFs and infrastructure investments
Source: Own calculations from publicly available data (SWFs' website, reports), based on Inderst and Stewart (2014) and Sovereign Wealth Fund Institute (2014).

and to form different co-investment alliances and joint-ventures with other like-minded investors (Bortolotti et al., 2014a). Sovereign investors recognized the attractiveness of infrastructure as an asset class due to its characteristics, such as inflation hedging potential and relative low uncertainty of high earnings. They continue to look for opportunities to increase their investment in infrastructure. At the same time, SWFs started to move away from expensive external management. Very often, it has proved to be an ineffective approach for institutional investors due to the mismatch in investment horizons of short-term oriented intermediaries and long-term investment objectives of these deep-pocketed investors. In an attempt to move more assets into internal portfolio management, SWFs recognized the need for co-investment in order to share knowledge and information with their partners, to create economies of scale and spread risks.

Bortolotti et al. (2014a) report a total of ca. $9.2 billion of SWFs' direct equity investment in infrastructure projects, such as airports, ports, oil, gas and energy infrastructure.

Recent most prominent infrastructure deals by SWF alliances include:

- Abu Dhabi's Mubadala together with the Dutch energy company *Trafigura*

Beheer BV won control of an iron ore port *MMX Porto Sudeste Ltda* in a $996 million deal (Parra-Bernal, 2013),

- In a prominent deal worth $1 billion, the *NSW Ports Consortium* consisting among others of the Abu Dhabi Investment Authority (ADIA) and the Australian superannuation funds, won a 99-year lease contract for the operation of *Sydney's Port Botany* and *Illawarra's Port Kembla* (Owens, 2013),

- The Qatar Investment Authority (QIA) created a co-investment arm *Nebras Power* together with other local investors to invest in power generation, water desalination and cooling and heating projects in the Middle East and East Asia (Tuttle, 2013),

- Singapore's Government Investment Corporation (GIC), ADIA, the Kuwait Investment Authority (KIA) and Norway's Government Pension Fund – Global (GPF–G) acquired an undisclosed share of *Royal Mail*, the UK postal operator in a deal with combined value of $340 million (Bortolotti et al., 2014a),

- GIC is expected to invest together with the Spanish infrastructure firm *Ferrovial* and the Australian bank *Macquarie* an expected $1.6 billion in airports in the cities of Glasgow, Southampton and Aberdeen (Shane, 2014).

An interesting co-investment platform provides the Russian Direct Investment Fund (RDIF), a $10 billion fund with the objective to invest and act as a catalyst for foreign direct investment in the Russian economy. The fund was created in 2011 and has already invested $7 billion in domestic projects together with its co-investor partners.[8] Infrastructure projects with importance for development play a central role in RDIF's investment plans. Some of these infrastructure deals include (Russian Direct Investment Fund, 2014):

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[8]RDIF invests with co-investors if their investment share equals at least RDIF's share. RDIF's co-investors should be funds with more than $1 billion of assets under management or $1 billion of market capitalization or a turnover exceeding $1 billion and earnings before interest, taxes, depreciation and amortization (EBITDA) exceeding $150 million (Russian Direct Investment Fund, 2014).

- Together with KIA and other private partners, RDIF acquired a large stake in *Enel OGK-5*, one of the leading power generating companies in Russia,

- RDIF and General Electric agreed to jointly invest in construction of autonomous power generation systems,

- Together with KIA, Mubadala and Deutsche Bank, RDIF invested in *Rostelecom*, Russia's largest telecommunications company.

- RDIF is expected to bring in investors from Arab countries to participate in construction of the Central Ring Road, a ring road (521km) encircling the City of Moscow (Gerden, 2014).

Besides the investments mentioned above, RDIF successfully created bilateral investment platforms together with partners such as the China Investment Corporation (CIC), the Korea Investment Corporation (KIC), the Qatar Holding, Bahrain's Mumtalakat, Caisse des Dépôts International (CDC International – France), Fondo Strategico Italiano (FSI), the State Bank of India and the Japan Bank for International Cooperation. Furthermore, RDIF and Abu-Dhabi's Department of Finance announced the creation of the partnership for investing in Russian infrastructure projects (Russian Direct Investment Fund, 2014).

China provides the most impressive example of investing in foreign infrastructure. Chinese funds, primarily the China-Africa Development Fund (CAD), invested more than \$540 million in 27 "infrastructure-for-resources" projects in Africa (Lin and Doemeland, 2012).

A few things are worth mentioning. First, SWFs' growing appetite for risky infrastructure assets is related to the trend of rising co-investment alliances. The experience of RDIF and other SWFs investing not only in high quality, low risk brownfield infrastructure projects, but also in risky greenfield assets and infrastructure in emerging markets shows that collaboration provides new opportunities for institutional infrastructure investors. Co-investment allows partners to share information, knowledge, expertise and human resources and also to spread risks. Second, the political risk of expropriation, contract renegotiation or nationalization of infrastructure assets is one of the most serious barriers to increasing infrastructure investment. Chinese experience in Africa demonstrates

that this political risk can be mitigated. The fact that, besides its infrastructure investments, China is widely involved in virtually all relevant sectors of many African countries' economies, provides an effective insurance mechanism against political risk. The expected costs and reputation losses in the case of a conflict between a given host government and Chinese investors are so high that no government would consider the option to expropriate or renegotiate contracts.[9] This chapter argues that co-investment by creating an investment alliance of different SWFs may imply sufficiently high expected costs of punishment for the host country in case of a conflict and thereby solve the hold-up problem. Third, SWFs and PPRFs represent an important class among institutional investors for infrastructure projects around the world. Co-investment through alliances and joint-ventures of like-minded investors with a long-term investment horizon may help to mitigate political risk and increase investment in global infrastructure. SWFs should take the chance provided by the current trend of teaming-up to establish clear rules and guidelines and to define best practices for co-investment among institutional investors. This would radically reduce the costs for SWFs considering new joint-ventures and at the end, induce new investments. IFSWF could take the leading role in this process providing a platform for discussions and technical assistance by using the experience from the "Santiago Principles".

4.3 Co-Investment of SWFs and the Hold-Up Problem

4.3.1 The Model Framework

In this section, a simple model is constructed which formalizes the ideas mentioned above. First, the framework will be introduced which illustrates the hold-up problem. Second, this framework will be extended to analyze the strategic aspects of co-investment between two SWFs under the hold-up risk.

Consider a capital-starved economy (HC - host country) which needs foreign investors to finance a domestic infrastructure project. There exists a SWF which

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[9]For more details on China's economic presence and role in Africa see Brautigam (2009) and Song and Wagner-Brizzi (2013).

is not credit-constrained and is willing to invest in HC's infrastructure. Since the model is constructed to focus on the hold-up problem of financing the project in the host country, the simplest technology is assumed which allows to analyze this problem. If an indivisible investment $K \geq 0$ is made in the project, it will generate a total revenue $R > K$. This revenue can be interpreted as the net present value of cash flows generated over the life-cycle of this infrastructure asset. The way the revenue is split between both parties will be specified in some initial bargaining process and will depend on their relative bargaining positions and outside options. However, the initial bargaining is not modeled explicitly here.[10] Instead, the model assumes that the total revenue is split between HC and SWF according to some rule which is exogenously given so that HC gets the share α of the revenue and the investor the remaining share $(1 - \alpha)$. Hence, the parameter $0 < \alpha < 1$ captures HC's relative bargaining power.

Once invested in infrastructure, K is sunk and thus subject to expropriation ex post in the host country. Even though in real life expropriation can take place in form of renegotiating contract terms ("creeping expropriation"), it is modeled in a very stylized way here. Once expropriating, HC reaps all revenues leaving the investor with nothing. Thus, there are only two possible actions for HC after SWF invests, expropriate (e) or not (ne). Denoting HC's action at this stage with ε, it follows that $\varepsilon \in \{e, ne\}$. If HC does not expropriate, the game ends. After being expropriated, SWF chooses to sanction HC (s) or not (ns). Denoting SWF's action with σ, $\sigma \in \{s, ns\}$ holds. Of course, SWFs cannot sanction countries who breach contracts directly. In fact, it is the SWF sponsoring country which can impose different economic or political sanctions as a reaction to expropriation. It is not specified in this chapter what kind of sanctions SWF imposes. The emphasis is rather on the fact that SWFs are investors with sovereign states as shareholders which are able to impose sanctions in order to influence other countries' behavior. In contrast to private investors, this specific feature makes SWFs unique investors with considerable political power.

If SWF does not sanction, the game ends. However, if SWF chooses to sanction, HC can choose to concede (c) and return to compliance with the initial distribution of revenue or not to concede (nc) end reap all revenues. It is as-

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[10]This is similar to Schnitzer (1999).

sumed that if HC concedes, SWF lifts the sanctions. However, if HC does not concede, sanctions remain in place. Denoting HC's action at this stage with η, $\eta \in \{c, nc\}$ holds.

