New Wealth, New Wisdom:

Understanding the Changing Profile of Countries Creating

Sovereign Wealth Funds

by

Matthew Gouett

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Carleton University

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Abstract

Sovereign wealth funds (SWFs) are among the most innovative and least-studied economic policy tools governments have at their disposal. At its essence, the question of why a country creates a SWF is about whether a government should save or spend. Despite the importance of SWFs to governments and global markets, the economic and noneconomic factors influencing a country's decision to create a SWF have not been sufficiently investigated. Moreover, studies purporting to answer why countries create SWFs or which types of countries create certain types of SWFs have been based on the theoretical benefits of SWFs or the stated mandates of SWFs; not observed macroeconomic data. I argue that these studies have obfuscated the changing dynamics of the population of countries creating SWFs and reified conventional wisdom that is no longer based on evidence.

In this thesis, I find that countries with a high dependence on resource exports and countries enjoying high levels of GDP growth are more likely to create SWFs. My findings put into question the conventional wisdom that countries with current account surpluses and higher levels of international reserves create SWFs. In addition, I also statistically test noneconomic reasons for SWF creation and find that resource-dependent countries may create SWFs to emulate other resource-dependent countries. My empirical findings also indicate that countries use SWFs as a signal of good economic governance in an attempt to attract foreign direct investment. However, these noneconomic reasons are found to be less statistically influential than the economic determinants of SWF creation.

In the latter half of this thesis, I employ the findings from my statistical analysis to create a new, statistically-based typology of SWF-creating countries and to assess the appropriateness of countries creating SWFs based on their respective macroeconomics. Finally, I conduct a three-country qualitative analysis of three African nations, of which two created SWFs, and find that the international financial institutions were particularly influential in the decisions of these countries to create their SWFs.

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Chapter 1: Introduction

In May 2015, the Canada Pension Plan Investment Board (CPPIB) entered into a joint venture with the Government of Singapore Investment Corporation (GIC) to acquire the D-Cube Retail Mall in Seoul, South Korea for $263 million[1] (CPP Investment Board 2015). A month earlier, the Qatar Investment Authority (QIA) finalized a $4 billion joint venture with Brookfield Property Partners to buy the London-based Canary Wharf Group. Among the portfolio of buildings held by Canary Wharf was One Canada Square, home of the European Energy Exchange, the International Sugar Organization, and offices for Moody Analytics (Allen and Massoudi 2015). These announcements followed reports that the Abu Dhabi Investment Authority (ADIA) and the GIC were in advanced talks to jointly purchase the Times Warner Center in New York City (Barnard 2014). These deals, and the reporting of them, represented a shift in the discussion of sovereign wealth funds (SWFs). Much of the consternation over SWF investments into Western economies has faded and Western governments have become so comfortable with SWFs that co-investing in third economies is now deemed acceptable. It is striking that less than a decade ago, Lawrence Summers (2007), former U.S. Secretary of the Treasury and advisor to Barack Obama, stated in a *Financial Times* editorial that SWF investments may be a way for new economic powers to exert influence over traditional powers and that SWF investments undermined capitalist logic. While the editorial did not provide evidence regarding how these countries had done this, Summers was quick to speculate

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[1] All figures in this thesis are United States dollars unless otherwise indicated.

on future scenarios. Specifically, he envisioned a situation where a SWF-having country[2] would contribute to the "coalition of the willing" in exchange for tax breaks for American companies in which they had invested. This type of concern was not confined to editorials in business newspapers.

A year before Summers' comments, controversy engulfed DP World's 2006 purchase of Peninsular and Oriental Steam Navigation Company (P&O) and their assumption of leases to manage major U.S. port facilities in New York, New Jersey, Philadelphia, Baltimore, New Orleans, and Miami. DP World, a state-owned enterprise (SOE) of the United Arab Emirates (UAE), and its purchase of P&O had already passed review by the Committee on Foreign Investment in the United States (CFIUS); however, the deal was blocked by the House Appropriations Committee of Congress by a 62-2 vote (Truman 2010). DP World eventually sold the American operations it had acquired in the deal with P&O to American International Group (AIG) (King Jr. and Hitt 2006). Ironically, two years later, AIG would go on to be one of several firms to receive a credit-liquidity facility from the Federal Reserve of New York as a result of the global financial crisis (Sorkin 2009).