Note that once imposed, sanctions imply costs both for the sender (SWF) and the target (HC). Denote SWF's sanction costs with V and HC's costs with C and assume that $C, V \geq 0$. However, if the target concedes and the sender lifts the sanctions, these costs will be notably smaller for both countries. It is assumed that in this case the sanction costs for SWF and HC are βV and βC, respectively, whereas β is a constant and $0 < \beta < 1$ holds.[11]

Figure 4.1 summarizes the structure of the game.[12]
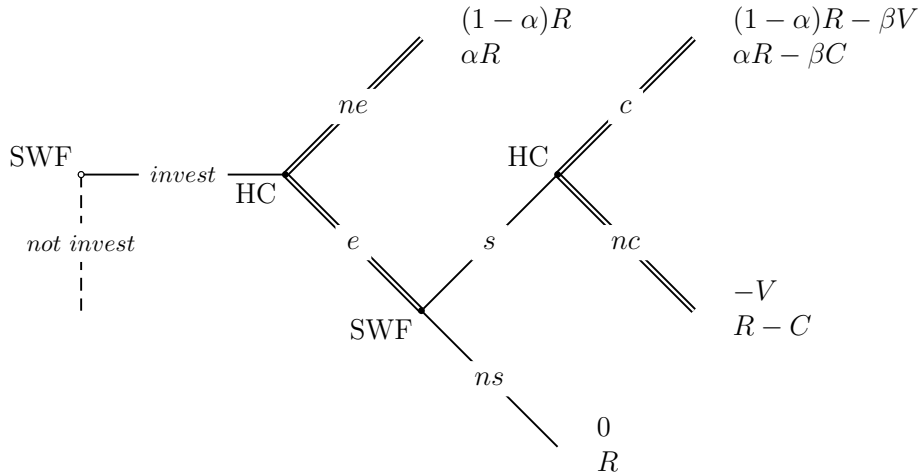
Figure 4.1: A simple investment game with the possibility of hold-up

Solving the game backwards, one can see that HC will concede after facing sanctions if sanctions imply sufficiently high costs for HC or if

$$C(1 - \beta) \geq R(1 - \alpha). \tag{4.1}$$

Sanctions are *potent* if they force HC to concede and *ineffective* otherwise.

Certainly, SWF's decision to sanction depends on whether the sanctions are

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[11]β captures how long it takes for HC to concede after sanctions are being imposed (Hovi et al., 2005).

[12]Here, first the SWF's pay-off is given and then the HC's pay-off.

potent or not. First, consider the case with potent sanctions. SWF will impose sanctions only if sanction costs V are small enough

$$R(1 - \alpha) - \beta V \geq 0. \tag{4.2}$$

An investor SWF is *strong* if he imposes potent sanctions in case of expropriation and *weak* otherwise.

Assuming perfect information and no information asymmetries between both HC and SWF, one can easily prove that HC will expropriate in this case only if SWF is weak. Consequently, only a strong SWF with the ability to impose potent sanctions will invest in the infrastructure project.

The case with ineffective sanctions is trivial. Knowing that no type of SWF will impose ineffective sanctions, HC will expropriate. Thus, there will be initially no investment due to lack of commitment not to expropriate, even though both parties could benefit from this investment.

The following proposition summarizes.

Proposition 6 *Under expropriation risk, there will be investment only if*

- *SWF is able to discipline HC with potent sanctions (inequality (4.1) holds) and;*

- *SWF is strong enough to impose sanctions in case of expropriation (inequality (4.2) holds).*

These first results are in line with the logic of China's out of scale investments in Africa mentioned earlier in the chapter. In fact, as analyzed by Song and Wagner-Brizzi (2013), China's buying power as a major importer results in the possibility to impose sizable trade sanctions quickly if the host country expropriates. The fact that China can easily substitute its imports from particular small exporting countries in Africa makes the threat of sanctions credible enough to discipline host countries with poor institutions. Thus, due to its purchasing power China has some comparative advantage as an investor in host countries with poor institutions (and thus high expropriation risk) and large export shares to China.

4.3.2 Co-Investment: A Possible Solution to Hold-Up

As a next step, the basic model framework is extended to analyze the possibility of co-investment with two SWFs as a way to accumulate enough sanctioning power and solve the hold-up problem. The starting point is the simple idea that two investors will have more possibilities to sanction in case of expropriation such that higher costs from sanctions should discipline HC. However, given that there will be no mechanism to force sovereign investors to cooperate and sanction together, both SWFs will have incentives to free-ride and this in turn will weaken the alliance.

Creating an investment alliance is costly. A formal framework should be set up which can manage the investment procedure and is acceptable for all members of the alliance. Costs arise not only from organizing and coordinating appropriate co-investment platforms and vehicles, but also from long-lasting and costly negotiation process to align different objectives and strategies of members. Furthermore, the alliance needs a capable team of investment experts and experienced staff should be acquired.[13] However, the model abstracts from these aspects and focuses rather on the strategic interaction between investors. It describes under what conditions free-riding incentives are offset and when co-investment alliance succeeds in becoming powerful enough to discipline HC.

Consider the case that a particular SWF is strong enough but fails to invest because it has not enough power to impose potent sanctions (conditions for SWF to be strong and its sanctions to be potent change slightly and will be defined below). This could be due to the fact that economic and political interconnections between HC and the SWF sponsoring state are on a low level. For example, the share of the HC's foreign trade with SWF sponsoring country is negligible, capital flows between these two countries are insignificantly small and common political projects do not exist. Given this, in the case of a conflict, SWF will not be able to impose potent sanctions implying sufficiently high costs in form of reputation losses, foregone revenues from sanctions. The implication is that the particular SWF cannot overcome the hold-up problem.

Now consider a second SWF which could act as a partner (PF - Partner Fund)

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[13]More details on the factors which make collaboration of institutional investors difficult can be found in Bachher and Monk (2013).

in a co-investment alliance.[14] Assume that in the case of co-investment, alliance members share both investment costs and revenues equally. Assume further that SWF plays a key role in the investment process, for example, it has some specific knowledge or access to local markets so that without the SWF no investment is possible[15]. If PF imposes sanctions, costs for PF and HC are W and Z, respectively.

Figure 4.2 illustrates the structure of the game starting from the alliance's investment decision.[16] The sequence of events in a game with two SWFs is the following. First, both SWFs decide whether to build a co-investment alliance. Second, the alliance (A) decides to invest or not. Third, if investments are made, HC chooses ε. If there is no expropriation ($\varepsilon = ne$), the game ends. However, if HC decides to expropriate ($\varepsilon = e$), both SWF and PF decide whether to sanction setting $\sigma_{SWF}, \sigma_{PF} \in \{s, ns\}$. Here, without loss of generality it is assumed that SWF sets σ_{SWF} first and PF chooses σ_{PF} observing SWF's decision.[17] If both partners decide not to sanction ($\sigma_{SWF} = \sigma_{PF} = ns$), the game ends. However, if even one of the investors imposes sanctions, HC has to decide to concede or not by setting $\eta \in \{c, nc\}$.

Note how the total revenue R is divided between HC and A. The γ-share of the total revenue accrues to HC whereas both investors, SWF and PF, split the remaining $(1 - \gamma)$-share equally (see figure 4.2). Furthermore, it is assumed that $0 < \gamma \leq \alpha < 1$. This captures the effect that HC's relative bargaining power at the initial negotiation stage declines when it faces an alliance of two investors.

Given the share of total revenue accruing to HC γ and condition (4.1), one

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[14]Hereafter, the second SWF will be called Partner Fund - PF, in order to avoid confusion.

[15]This assumption rules out the possibility for a strong PF with potent sanctions to invest without SWF's participation.

[16]Here, first SWF's pay-off is given, second PF's pay-off and then HC's pay-off.

[17]In practice, partners in an alliance will decide to impose sanctions taking into account the decision of each other. In the real world, one country imposes sanction and others decide whether to join them or not. Thus, the Nash-equilibrium is not suitable as a concept here because the decisions are not made independently and simultaneously. Rather, it is more convenient to assume that one of the funds decides and the second reacts observing the partner's decision. In this case, it is not important which partner is assumed to play first. Changing this ordering will merely mirror-reverse the results without affecting the nature of strategic interaction between both partners.

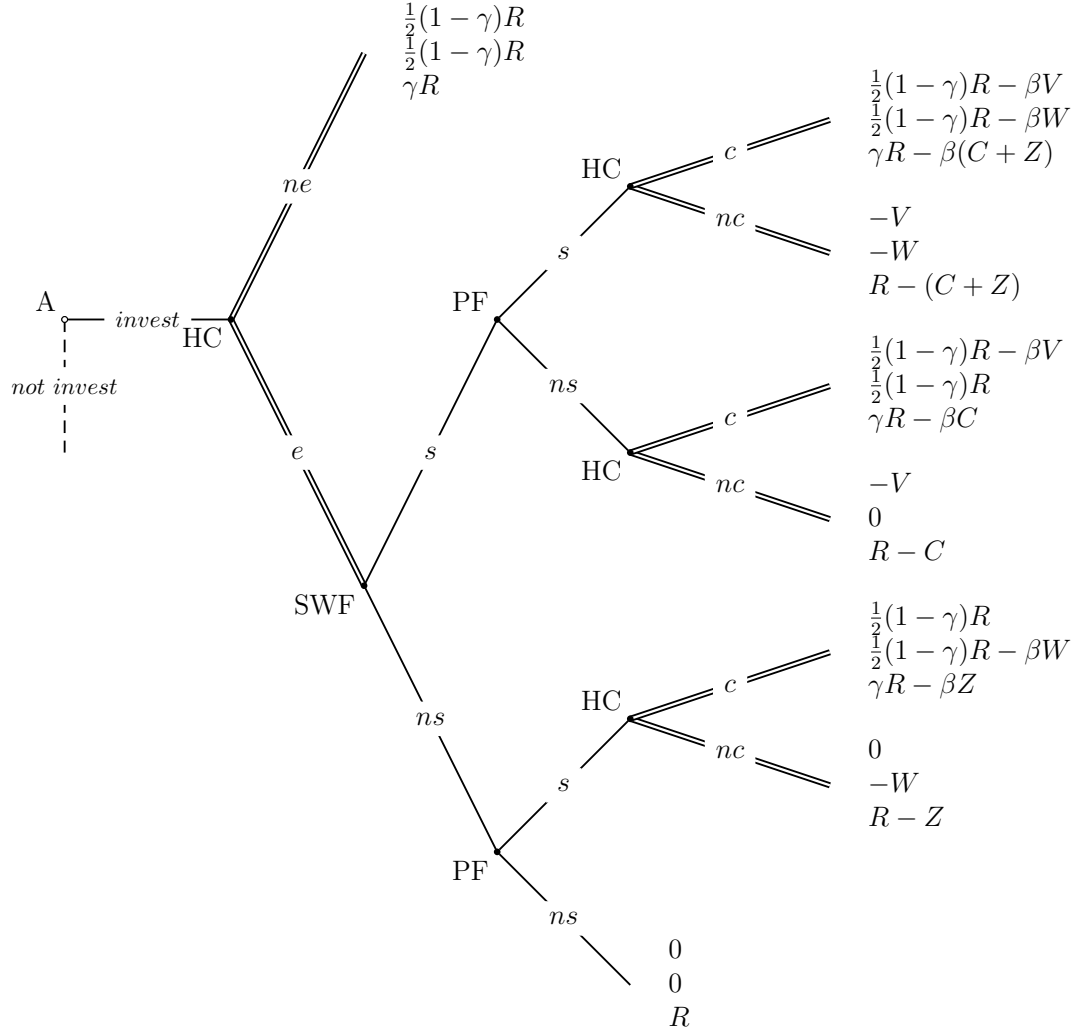Figure 4.2: A simple investment game with co-investment

can see that SWF's sanctions are not sufficiently potent if C is small or

$$C(1-\beta) \leq R(1-\gamma). \tag{4.3}$$

Appendix D.3 analyzes this game assuming perfect information. It shows that in equilibrium only alliances with strong members which have enough sanctioning power come into existence. This in turn implies that there will be no expropriation.

There are some details worth to mention at this point. First, note that the condition for investors being strong has changed compared to condition (4.2). Now, an investor is strong and imposes potent sanctions in case of expropriation if

$$\frac{1}{2}R(1-\gamma) - \beta\Omega \geq 0, \tag{4.4}$$

where $\Omega = V, W$ for SWF and PF, respectively. Here, two effects matter. On the one hand, the revenue must be split between the two investors so that each investor gets a smaller share. On the other hand, however two investors have a higher relative bargaining power against HC so that they are able to negotiate a higher share of total revenue for the alliance. Depending on which effect is stronger, the condition can be more or less strict compared to (4.2).

Second, given perfect information, a strong PF with potent sanctions will anticipate that SWF is going to free-ride imposing no sanctions. However, given that SWF's participation is crucial for the investment, PF will join the co-investment alliance.

The following proposition summarizes.

Proposition 7 *Assume that SWF is strong (condition (4.4) holds) but does not have enough sanctioning power to discipline HC (see condition (4.3)). In this case, under perfect information, an alliance will be built and there will be investment only if*

- *the PF is strong (condition (4.4) holds) and;*

- *the PF's sanctions are sufficiently potent together with SWF's sanctions to force HC to concede (either condition (D.15) or (D.17) hold).*

The results derived above rest upon the assumption of perfect information. In order to give some leeway to alliance members' free-riding behavior, one has to allow for some degree of uncertainty in the model. As a next step, uncertainty about investors' sanctioning power is introduced. It is assumed for simplicity that there exist only three types of sanctions in general – *ineffective*, *useful* and *potent*. Ineffective sanctions imply zero costs for HC and are therefore not suitable to influence HC's behavior. Useful sanctions imply a cost ξ which is not sufficient

to discipline HC so that

$$\xi(1 - \beta) \leq R(1 - \gamma). \tag{4.5}$$

However, potent sanctions imply a cost 2ξ and are sufficient to force HC to concede or

$$2\xi(1 - \beta) > R(1 - \gamma). \tag{4.6}$$

Note that if both SWF and PF have at least the power to impose useful sanctions, they are able to force HC to concede after expropriation together. It explains why these sanctions are called useful.

Assume that there is asymmetric information between both investors and HC. The costs of each investor's sanctions are observable for himself and the HC but not for the alliance partner. HC will be able to estimate how costly each investor's sanctions will be in case of conflict correctly because they depend on the level and intensity of existing economic and political relations (trade, capital flows etc.). In contrast, alliance members are less informed about each other's relations with HC so that they have imperfect information about sanction costs.

Consider the information each alliance member has about its partner's sanctioning power. In general, each partner can be strong or weak with three possible types of sanctions – ineffective, useful or potent. However, the fact that partners agree to build an alliance reveals additional information. In particular, observing that SWF wants to build an alliance PF can be certain that it is not able to impose potent sanctions. Assume PF expects that

$$C = \begin{cases} 0, & \text{with probability } (1 - p), \\ \xi, & \text{with probability } p, \end{cases} \tag{4.7}$$

where $p \in (0, 1)$.

Similarly, observing that PF joins the alliance SWF can be certain that it is strong and able to impose at least useful sanctions. Assume SWF expects that

$$Z = \begin{cases} \xi, & \text{with probability } (1 - q), \\ 2\xi, & \text{with probability } q, \end{cases} \tag{4.8}$$

where $q \in (0, 1)$.

The structure of the game is the same as in figure 4.2 with the only difference that now both alliance members are uncertain about each other's sanctioning power. Appendix D.4 analyzes this game in detail and the following proposition summarizes the results.

Proposition 8 *Assume that SWF and PF are strong (condition (4.4) holds) but SWF has not enough sanctioning power to discipline HC alone (see condition (4.3)). Assume further that both funds have imperfect information about each other's sanctioning power (see conditions (4.7) and (4.8)).*

When SWF's sanctions are useful, an alliance will be built and there will be investment only if

- *$q \in [\bar{q}, 1)$ and PF has potent sanctions or;*

- *$q \in [\bar{q}, q^*]$ and $p \in [\bar{p}, 1)$ or;*

- *$q < \bar{q}$ and $q \le q^*$.[18]*

When SWF's sanctions are ineffective, an alliance will be built and there will be investment only if

- *$q \in [\bar{q}, 1)$ and PF's sanctions are potent or;*

- *$q \in [\bar{q}, q^*]$ and $p \in [\bar{p}, 1)$.*

There are details embedded in the results that are worth mentioning. First, one can see that SWF's incentives to free-ride by not sanctioning depend on its expectation about PF's sanctioning power. If the chance that PF's sanctions are powerful is large enough or $q > q^*$, SWF will be better off by free-riding. However, if the risk is high that PF's sanctions will turn out not to be potent, it is worth for SWF to accept costs and impose sanctions together with PF.

Second, independently of its own sanctions' effectiveness, SWF will ask PF to build an alliance as soon as it believes that PF's sanctions will be potent enough or $q \in [\bar{q}, 1)$. Actually, PF with potent sanctions will accept the proposal so that

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[18]Note that taking into account (D.21) and (D.23) one can show that depending on the parameters, q^* can be both smaller or higher than $\bar{q}$.

an alliance will be built and investment will take place. In this case, the hold-up problem disappears because both investors are able to discipline HC together. However, it is possible that an alliance comes into existence which turns out to be ineffective. This happens if both investors expect each other's sanctions to be powerful enough.[19] In this case, SWF with ineffective sanctions makes a proposal and PF with useful sanctions accepts it. Thus, an alliance comes into existence because of uncertainty which is not able to sanction HC in case of expropriation. The hold-up problem prevails.

Third, for SWF with useful sanctions there are more possibilities to build an alliance. Even if SWF expects that PF's sanctions are not potent $(q < \bar{q})$, a proposal will be made if the probability that PF's sanctions are useful is small enough or $q \leq q^*$. In this case even PF with just useful sanctions will accept the proposal. The intuition is that expectations about PF's sanctioning power discipline SWF and prevent free-riding. SWF's expected pay-off from free-riding declines with the probability that PF's sanctions are useful as well.

To summarize, a SWF with ineffective sanctions will try to build a co-investment alliance with PF which it expects is able to impose potent sanctions. Even though it is puzzling, a SWF with useful sanctions will make a proposal to PF which probably has no potent sanctions in order to constrain its own incentives to free-ride. If from SWF's point of view the probability that PF's sanctions are potent is too high, SWF will be better off not imposing any sanctions because it believes that PF's sanctions alone would be enough to discipline HC. Anticipating this, no PF with useful sanctions will accept the proposal and no alliance will be built.