As Western governments were moderating their stance toward SWFs, commodity-producing countries were the beneficiaries of increased prices for their goods which translated to improved fiscal balance sheets. However, these countries with improved fiscal conditions faced a new challenge as a result of the global financial crisis: low-yielding reserves. As the most developed economies were undertaking programs of quantitative easing to spur economic rebound in their respective economies, the yield on

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[2] For a list of SWFs and the countries that have them, see Appendix 1.

instruments issued by these governments declined significantly. A 3-month United States treasury bill, an important investment vehicle of most countries' international reserves, had its yield decline from 5.03% to 0.3% from February 2007 to February 2009 (Board of Governors of the Federal Reserve System 2016). Therefore, commodity-producing countries with new levels of wealth could no longer rely on the traditional methods of investing their savings.

These events, combined with the increasing number of countries creating SWFs[3], spurred greater interest in the study of SWFs and their operations. These studies largely focused on a country's motivations to create a SWF, how SWFs make investment decisions, and the impact these decisions have on the companies in which they invest. Although these studies provided initial insights, many were undermined by the lack of available data about SWFs' operations. Most academic works on SWFs were biased by the availability of data on the most transparent SWF-having countries; countries such as Norway and Singapore. While these two nations were among the first to create SWFs, they are not representative of the diversity among the forty-five countries[4] that currently operate SWFs. Led by the efforts of the International Monetary Fund (IMF) and the International Forum of Sovereign Wealth Funds (IFSWF), SWFs have, over time, become more transparent in their reporting and their operations. This new data, combined with a better availability of cross-national macroeconomic figures, now allows for more robust findings with greater nuance and a more comprehensive understanding of SWFs and the countries creating them.

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[3] For a graphical representation of this increase, see Appendix 2.
[4] As of March 2014.

This thesis seizes on the opportunity of having more robust data and investigates four interrelated questions regarding SWFs. First, what are the macroeconomic conditions that lead a country to establish a SWF? Second, what are the pressures external to a country's macroeconomy that may lead a country to launch a SWF? Third, how should SWFs be subdivided or classified for deeper analysis? Fourth, how does a country's domestic politics influence the decision to create a SWF and how do these politics inform the ways in which the SWF operates?

The data used in this research were predominantly sourced from the World Bank's *World Development Indicators* (WDI) and included annual figures for 214 countries from 1960 until 2012. Given that the countries of Kiribati and Kuwait initiated their SWFs prior to 1960, these countries were not included in the sample. As well, Saudi Arabia's Monetary Authority began foreign asset purchasing at some undisclosed period and was therefore excluded. While acknowledging these shortcomings, the sample of countries and data used in this research is more comprehensive than any SWF study previously published and succeeds in offering a better understanding of the population of SWF-having countries.

This thesis is comprised of six chapters. In this first chapter, I provide a brief history of SWFs and the definitional issues surrounding studies of this kind. Furthermore, I outline the previous SWF literature and highlight existing gaps therein. In Chapter 2, I present a quantitative analysis of the macroeconomic conditions that existed prior to a country creating a SWF. As well, I investigate whether the results differ when commodity revenue stabilization funds (CRSFs) are included in the sample. In Chapter 3, I test the idea that international policy diffusion and external non-economic

considerations are more influential in the SWF-creating process than the economic

determinants found in the second chapter. In Chapter 4, I question the historical

subgroupings of SWF analysis and offer the first-ever statistically-based SWF typology

based on statistical clustering. In Chapter 5, I employ the findings from the fourth

chapter to choose three country cases to discuss the domestic politics and pressures that

lead a country to create a SWF or to forego SWF creation. By using the statistical data

from the previous chapters, I chose a country where the statistical model rightfully

predicted SWF creation, a country which created a SWF despite having had a low

predicted probability of creating a SWF, and a country which the model predicted would

have created a SWF, but did not. The statistical underpinning of the selection method

lends a higher level of credibility to the case selection process and clear reasoning as to

why these cases were chosen. In Chapter 6, I offer concluding thoughts on how this

research has added to the understanding of SWFs and I provide insights regarding areas

of productive future research.

1.1   What are SWFs and how do they differ from CRSFs?

Prior to the advent of the term "sovereign wealth fund", many investment vehicles

now called SWFs, were referred to as commodity stabilization funds (Arrau and

Claessens 1992), revenue stabilization funds (Auty 2001), or national revenue funds

(Asfaha 2007).[5] These funds were hard-currency savings accumulated from the royalties

of resource extraction to provide a buffer for government budgets reliant on commodity

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[5] For the purposes of this research, I refer to these funds as commodity revenue stabilization funds
(CRSFs).

revenue (Arrau and Claessens 1992). As these funds accumulated more wealth due to the increased price of the commodities on which they were based, there was an acknowledgment that funds had saved more than what was required to buffer their respective economies, and that these funds could become a mechanism to transfer resource wealth to future generations. The best example of this type of decision was the 1998 mandate change of Norway's State Petroleum Fund (SPF) to invest 40% of its holdings in equities at a time when the SPF was worth $15B (or almost 10% of Norway's annual GDP) (Tranoy 2009; Norges Bank Investment Management 2014). Although not officially stated, it can be assumed that the Norwegian government realized that the stabilization requirement of the SPF had been fulfilled and that developing a savings function provided a secondary opportunity to responsibly manage Norway's petroleum wealth.

While CRSFs have garnered much academic attention, the literature linking CRSFs to SWFs is relatively thin. This missing linkage can be attributed to the nebulous nature of SWF definitions and the way in which the term SWF came to be. Rozanov (2005) has been widely credited with applying the title of "sovereign wealth fund" to government investment vehicles created by national budget surpluses, accumulated over the years due to favourable macroeconomic trade and fiscal positions, coupled with long-term budget planning and spending restraint. He stated that these funds were set up to insulate a government's budget and economy from excess volatility in revenues, help monetary authorities sterilise unwanted liquidity, build up savings for future generations, or use the money for economic and social development. Citing Norway's Government Petroleum Fund (GPF), Government of Singapore Investment Corporation (GIC), Abu

Dhabi Investment Authority (ADIA), Kuwait Investment Authority (KIA), as well as

other funds in Kazakhstan, Azerbaijan, and Russia, Rozanov retroactively grouped these

funds and labelled them SWFs.[6] While the label has been widely accepted, discussions

of how to define SWFs and which funds to include or exclude persist.

Since Rozanov coined the term SWF, there have been a number of different

authors and organizations that have put their own definition forward (U.S. Department of

the Treasury 2008; Monetary and Capital Markets and Policy Development and Review

Departments, International Monetary Fund 2008; Kern 2008; Beck and Fidora 2008;

Aizenman and Glick 2009). I argue that the definition of greatest import is the one on

which SWF-having countries have agreed. The IFSWF, a group of twenty-nine countries

which meet annually to discuss best practices, stated:

> 'SWFs are defined 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. The SWFs are commonly established out of balance of payments surpluses,
> official foreign currency operations, the proceeds of privatizations, fiscal surpluses,
> and/or receipts resulting from commodity exports. This definition excludes, *inter
> alia*, foreign currency reserve assets held by monetary authorities for the traditional
> balance of payments or monetary policy purposes, operations of state-owned
> enterprises in the traditional sense, government-employee pension funds, or assets
> managed for the benefit of individuals.' (International Working Group of Sovereign
> Wealth Funds 2008)

It is important to point out three funds on which there have been divergent views

as to their classification as SWFs: Australia's Future Fund, New Zealand's

Superannuation Fund, and Ireland's National Pensions Reserve Fund, now called the

Ireland Strategic Investment Fund. The association of these three funds to their

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[6] While Rozanov never mentioned that some of these funds were viewed as stabilization funds, some of the funds he listed are mentioned in other works as CSRFs.

countries' government-employee pensions has caused some authors to exclude these SWFs from their analysis (Aizenman and Glick 2009) or label them as pension funds (Truman 2008). Although this methodological choice is understandable given their associations, these three funds were created as a supplement to existing government-employee pensions and had no explicit pension obligations. All three funds were created to combat the possibility of under-funded pension schemes and an aging public service; they are not the primary public service pension fund and have no explicit liabilities like pension schemes.[7] For these reasons, I included these funds in this study.