4.4 How to Foster Co-Investment among SWFs?

The model described in the previous section analyzes under what conditions a co-investment alliance of sovereign investors may become powerful enough to solve the hold-up problem. One has to recognize that building a platform for co-investment among institutional investors is a difficult task. First of all, a mechanism should be set up which aligns the investors' interests and objectives. In the

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[19]This can happen if SWF's sanctions are ineffective and at the same time $q \in [\bar{q}, q^*]$ and $p \in [\bar{p}, 1)$.

case of SWFs which follow not only purely commercial but also various political objectives setting up such a platform could be a challenging problem to solve. However, even if a group of funds shares values and objectives or similar motivation, coordination of actions within the group can be difficult. Strategic action problems among members and free-riding behavior potentially reduce the group's efficiency. One of the obstacles that impede SWFs' participation in co-investment projects is uncertainty among potential partners. Note that, if possible alliance members were sure about their future partners' type and credibility, only effective alliances would be created and investment would take place. However, the fact that SWFs cannot be sure how their future partners will react in case of conflict distorts the alliance building. Under certain conditions, inefficient alliances may arise which will not be able to solve the hold-up problem. Moreover, uncertainty may also result in reduced possibilities for alliance building in general. The model analyzes this issues and finds that alliance building can still function if partners' uncertainty is limited. On the one hand, high uncertainty makes alliance building and investment too risky. On the other hand, knowing that the partner will most likely intervene in the case of conflict, induces free-riding behavior. This in turn is anticipated by all players so that in the end it results in less possibilities for alliances and thus less investment.

As Bachher and Monk (2013) notice, a growing number of institutional investors shows some degree of dissatisfaction with existing institutions in finance and investment. Especially SWFs are gradually turning away from expensive external asset management in an attempt to invest rather directly. This trend resulted as a consequence of the global financial crisis with poor returns that are often depleted by inefficiently high intermediary fees. Moreover, SWFs became aware of the existing misalignment between their investment horizon and external managers' short-term objectives. This discrepancy is more obvious in the case of long-term investments in alternative assets such as infrastructure. As a result, SWFs are often trying to eliminate the lack of finance experience and specific knowledge by collaborating with each other. In fact, institutional investors can benefit from investing jointly. Potential benefits from collaboration could arise from sharing knowledge and skills, as well as saving costs by pooling resources. In addition, co-investment alliances could gain access to investment possibilities

which would otherwise be inaccessible to a single investor. However, the focus of this chapter is on the possibility of SWFs to mitigate political risk in the case of long-term infrastructure investments by co-investment. Regarding the ways to reduce risks of foreign infrastructure investments, Wells and Gleason (1995) mention the possibility of involving various local and international partners into the investment process. The intuition is that local partners could protect investors against government actions in the future. More interesting is the consideration that international investors may provide some security because host countries will fear the wrath of investors' home countries in case of expropriation or even renegotiation of contract terms and conditions. However, one may doubt whether home governments of companies investing abroad will in fact intervene in order to protect a given company.

This chapter argues that the situation is different in the case of SWFs. The main difference is that in contrast to private commercial investors, SWFs represent sovereign states rather directly which may and will punish the expropriating government with economic or political sanctions. Creating an investment alliance that involves different SWFs will increase expected costs of punishment for the host country in case of a conflict and thereby help investors to mitigate political risks by solving the hold-up problem. The chapter concentrates on the strategic interaction between co-investment partners and shows how these strategic aspects influence the credibility of the co-investment alliance. The success of co-investment as a way to mitigate political risks and to increase investment in infrastructure depends on whether the alliance can credibly promise to punish bad behaving host governments.

From the previous analysis it becomes apparent that SWFs need to coordinate their efforts in teaming-up in order to generate and share knowledge, experience and best practices of infrastructure investing. The already existing International Forum of Sovereign Wealth Funds (IFSWF) could play a central role in this process as a discussion platform and institution that facilitates collaboration among SWFs. It may be helpful to create guidelines and rules for co-investment in order to eliminate uncertainty among potential partners.

Actually, examples for institutions exist that in various ways act as catalyst for increasing infrastructure investment in the world. First, the World Bank

Group's Public-Private Infrastructure Advisory Facility (PPIAF) is worth to be mentioned which was created in 1999 and provides technical assistance to developing countries' governments in order to create a suitable environment for infrastructure investments.[20] Besides developing strategies for policy, regulatory and institutional reforms, PPIAF has generated a considerable amount of knowledge and expertise about private investors' and host governments' cooperation. Second, a young initiative, the Global Infrastructure Facility (GIF), started to operate in April 2015. GIF aims at coordinating and aggregating the efforts of MDBs, private and institutional investors as well as governments which are interested in financing infrastructure projects.[21] GIF cooperates with the world's leading institutional investors, insurance companies, pension funds, commercial banks and SWFs which act as GIF's advisory partners, provide funding and technical assistance. Although PPIAF concentrates its efforts on host governments, GIF is rather a facility that connects possible investors and finds new paths for successful investment.

The example of GIF could provide some benchmark for IFSWF to start with. Combining the knowledge and experience of voluntarily created "Santiago Principles" that already exist, IFSWF could gradually convince SWFs to start a dialogue on co-investment possibilities and create a suitable environment for collaboration in the form of guidelines and rules for behavior. This would not only reduce uncertainty about each other's objectives and facilitate the communication within the community, but also improve SWFs' image as investors acting together as a strong and united community.

4.5   Conclusion

In recent years, the majority of institutional investors are shifting their investment allocation towards alternative assets, such as private equity, real estate, commodities and infrastructure. Infrastructure plays an increasingly important role in SWF's portfolios. This trend is based not only on diversification benefits

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[20]Detailed information on PPIAF can be found on its website (Public-Private Infrastructure Advisory Facility, 2015).

[21]Detailed information on GIF can be found on its website (Global Infrastructure Facility, 2015).

and higher expected investment returns in times of globally low interest rates, but also on the fact that infrastructure as an asset class offers a perfect match against the liability structure of these deep-pocketed investors. However, the long-term nature of infrastructure assets and huge capital needs for large-scale infrastructure projects make the investment process difficult even for institutional investors. Political risks, including regulatory uncertainty, corruption, political instability, sovereign theft, expropriation and nationalization of infrastructure assets belong to investors' major worries and important barriers to infrastructure investment. The social importance of infrastructure projects results sometimes in risks for investors to face political pressure and unexpected regulatory changes driven by public opinion, especially if investors achieve high returns.[22]

This chapter studies the role of co-investment among SWFs as a possibility to mitigate political risks and increase their infrastructure investments. It argues that creating alliances and joint-ventures of like-minded SWFs may act as an appropriate mechanism to discipline host governments by making the threat of punishment in case of expropriation more effective. First, SWFs are state owned investors so that there is room for sponsoring states' intervention. Second, a group of SWFs will imply sufficiently high expected costs of punishment for the host country so that it may solve the hold-up problem. However, a co-investment alliance entails strategic action problems among members caused by free-riding behavior. The reason for this lies in asymmetric information that possible alliance members have about each other. The model developed here analyzes how asymmetric information and potential partners' uncertainty about each other create strategic problems and make the co-investment of SWFs difficult. Some noteworthy results are derived from the theoretical analysis. Even though puzzling at first glance, the most interesting result is that under certain conditions, building an alliance with a partner which is expected to be less capable can be advantageous. The reason is that free-riding behavior does not occur if each of the partners believes that its own effort is essential for the group's success.

Taking into account the theoretical considerations described above and prevailing circumstances in reality, one has to recommend that SWFs take the chance

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[22]A more detailed discussion can be found in Wells and Gleason (1995) and the World Economic Forum (2014).

provided by the current trend of teaming-up, establish clear rules and guidelines, and define best practices for co-investment among institutional investors. This would reduce uncertainty about each other's objectives and facilitate communication among potential partners reducing the costs for SWFs considering new joint-ventures radically. At the end, this would induce new investments in global infrastructure. IFSWF could play a key role in this process by providing a platform for discussions and technical assistance and using the existing experience from the "Santiago Principles".

Chapter 5

Conclusions

This thesis delivers a thorough theoretical analysis on different aspects of sovereign wealth funds (SWFs) from the political economic point of view. In the light of recent widespread public interest on this particular type of public sector players, a large amount of academic literature on SWFs has been accumulated during last decades. However, the political economy of these important class of institutional investors lacks theoretical foundations. This thesis makes a contribution to the existing literature on political economic aspects of SWFs.

Taking into account that most SWFs come from countries with rather non-democratic political regimes, chapter 2 concentrates on societies dominated by a ruler and a powerful elite and models incentives of the ruler to set up a SWF. The intuition is that independently of whether these are ethnic (tribes, ethnic groups, for example in UAE or Kuwait), economic (oligarchy, for example in Russia or Kazakhstan) or political elites (ruling party, for example in Singapore), the elite's support is crucial for the ruler in order to remain in power. It is shown that under certain circumstances, the ruler will be able to use SWF as an instrument to link the elite's interests to the regime's existence and to maintain its privileged position in domestic political space as well as in the home economy. This is possible due to the fact that SWFs are strongly institutionalized and long-term oriented investment entities so that the ruler can credibly promise to transfer some resource rents to the elite via a SWF.

Following the debate about SWFs' investment motivation, transparency and governance, chapter 3 analyzes the incentives of politicians in SWF sponsoring

governments to delegate the fund's management to an independent external manager. The widely held opinion among observes and politicians is that investing through intermediary asset managers could increase SWFs' transparency and signal the purely commercial nature of their investments. The model developed in this chapter compares the increase in SWF's investment possibilities as a consequence of management outsourcing with the loss of decision-making power from the politician's point of view. Two additional factors that matter for the delegation decision are the competence of the politician and the quality of prevailing institutions in the country. It is shown that less competent politicians are more willing to delegate as it improves their chances to remain in office. In general, the delegation is also more likely if the quality of existing political and economic institutions is low.

Chapter 4 concentrates on the recent shift in SWFs' investment allocation towards more alternative assets, especially infrastructure. This trend is based not simply on diversification benefits, but rather on attractiveness of infrastructure as an asset class especially for deep-pocketed long-term investors such as SWFs. However, the existing political risk in developing countries with massive need for infrastructure projects and finance that includes regulatory uncertainty, corruption, political instability, sovereign theft, expropriation and nationalization of infrastructure assets represents a major problem for infrastructure investors. The theoretical analysis in this chapter underlines the role of co-investment among SWFs as a specific way to mitigate the political risk and facilitate investment. Given the fact that SWFs' stakeholders are sovereign states, it becomes possible to intervene in case of host governments misbehavior. Additionally, building co-investment alliances and joint-ventures of SWFs allows to accumulate enough sanctioning power to discipline host governments and under certain circumstances, may even increase the credibility of punishment's threat. However, an alliance entails strategic interaction problems among members caused by free-riding behavior. The reason is the asymmetric information that possible partners have about each other. It is shown that a moderate level of uncertainty among partners so that each partner believes its own effort to be essential for the group's success helps to overcome free-riding problems.

To summarize, the modern financial system is no longer imaginable without

SWFs today. It seems that these state-owned investors were able to tackle quickly the problems concerning transparency of their investments and succeeded to gain the confidence of global capital market participants. Moreover, despite the concerns raised by politicians all over the world and following protectionist pressure from recipient countries, SWFs managed to establish a reputation of a stable and important source of capital for the international financial world. With certainty, a key role in this development played SWFs' large and much-welcomed capital injections in Western financial institutions during the recent financial downturn. Today, SWFs are in a unique position as suppliers of long-term capital with multi-generational investment horizons. Cooperation with these important institutional investors could offer capital-starved economies new opportunities for financing long-term infrastructure projects. However, SWFs represent a highly heterogeneous group of investors with multiple objectives and pursue different investment strategies. In order to facilitate the cooperation with SWFs, governments have to understand these funds' motivation and learn how to interact with this class of government-controlled investors.

Overall, the thesis contributes to better understanding of SWFs as a multi-faceted phenomenon in recent financial world. The focus on political economic aspects of this important class of institutional investors helps to round off the complex picture of these funds' investment motivation, purposes and strategies.

Appendix A

A.1 Generally Accepted Principles and Practices (GAPP) – Santiago Principles

GAPP 1. Principle

The legal framework for the SWF should be sound and support its effective operation and the achievement of its stated objective(s).

GAPP 1.1. Subprinciple. The legal framework for the SWF should ensure legal soundness of the SWF and its transactions.

GAPP 1.2. Subprinciple. The key features of the SWF's legal basis and structure, as well as the legal relationship between the SWF and other state bodies, should be publicly disclosed.

GAPP 2. Principle

The policy purpose of the SWF should be clearly defined and publicly disclosed.

GAPP 3. Principle

Where the SWF's activities have significant direct domestic macroeconomic implications, those activities should be closely coordinated with the domestic fiscal and monetary authorities, so as to ensure consistency with the overall macroeconomic policies.

GAPP 4. Principle

There should be clear and publicly disclosed policies, rules, procedures, or arrangements in relation to the SWF's general approach to funding, withdrawal, and spending operations.

GAPP 4.1. Subprinciple. The source of SWF funding should be publicly disclosed.

GAPP 4.2. Subprinciple. The general approach to withdrawals from the SWF and spending on behalf of the government should be publicly disclosed.

GAPP 5. Principle

The relevant statistical data pertaining to the SWF should be reported on a timely basis to the owner, or as otherwise required, for inclusion where appropriate in macroeconomic data sets.

GAPP 6. Principle

The governance framework for the SWF should be sound and establish a clear and effective division of roles and responsibilities in order to facilitate accountability and operational independence in the management of the SWF to pursue its objectives.

GAPP 7. Principle

The owner should set the objectives of the SWF, appoint the members of its governing body(ies) in accordance with clearly defined procedures, and exercise oversight over the SWF's operations.

GAPP 8. Principle

The governing body(ies) should act in the best interests of the SWF, and have a clear mandate and adequate authority and competency to carry out its functions.

GAPP 9. Principle

The operational management of the SWF should implement the SWF's strategies in an independent manner and in accordance with clearly defined responsibilities.

GAPP 10. Principle

The accountability framework for the SWF's operations should be clearly defined in the relevant legislation, charter, other constitutive documents, or management agreement.

GAPP 11. Principle

An annual report and accompanying financial statements on the SWF's operations and performance should be prepared in a timely fashion and in accordance with recognized international or national accounting standards in a consistent manner.

GAPP 12. Principle

The SWF's operations and financial statements should be audited annually in accordance with recognized international or national auditing standards in a consistent manner.

GAPP 13. Principle

Professional and ethical standards should be clearly defined and made known to the members of the SWF's governing body(ies), management, and staff.

GAPP 14. Principle

Dealing with third parties for the purpose of the SWF's operational management should be based on economic and financial grounds, and follow clear rules and procedures.

GAPP 15. Principle

SWF operations and activities in host countries should be conducted in compliance with all applicable regulatory and disclosure requirements of the countries in which they operate.

GAPP 16. Principle

The governance framework and objectives, as well as the manner in which the SWF's management is operationally independent from the owner, should be publicly disclosed.

GAPP 17. Principle

Relevant financial information regarding the SWF should be publicly disclosed to demonstrate its economic and financial orientation, so as to contribute to stability in international financial markets and enhance trust in recipient countries.

GAPP 18. Principle

The SWF's investment policy should be clear and consistent with its defined objectives, risk tolerance, and investment strategy, as set by the owner or the governing body(ies), and be based on sound portfolio management principles.

GAPP 18.1. Subprinciple. The investment policy should guide the SWF's financial risk exposures and the possible use of leverage.

GAPP 18.2. Subprinciple. The investment policy should address the extent to which internal and/or external investment managers are used, the range of their activities and authority, and the process by which they are selected and their performance monitored.

GAPP 18.3. Subprinciple. A description of the investment policy of the SWF should be

publicly disclosed.

GAPP 19. Principle

The SWF's investment decisions should aim to maximize risk-adjusted financial returns in a manner consistent with its investment policy, and based on economic and financial grounds.

GAPP 19.1. Subprinciple. If investment decisions are subject to other than economic and financial considerations, these should be clearly set out in the investment policy and be publicly disclosed.

GAPP 19.2. Subprinciple. The management of an SWF's assets should be consistent with what is generally accepted as sound asset management principles.

GAPP 20. Principle

The SWF should not seek or take advantage of privileged information or inappropriate influence by the broader government in competing with private entities.

GAPP 21. Principle

SWFs view shareholder ownership rights as a fundamental element of their equity investments' value. If an SWF chooses to exercise its ownership rights, it should do so in a manner that is consistent with its investment policy and protects the financial value of its investments. The SWF should publicly disclose its general approach to voting securities of listed entities, including the key factors guiding its exercise of ownership rights.

GAPP 22. Principle

The SWF should have a framework that identifies, assesses, and manages the risks of its operations.

GAPP 22.1. Subprinciple. The risk management framework should include reliable information and timely reporting systems, which should enable the adequate monitoring and management of relevant risks within acceptable parameters and levels, control and incentive mechanisms, codes of conduct, business continuity planning, and an independent audit function.

GAPP 22.2. Subprinciple. The general approach to the SWF's risk management framework should be publicly disclosed.

GAPP 23. Principle

The assets and investment performance (absolute and relative to benchmarks, if any) of the SWF should be measured and reported to the owner according to clearly defined principles or standards.

GAPP 24. Principle

A process of regular review of the implementation of the GAPP should be engaged in by or on behalf of the SWF.

Source: International Working Group on Sovereign Wealth Funds (2008).