It is also important to note that some countries with subnational SWFs have been included in this study as not having a SWF. Canada, Australia, and the United States have province- and state-established SWFs in Alberta, Western Australia, Alabama, Alaska, Louisiana, North Dakota, Texas, and Wyoming. In the case of Australia, the Government of Australia established the Future Fund prior to Western Australia's fund and was included in the sample of SWF-establishing countries.[8] With respect to Canada and the United States, the federal governments of these two countries did not establish SWFs and the SWFs of the subnational governments have no real linkages to the federal government.

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[7] In Australia, public service employees are entitled to pension benefits from the Public Sector Superannuation Accumulation Plan (PSSAP), the Public Sector Superannuation Scheme (PSS) or the Commonwealth Superannuation Scheme (CSS). In New Zealand, basic pension benefits are provided by New Zealand Superannuation. In Ireland, public service pensions are provided under the Civil Service Pension Scheme.
[8] Government of Australia's Future Fund and Western Australia's Future Fund are distinct entities.

1.2   Previous Literature

1.2.1   Who has SWFs and why?

As previously mentioned, any discussion of the history or motivation of SWFs must be rooted in an acknowledgement of their precursor; commodity revenue stabilization funds (CRSFs). The literature on CRSFs is entrenched in the political economy and public financial management aspects of creating a CRSF. The prevailing view in the literature is that CRSFs are created due to the limited options available to countries vulnerable to commodity price risk. In their work on these funds, Arrau and Claessens (1992) discussed that many resource-dependent countries have two options to deal with this vulnerability: self-insure or transfer the risk to international capital markets via financial instruments. For most resource-based economies, the latter is difficult due to the modest sizes of their domestic capital markets and the negative perceptions of their creditworthiness in international markets. These factors lead most countries to self-insure.

Self-insurance can be pursued in two different ways: first, the accumulation of foreign reserves to smooth fluctuations of extraction royalties and insulate government budgets and second, the diversification of the domestic economy to develop other sectors that will export and, thus, decrease the economy's reliance on one sector. Although these strategies can be pursued in tandem, accumulating foreign reserves can be accomplished more rapidly than encouraging the other, non-extractive sectors of an economy to develop an international comparative advantage as a base for diversified exports. Speaking to this difficulty is the mixed success of import substitution strategies and export-oriented development initiatives from the 1950s onward (Bruton 1998). For this

reason, sustained foreign reserve accumulation has been the public policy tool of choice for countries looking to manage extraction windfalls.

In their work on CRSFs, Humphreys and Sandbu (2007) emphasized that CRSFs needed clear and transparent rules to effectively manage government expenditure. That if a CRSF is intended to decouple the extractive revenue from expenditures, the different political constituencies in the country must have confidence that the CRSF will still exist when rival constituencies compete for power. Without clear rules or transparent accounting of the CRSF, political rivals become worried that the ruling party will be able to maintain support through higher public expenditures and that any saved royalties may be lower than expected when they come to power. CRSFs, when created in a proper manner, provide assurances to the various political constituencies that the intertemporal benefits provided by the CRSF will be preserved.

While Humphreys and Sandbu presented the logic behind creating CRSFs, others have pointed to only tenuous evidence of CRSFs' effectiveness smoothing government expenditures. In his comparison of CRSFs in Norway, Chile, the State of Alaska, Venezuela, Kuwait, and Oman, Fasano (2000) found that in the case of Oman and Venezuela, the potential effectiveness of their CRSFs had been undermined by frequent changes to the deposit and withdrawal rules, as well as deviations from their intended purposes. Fasano also noted that continued fiscal discipline was needed as CRSFs grow and that the countries which had been most effective were those which had been able to avoid the temptation to increase government expenditures. These arguments are similar to those made regarding the efficacy of SWFs and the need for transparent rules and

accountability mechanisms (Truman 2007; Bazoobandi and Niblock 2011; Dixon and Monk 2012a; Dixon 2014).