A.2 Truman's Scoreboard for SWFs

STRUCTURE

1. Is the SWF's objective clearly stated?

2. Is there a clear legal framework for the SWF?

3. Is the procedure for changing the structure of the SWF clear?

4. Is the overall investment strategy clearly stated?

Fiscal Treatment

5. Is the source of the SWF's funding clearly specified?

6. Is the nature of the subsequent use of the principal and earnings of the fund clearly specified?

7. Are the SWF's operations appropriately integrated with fiscal and monetary policies?

8. Is the SWF separate from the country's international reserves?

GOVERNANCE

9. Is the role of the government in setting the investment strategy of the SWF clearly established?

10. Is the role of the governing body of the SWF clearly established?

11. Is the role of the managers in executing the investment strategy clearly established?

12. Are decisions on specific investments made by the managers?

13. Does the SWF have internal ethical standards for its management and staff?

14. Does the SWF have in place, and make publicly available, guidelines for corporate responsibility that it follows?

15. Does the SWF have ethical investment guidelines that it follows?

TRANSPARENCY AND ACCOUNTABILITY

Investment Strategy Implementation

16. Do regular reports on investments by the SWF include information on the categories of investments?

17. Does the strategy use benchmarks?

18. Does the strategy use credit ratings?

19. Are the holders of investment mandates identified?

Investment Activities

20. Do regular reports on the investments by the SWF include the size of the fund?

21. Do regular reports on the investments by the SWF include information on its returns?

22. Do regular reports on the investments by the SWF include information on the geographic location of investments?

23. Do regular reports on the investments by the SWF include information on the specific investments?

24. Do regular reports on the investments by the SWF include information on the currency composition of investments?

Reports

25. Does the SWF provide at least an annual report on its activities and results?

26. Does the SWF provide quarterly reports?

Audits

27. Is the SWF subject to a regular annual audit?

28. Does the SWF publish promptly the audits of its operations and accounts?

29. Are the audits independent?

BEHAVIOR

30. Does the SWF have an operational risk management policy?

31. Does the SWF have a policy on the use of leverage?

32. Does the SWF have a policy on the use of derivatives?

33. Does the SWF have a guideline on the nature and speed of adjustment in its portfolio?

Source: Truman (2008) and Bagnall et al. (2013).

A.3   Linaburg-Maduell Transparency Index

1. Fund provides history including reason for creation, origins of wealth, and government ownership structure.

2. Fund provides up-to-date independently audited annual reports.

3. Fund provides ownership percentage of company holdings, and geographic locations of holdings.

4. Fund provides total portfolio market value, returns, and management compensation.

5. Fund provides guidelines in reference to ethical standards, investment policies, and enforcer of guidelines.

6. Fund provides clear strategies and objectives.

7. If applicable, the fund clearly identifies subsidiaries and contact information.

8. If applicable, the fund identifies external managers.

9. Fund manages its own web site.

10. Fund provides main office location address and contact information such as telephone and fax.

Source: Sovereign Wealth Fund Institute (2015b).

Appendix B

B.1 The Ruler's Investment Decision

Consider the ruler's decision to invest in infrastructure (and thus move from point 2 to 3 of figure 2.1). If the ruler increases its investment from zero to i^*, an increase in the size of the SWF by $\bar{s}$ will be needed to prevent the coup so that

$$R + \gamma A i^* = \left[\frac{1-p}{2\pi} - 1\right](s' + \bar{s}). \tag{B.1}$$

Combining this equation with the fact that at point 2

$$R = \left[\frac{1-p}{2\pi} - 1\right]s', \tag{B.2}$$

leads to

$$\bar{s} = \frac{2\pi\gamma A}{1 - p - 2\pi}i^*, \tag{B.3}$$

Compared to point 2, increasing the investment from zero to i^* means that the ruler must pay $i^* + \bar{s}$ today, but will obtain $\gamma A i^* + p\bar{s} + (1-p)\frac{\bar{s}}{2}$ tomorrow. It is worth for the ruler if and only if

$$\gamma A i^* + p\bar{s} + (1-p)\frac{\bar{s}}{2} - i^* - \bar{s} > 0. \tag{B.4}$$

Using the expression for $\bar{s}$ and rearranging leads to

$$\gamma A > \frac{1 - p - 2\pi}{1 - p - 2\pi - \pi(1-p)}. \tag{B.5}$$

Note that by assumption (1) $\gamma A > 1$. One can easily show that the right-hand side of condition (B.5) is also greater or equal to 1. Moreover, it increases both with π and p.

Appendix C

C.1 Proof of Proposition 3

Voters choose the output threshold level $\tilde{y}$ to maximize

$$Prob\left(\theta_t > \theta^*\right) \sum_{i=t}^{\infty} \delta^{i-t} y_i = \left[1 - F(\theta^*)\right] \frac{\tilde{y}}{1-\delta}. \tag{C.6}$$

The first order condition is

$$\frac{1}{1-\delta} \left[1 - F(\theta^*) - \tilde{y} f(\theta^*) \frac{1}{\delta\left(R + EV_t\right)}\right] = 0, \tag{C.7}$$

with $F(\cdot)$ being the cumulative distribution function and $f(\cdot)$ the density function of θ. Using equation (3.6) and rearranging yields

$$\theta^* = \frac{1 - F(\theta^*)}{f(\theta^*)}. \tag{C.8}$$

For the uniform distribution of θ over the interval $[0, a]$ this results in $\theta^* = a/2$.

The expected value of reelection at the time point t is given by

$$
\begin{aligned}
EV_t &= Prob\left(\theta_{t+1} \leq \theta^*\right) e + Prob\left(\theta_{t+1} > \theta^*\right) \left[E(\tilde{r}_{t+1} | \theta_{t+1} > \theta^*) + \delta\left(R + EV_{t+1}\right)\right] \\
&= F(\theta^*) e + \int_{\theta^*}^{a} \left(e - \frac{\tilde{y}}{\theta}\right) dF(\theta) + \left(1 - F(\theta^*)\right) \delta\left(R + EV_{t+1}\right). \tag{C.9}
\end{aligned}
$$

Taking into account the uniform distribution of θ, the fact that $EV_t = EV_{t+1}$ and

replacing for $\theta^* = a/2$ gives

$$EV_t = \frac{\delta R + e}{2 - \delta} + \frac{2}{2 - \delta} \int_{\theta^*}^{a} \left(e - \frac{\tilde{y}}{\theta} \right) dF(\theta). \tag{C.10}$$

Making use of equation (3.6) simplifies (C.10) to

$$EV_t = \frac{\delta R + e}{2 - \delta} + \frac{2}{2 - \delta} \left[\frac{e}{2} - \frac{a}{2} \delta \left(R + EV_t \right) \int_{\theta^*}^{a} \frac{1}{\theta} dF(\theta) \right], \tag{C.11}$$

which results in

$$EV_t = \frac{2e + \delta R \left(1 + \ln 2 \right)}{2 - \delta \left(1 - \ln 2 \right)}. \tag{C.12}$$

Together with equation (3.6), this leads to

$$\tilde{y} = a\delta \left(\frac{e + R + \delta R \ln 2}{2 - \delta \left(1 - \ln 2 \right)} \right) \tag{C.13}$$

and

$$\tilde{r}_t(\theta_t) = e - \frac{a\delta}{\theta_t} \left(\frac{e + R + \delta R \ln 2}{2 - \delta \left(1 - \ln 2 \right)} \right). \tag{C.14}$$

C.2   Analyzing Condition (3.28)

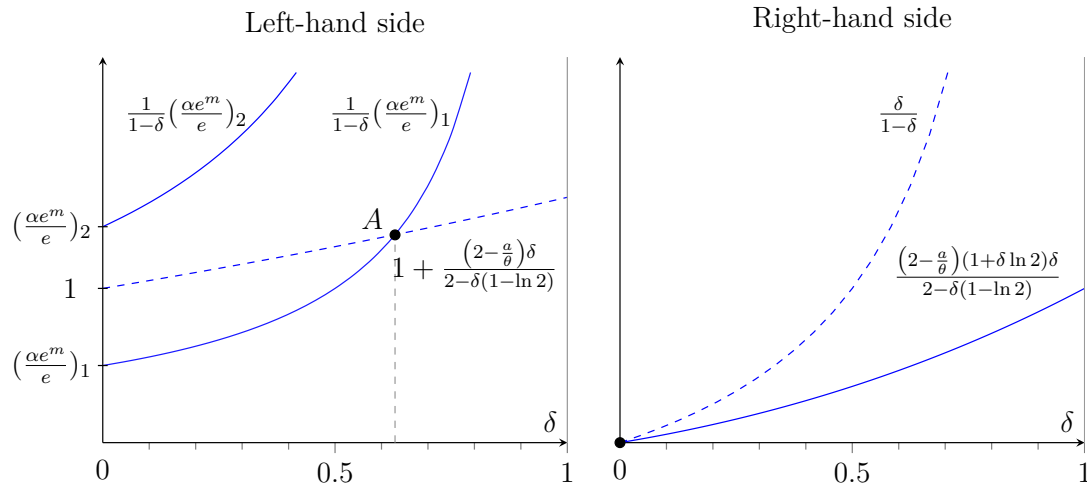The following figure depics both sides of condition (3.28).

Figure C.1: Analyzing condition (3.28)

One can see that if $\alpha e^m < e$, the left-hand side of the condition (3.28) (given as the vertical difference between the dashed and smooth lines) is positive for each δ lying on the left-hand side of point A. In the case of $\alpha e^m \geq e$, the left-hand side of the condition (3.28) is negative for all $0 < \delta < 1$.

The right-hand side of condition (3.28) is positive for all $0 < \delta < 1$.

Appendix D

D.1 Types of Infrastructure Investment
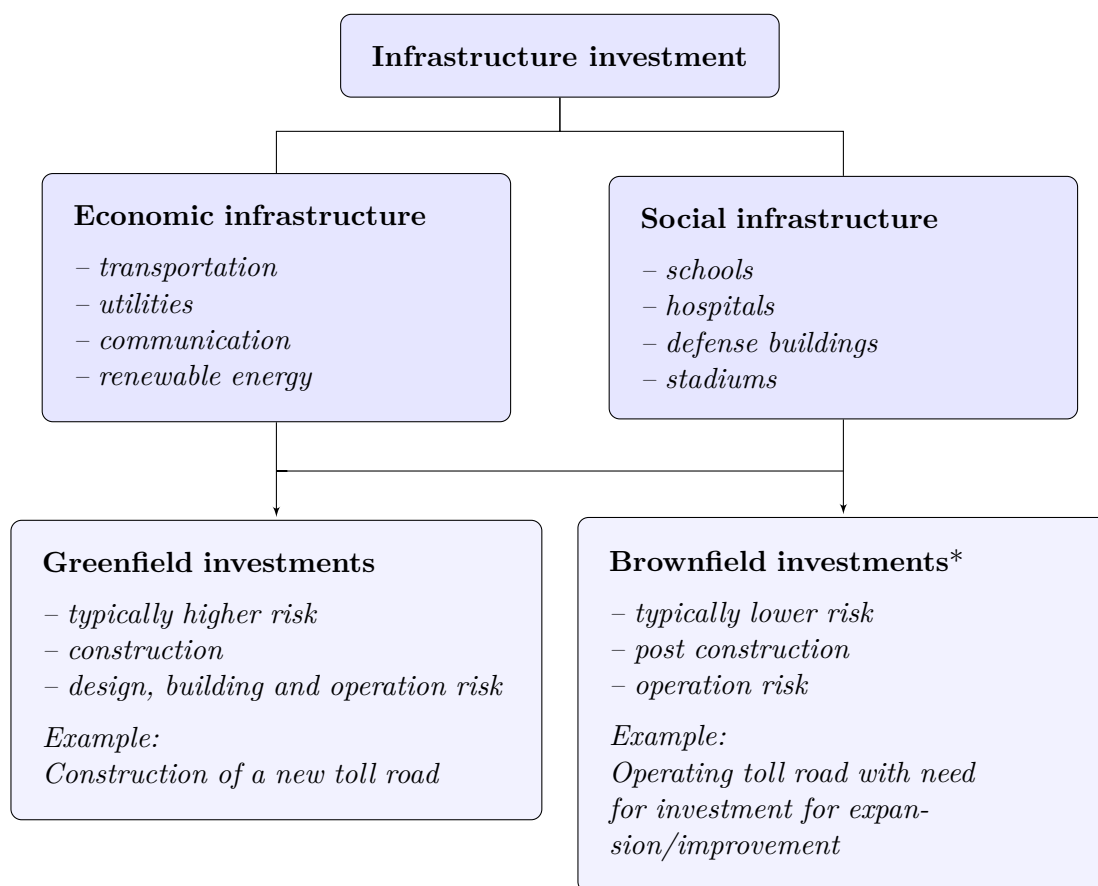

Figure D.2: Types of infrastructure investment
Source: The diagram is based on Della Croce (2012), World Economic Forum (2014) and Inderst and Stewart (2014).
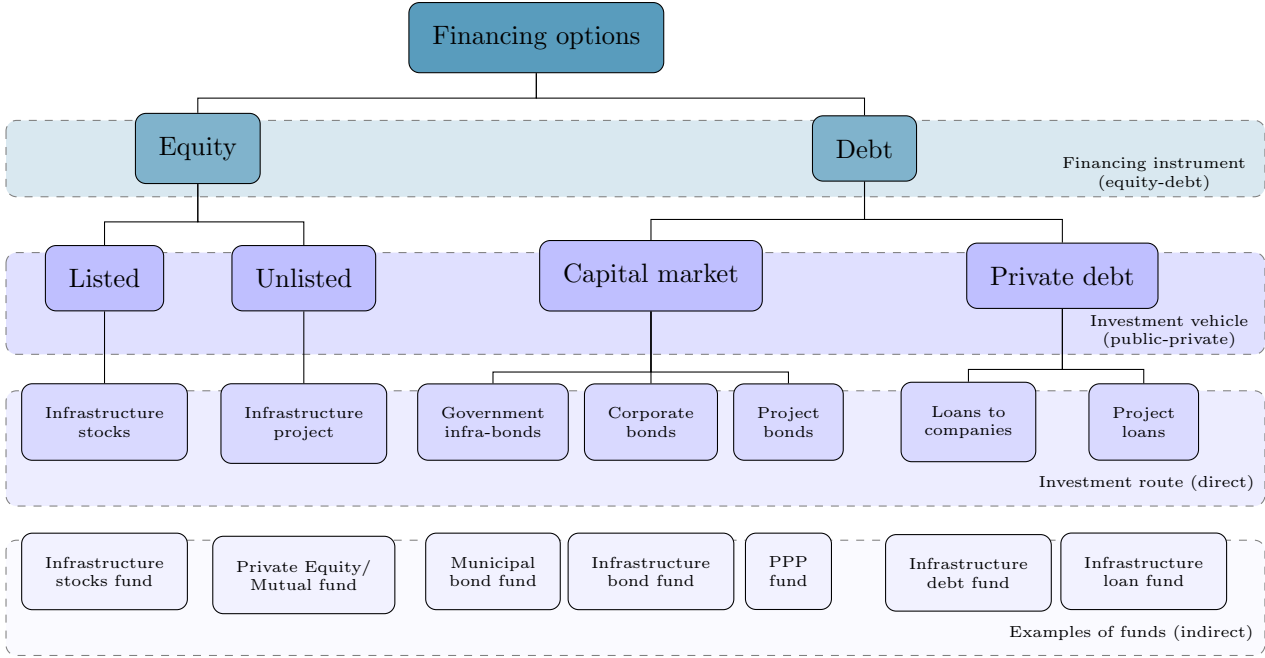
D.2 Infrastructure Financing Instruments

Figure D.3: Infrastructure financing instruments
Source: The diagram is based on Inderst and Stewart (2014).

D.3 The Game of Figure 4.2 with Perfect Information

Consider the game described in figure 4.2 with perfect information. The game is analyzed backwards.

PF's decision

Consider first PF's decision when SWF sets $\sigma_{SWF} = s$. Note, that PF anticipates that if $\sigma_{PF} = ns$, HC will set $\eta = nc$ because SWF's sanctions are not sufficiently potent. Thus, if $\sigma_{PF} = ns$, PF's pay-off will equal 0. However, if PF's sanctions are potent enough or

$$(C + Z)(1 - \beta) \geq R(1 - \gamma), \tag{D.15}$$

so that at least together with SWF's sanctions they force HC to set $\eta = c$, then it is worth for PF to choose $\sigma_{PF} = s$, of course only if PF is strong enough which means that the sanction costs W are small enough

$$\frac{1}{2}R(1 - \gamma) - \beta W \geq 0. \tag{D.16}$$

Now consider PF's decision when SWF sets $\sigma_{SWF} = ns$. If PF chooses $\sigma_{PF} = ns$, the game ends and both SWF and PF get 0. However if PF sets $\sigma_{PF} = s$, HC will be forced to concede by setting $\eta = c$ if PF's sanctions are potent

$$Z(1 - \beta) \geq R(1 - \gamma). \tag{D.17}$$

Note that PF will decide to sanction only if it is strong (see condition (D.16)), otherwise its pay-off is negative and thus, it is better to set $\sigma_{PF} = ns$.

SWF's decision

Consider now SWF's decision. Note that under perfect information, SWF is completely informed about PF's type and effectiveness of PF's sanctions. Hence, if PF is strong (condition (D.16) holds) and its sanctions are potent (condition (D.17) holds) so that HC is forced to concede, SWF's best strategy will be to save

sanction costs by free-riding and setting $\sigma_{SWF} = ns$. Thus, using the first-mover advantage, SWF will force PF to imply sanctions alone and to set $\sigma_{PF} = s$. Facing PF's sanctions, HC will choose $\eta = c$.

However, if PF is strong (condition (D.16) holds) but its sanctions are just potent enough to discipline HC together with SWF (condition (D.17) does not hold, but (D.15) holds), then both SWF and PF will sanction ($\sigma_{SWF} = \sigma_{PF} = s$). Facing sanctions, HC will concede ($\eta = c$).

In the case that PF is either weak or its sanctions are not potent enough, SWF will foresee that it is not possible to discipline HC and thus none of the alliance members will sanction. However, one has to recognize that in this case there will be no incentive for both funds to build an alliance at the beginning of the game.

HC's expropriation decision

Turn now to HC's expropriation decision. Note once again that under perfect information assumption HC is completely informed about both alliance members' types and their sanctioning power. Hence, observing an alliance of strong investors (SWF and PF) which have either enough sanctioning power together or because PF's sanctions are potent, HC will be better off not expropriating ($\varepsilon = ne$) because otherwise sanctions will be implied and HC will be forced to concede. This implicates a smaller pay-off due to sanction costs.

Alliance building and investment

To summarize, in the game given by figure 4.2 under perfect information assumption only alliances of strong investors with potent sanctions will be built and investment will take place. The threat of sanctions and the knowledge that these sanctions are potent will discipline HC so that no expropriation will take place.