Econometric work on the efficacy of CRSFs in reducing government expenditure volatility has produced mixed results. Davis et al. (2001) found a lack of uniformity among CRSFs and that the establishment of a CRSF did not have an identifiable impact on government spending. Davis et al. also hypothesized that those countries having established a CRSF may have already been prudent fiscal managers and that the lack of "CRSF effect" was simply a continuation of these practices. They mentioned that the CRSF may have had some influence on governments' ability to maintain fiscal discipline, but that this influence would not have made itself clear in the econometric analysis. Nevertheless, the authors were quick to point out that with such a limited sample, conclusions should be drawn cautiously.

In a similar work, with more recent data, Sugawara (2014) found that spending volatility in countries with a CRSF was thirteen percent lower than countries which had not created a CRSF. Sugawara's analysis also found the quality of institutions, as indicated by variables derived from Freedom House and Polity IV data, had a positive, interactive effect with CRSFs in managing spending volatility. Many of the funds that Sugawara included in his sample as positive cases are also included in the quantitative work of this thesis. Sugawara made no distinction between stabilization funds focused primarily on holding foreign reserves and those investing in global markets. While his research focused on the domestic impacts following the creation of a stabilization fund and, thus, was not as reliant on the CRSF/SWF distinction, how different types of

stabilization funds address government expenditure volatility would have provided greater nuance to his conclusions on the efficacy of CRSFs.

Focusing on the economic opportunities a country may be pursuing by establishing a SWF, Gomes (2008) provided a comprehensive outline of the theoretical stabilizing effects of SWFs. Regarding potential domestic stabilizing forces, she noted that SWFs allow their owners to manage capital inflows, diversify their investments, reduce their vulnerability to commodity prices, and address long-term structural issues. From an international perspective, Gomes cited SWFs as providing liquidity to the international economy and having long-term investment horizons that may act to stabilize the international financial system during periods of short-term volatility. Finally, Gomes contended that SWFs may play an important role in the orderly unwinding of global imbalances. As countries which have been building significant reserves over the past twenty-five years–namely China, Saudi Arabia, Qatar, and the United Arab Emirates– invest these reserves, Gomes envisioned a gradual resolution of global imbalances.

Looking at the domestic stabilizing forces in depth, Shields and Villafuerte (2010) argued that a SWF can have profound effects on the path of public spending, aggregate demand, monetary conditions and the exchange rate, private sector behavior, and the economy's overall vulnerability. On public spending and aggregate demand, they noted that SWFs are seen as a safety valve that, if employed correctly, can offer an effective countercyclical policy tool to insulate public expenditures and aggregate demand from year-to-year volatility and economic cycles. This type of tool is especially powerful for countries with budgets and borrowing constraints which are inextricably linked to the commodity prices of their primary exports. Moreover, Shields and Villafuerte postulated

that countries may employ SWFs for domestic spending, stimulating the domestic

economy and augmenting aggregate demand.

Shields and Villafuerte also stated that SWFs provide another policy tool for

countries to control their exchange rate and inflation rate. For countries which

continually run trade surpluses, these countries will inevitably have their currency

appreciate as it is demanded by foreign buyers as a means of buying the goods and

services that led to the surplus. This upward pressure on the nominal exchange rate is

particularly problematic for countries wanting to keep their exchange rate fixed. Under

this scenario, policymakers in a fixed exchange rate country have two options: adjust the

fixed exchange rate upward making the goods and services more expensive for foreigners

and easing monetary demand, or increase the money supply. An increased money

supply, while building international reserves, is likely to cause inflation as this "new"

money will eventually make its way back to the domestic economy. A SWF provides a

third way forward.   By taking the foreign currency accumulating in the international

reserves and investing in foreign economies, the government is able to readjust the ratio

of domestic money supply to foreign money supply after the domestic money supply has

been expanded.

Under the same circumstances, a country with a floating currency sees the

currency naturally appreciate given the increased demand; however, the automatic

equalization of a floating currency may not be beneficial for all sectors of the country's

economy. Specifically, if the trade surplus is being driven by resource exports, it is likely

that prices and wages in that sector will increase, and currency appreciation will be

tolerable. In countries with diversified economies, an appreciating currency can

undermine other tradeable sectors as the goods and services from these sectors become more expensive as the currency strengthens. Therefore, being able to control the inflows and, more importantly, outflows of the supply of domestic and foreign currencies via a SWF may be attractive to governments having either fixed and floating exchange rate regimes as it allows for greater control over exchange rate pressures associated with capital inflow. As evidence of this control, Coulibaly, Omgba, and Raymond (2015) found that setting up a SWF allowed energy-exporting countries to reduce exchange rate misalignments by buffering the transmission of energy terms of trade. That by investing part of the natural resource rents in foreign assets, countries were able to limit domestic spending and control inflation.

Finally, Shields and Villafuerte remarked that SWFs can have a signalling effect whereby the private sector is more apt to consume and invest as the SWF indicates that their government is doing well financially and future tax increases are less likely; a pseudo-Ricardian equivalence.[9] While the authors focused primarily on domestic investors and consumers, one would assume that the idea of a SWF as a signal could be extrapolated to foreign investors and consumers. If companies or their employees believe that a country's tax policies and exchange rate are stable, it is reasonable to believe that these entities would feel more at ease making longer-term investment decisions. Shields and Villafuerte contended that a SWF signals this type of stability, making a SWF an attractive policy decision in this regard.

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[9] The Ricardian equivalence of taxes and government expenditures argues that when governments cut taxes and raises its deficit, consumers anticipate that they will pay higher taxes in the future to pay for the accumulating government debt (Krugman, Obstfeld, and Melitz 2012).

There is also a collection of works which look at the noneconomic reasons of why countries pursue SWFs. In their comparative case study of Kuwait, Abu Dhabi, Singapore, and China, Hatton and Pistor (2012) argued that governing elites in these countries created and utilized SWFs as a way to maximize their autonomy. By centralizing the country's economic might, these elites were able to better control the economic fortunes of their countries and pacify domestic adversaries. As one example, the authors pointed to Kuwait in the 1980s where the Kuwait Investment Authority (KIA) invested in companies owned by merchants who were meeting in secret with members of the dissolved Kuwait National Assembly. These investments were made with little expectation of dividends and shares were rarely sold.

Looking at the global ambitions of these countries, Hatton and Pistor cited SWF-having countries, with their access to large amounts of capital, as being powerful players in the global marketplace. Reflecting on the 2008 global financial crisis, the authors outlined the ways in which SWFs stabilized financial markets and how this stabilization reified existing arrangements of country to country reciprocity or established new arrangements. It was the authors' contention that the elites controlling these SWFs were able to employ them in such a way as to maintain a firm grasp on the leadership of the country while avoiding some of the international criticisms that accompany autocratic leadership. While this work is insightful as it brings forth facts that had previously been ignored in the SWF literature, the relatively small sample size undermines its external validity. Norway, the country with the largest SWF in the world, was only mentioned once in the 82-page paper. As well, countries such as Australia, Malaysia, and South Korea, all with sizable SWFs were also excluded from their analysis.

In one of their many works on SWFs, Dixon and Monk (2012b) proclaimed SWFs as an exercise of sovereignty. Contending that SWFs served complementary goals of engagement and resistance, they argued that SWFs improve a country's sovereignty deficit *vis-à-vis* more powerful states. The investment of SWFs in powerful firms or real estate in powerful states brought a certain amount of political clout in those powerful states and, according to the authors, counteracted a possible deterioration of domestic sovereignty by preserving domestic power structures. For Dixon and Monk, the accumulation of international reserves is a tool of resistance. Citing Asian SWFs as the product of excess reserves, the authors stated that a SWF and a country's reserves acted as a *de facto* firewall between the country and multilateral financial institutions. They argued that it was unlikely that SWF-having countries would look to the IMF and their loan conditions during a balance of payment crisis. There does seem to be some evidence of this desire to avoid traditional international lenders and some SWFs have recently implored countries in crisis to shun multilateral financial institutions and work with the SWF community (Cutmore 2015).