D.4 The Game of Figure 4.2 with Imperfect Information

Consider the game described in figure 4.2 with uncertainty about the alliance members' sanctioning power as described in the main text (see equations (4.7) and (4.8)). The game is analyzed backwards.

PF's decision

Note that as mentioned above, after building an alliance, SWF and PF know that they both are strong. First, consider the case that PF observes SWF imposing no sanctions or $\sigma_{SWF} = ns$. If PF chooses $\sigma_{PF} = ns$, the game ends and both SWF and PF get nothing. However if PF sanctions and sets $\sigma_{PF} = s$, HC will be forced to concede by setting $\eta = c$ only if PF's sanctions are potent ($Z = 2\xi$). Hence, a strong PF with potent sanctions has positive pay-off from sanctioning and thus will always set $\sigma_{PF} = s$. However, if PF's sanctions are just useful ($Z = \xi$), it is better to set $\sigma_{PF} = ns$ because otherwise HC will not concede setting $\eta = nc$ and PF's pay-off will be negative.

Now, assume that SWF has imposed sanctions and $\sigma_{SWF} = s$. Knowing that SWF's sanctions are not potent enough, PF anticipates that without its own sanctions HC will not concede so that at the end PF's pay-off will be zero. However, if PF's sanctions are potent, setting $\sigma_{PF} = s$ will be sufficient (independently of how potent SWF's sanctions are) to force HC to concede. In this case, PF's pay-off will be $\frac{1}{2}R(1-\gamma) - \beta W$ so that a strong PF will be better off sanctioning. Nevertheless, if PF's sanctions are just useful, their impact on HC's behavior will depend on the effectiveness of SWF's sanctions. If SWF has useful sanctions as well, the alliance will be able to force HC to concede and PF's pay-off will be positive (the same as mentioned above). But if SWF's sanctions are ineffective, the alliance will not be able to discipline HC. PF has to bear costs from its own sanctions W. Thus, PF's expectations about SWF's sanctioning power matter. PF will choose to sanction only if its expected pay-off from sanctioning is not negative or

$$\pi(\frac{1}{2}R(1-\gamma) - \beta W) - (1-\pi)W \geq 0, \tag{D.18}$$

where $\pi = prob\{C = \xi \mid \sigma_{SWF} = s\}$ is the probability that SWF's sanctions are useful given that SWF already has chosen to impose sanctions. Note that this condition holds if π is sufficiently high. In order to define π, one has to consider SWF's decision about sanctioning.

SWF's decision

Consider first the decision of SWF with ineffective sanctions ($C = 0$). From SWF's point of view there are two possibilities, if it does not sanction. Either with probability q PF has potent sanctions and will actually set $\sigma_{PF} = s$, or with probability $(1 - q)$ its sanctions are just useful and PF will set $\sigma_{PF} = ns$ observing $\sigma_{SWF} = ns$. In the first case HC will concede facing PF's sanctions. This leads to a pay-off of $\frac{1}{2}R(1-\gamma)$ for SWF. However, in the second case, SWF's pay-off is zero. Thus, the expected pay-off of a SWF with ineffective sanctions in case of not imposing sanctions is $\frac{1}{2}qR(1 - \gamma)$. Note that SWF's expected pay-off from setting $\sigma_{SWF} = s$ will be smaller. Again with probability q it can expect that PF has potent sanctions so that HC will concede facing sanctions. In this case SWF's pay-off will be $\frac{1}{2}qR(1 - \gamma) - q\beta V$. However, if PF's sanctions are just useful or PF does not sanction, SWF has to bear its sanction costs V. To summarize, a SWF with ineffective sanctions will always prefer to set $\sigma_{SWF} = ns$. This means, that after observing SWF's sanctions PF can update its beliefs about SWF's sanctioning power and be sure that SWF's sanctions are useful or

$$\pi = prob\{C = \xi \mid \sigma_{SWF} = s\} = 1. \tag{D.19}$$

Now, consider the decision of SWF with useful sanctions ($C = \xi$). Again, two things may happen, if SWF does not sanction. Either PF has enough power and will actually sanction, or its sanctions are just useful so that there will be no reaction to expropriation. Thus, SWF's expected pay-off from setting $\sigma_{SWF} = ns$ is equal to $\frac{1}{2}qR(1 - \gamma)$. However, if SWF sanctions, it will get $\frac{1}{2}R(1 - \gamma) - \beta V$ independently of PF's sanctioning power because PF's sanctions are at least useful so that in sum the alliance is powerful enough to force HC to concede. Hence, SWF will set $\sigma_{SWF} = s$ if its expected pay-off is higher than in case of not

sanctioning or

$$\frac{1}{2}R(1-\gamma) - \beta V \geq \frac{1}{2}qR(1-\gamma). \tag{D.20}$$

One can easily prove that this happens if $q \leq q^*$ where

$$q^* = \frac{R(1-\gamma) - 2\beta V}{R(1-\gamma)}. \tag{D.21}$$

Thus, SWF's incentives to free-ride by not sanctioning disappear if the probability that PF's sanctions are potent is small enough.

To sum up, SWF with ineffective sanctions will always prefer not to sanction. Observing no sanctions, PF will sanction only if its sanctions are potent. Nevertheless, SWF with useful sanctions will impose sanctions if it expects PF not to be powerful enough. Otherwise, SWF will free-ride hoping that PF will react in the case of expropriation.

HC's expropriation decision

Note that HC is able to estimate the costs implied by both alliance members' sanctions perfectly. If HC chooses not to expropriate ($\epsilon = ne$), its pay-off is γR. Whether HC is better off by expropriating ($\epsilon = e$), depends on the sanctioning power of the alliance. Note that if the alliance includes at least one member with potent sanctions, HC can be sure that expropriation will be punished with sanctions and therefore decides not to expropriate.[1] If HC observes an alliance consisting of members with ineffective and useful sanctions, it expropriates because alliance members' sanctions are not potent enough so that actually no sanctions will be imposed.[2]

The most interesting case represents the alliance if both members have useful sanctions possibilities. As mentioned earlier, SWF sets $\sigma_{SWF} = s$ as soon as $q \leq q^*$ and after observing SWF's sanctions, PF sets $\sigma_{PF} = s$ as well. Thus, as soon as HC observes that $q \leq q^*$, it can expect potent sanctions as a reaction to expropriation and will therefore choose not to expropriate. Otherwise, due to

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[1]Given the timing assumptions of the game, only PF can be the member with potent sanctions. However, this does not influence the results in general.

[2]Note again that given the assumptions of the game, SWF will be the member with ineffective sanctions and PF the one with useful sanctions.

free-riding behavior of its members, the alliance will not be able to discipline HC.

Alliance building and investment

Assume that the alliance is built as follows. First, SWF makes a proposal and second, PF decides whether to accept it. Only if a proposal is made and accepted, an alliance is built. Obviously, PF with potent sanctions will always accept a proposal. As mentioned earlier, PF with just useful sanctions will agree to build an alliance if it expects that SWF has useful sanctions as well and its incentives to free-ride are sufficiently weak (so that $q \leq q^*$).

The question is, what can PF learn about SWF's sanctioning power after receiving a proposal? Note that SWF with ineffective sanctions will make a proposal only if its expected pay-off exceeds its initial investment

$$\frac{1}{2}qR(1-\gamma) \geq \frac{K}{2}. \tag{D.22}$$

One can rearrange this condition to

$$q \geq \bar{q} \equiv \frac{K}{R(1-\gamma)}. \tag{D.23}$$

In other words, SWF with ineffective sanctions makes a proposal only if the probability that PF has enough sanctioning power is higher than a given threshold $\bar{q}$. The same is true for SWF with useful sanctions but with strong incentives to free-ride (when $q > q^*$). In contrast, SWF with useful sanctions and without incentives to free-ride (when $q \leq q^*$) would like to build an alliance and will make a proposal.

Consider now the decision of PF with just useful sanctions. If PF receives a proposal and observes that $q < \bar{q}$, it can be sure that SWF's sanctions are useful and SWF is actually willing to impose sanctions in case of expropriation so that $q \leq q^*$. Thus, in this case PF is better off accepting the proposal so that the alliance is built and investment takes place.

However, if PF receives a proposal but observes that $q \geq \bar{q}$, then two possibilities exist. First, if $q > q^*$, PF can be sure that even SWF with useful sanctions will free-ride and never impose sanctions. Thus, PF will reject the proposal and

there will be no investment. Second, if $q \leq q^*$, there is no risk of free-riding behavior so that either with probability p SWF has useful sanctions and will be ready to impose sanctions in the case of expropriation, or with probability $(1-p)$ its sanctions are ineffective so that the alliance will not have enough power to discipline HC. Hence, PF will accept the proposal only if the probability that SWF's sanctions are useful is high enough or

$$\frac{1}{2}pR(1-\gamma) \geq \frac{K}{2}. \tag{D.24}$$

One can rearrange this condition to

$$p \geq \bar{p} \equiv \frac{K}{R(1-\gamma)}. \tag{D.25}$$

Generally, one can say that the information of possible partners about each other's sanctioning power plays a key role in the alliance building process and in the end, defines whether investment takes place. Proposition 8 summarizes the results of the analysis.

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