As a result of their analysis, Dixon and Monk produced a new classification of SWFs based on the role the SWF plays in a country's sovereignty. Stating that the groups are not mutually exclusive, the authors proposed that SWFs can be classified as: Postcolonial SWFs, Rentier SWFs, Productivist SWFs, Territorialist SWFs, or Moralist SWFs. Postcolonial SWFs are funds that allow postcolonial states–traditionally seen to be weak as well as lacking in capital and institutional structure–to engage more powerful states and nongovernmental organizations. These countries are then able to portray strength to their citizens despite resources being diverted from domestic development

agendas. Rentier SWFs are those SWFs established in countries where the ruling elite are using the SWF to strengthen domestic sovereignty, usually to their advantage. Like Hatton and Pistor, Dixon and Monk cited Kuwait as the classic example of the Rentier SWF, while also adding the Brunei Investment Agency which is exclusively controlled by the Sultan of Brunei.

Productivist SWFs take portfolio investment positions in jurisdictions, firms, and networks where value can be extracted or where a strategic investment may garner influence within the network. The authors deemed this process as productivist as the SWF has a clear agenda to improve the country's domestic economy either through reaping direct profits from investments or leveraging the country's enhanced position in the network. Differently, the Territorialist SWF is created as a way to improve the position of domestic firms in these wider global networks. While some have deemed this type of SWF as protectionism, Dixon and Monk argued that these funds operate more like private equity firms trying to support the global expansion of domestic firms and that these SWFs are unlikely to support unprofitable enterprises.

Dixon and Monk deemed Moralist SWFs as those concerned with intergenerational justice. Not surprisingly, they used Norway's Government Pension Fund Global as the example to illustrate Moralist SWFs. Not only has Norway's SWF evolved to be a mechanism to transfer current wealth to future generations, but it has also been an activist investor. By adhering to a mandate that stipulates that the fund only invests in firms that follow ethical guidelines, the Norwegian fund has divested from numerous tobacco firms, coal companies, and enterprises associated with arms production. The authors cited these actions as the Government of Norway asserting its

values globally while continuing to legitimize itself in the eyes of its domestic

population. Although the argument for Norway's SWF as a Moralist SWF is clear,

Dixon and Monk did not highlight that it is unique and did not point to other examples

that would fit in this category of the typology.

Grigoryan (2015) delved further into the idea of the SWF as a tool for rulers to

appease elite interests. Utilizing Abu Dhabi as the example to develop his theoretical

model, Grigoryan cites members of the ruling family populating the boards of governors

of the SWFs as an example of the main ruler placating elites by institutionalizing power-

sharing arrangements.[10] The author posited that these type of arrangements undermine

the likelihood of a *coup d'état* and that this likelihood further diminishes as the size of the

SWF grows and more elite interests can be satisfied. While the logic is sound, the

author's reliance on Abu Dhabi, Kuwait, and Kazakhstan as examples of the "ruling

bargain" struck between rulers and elites provided only positive cases where the bargain

was achieved. Furthermore, by only illustrating cases where success occurred in

autocratic regimes, he overlooked the majority of SWF-having countries: democracies.

Although his study provides a deeper understanding of the dynamics within these three

countries, its predictive force is undermined by the increasing transparency of SWFs and

the increasing number of democratic regimes creating SWFs.

1.2.2   How do SWFs choose their investments?

As SWFs have become more transparent and forthcoming, studies on the portfolio

decisions of SWFs have become more common. In his analysis of SWFs, Balding (2008)

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[10] In the case of Abu Dhabi, many of these elites are fellow family members.

argued that the capitalization levels of SWFs and their influence on global markets had been overstated. Moreover, his review of a handful of SWFs led him to highlight that SWFs act as rational investors looking to diversify across asset class and geographical regions. However, Chhaochharia and Laeven (2009) found in their research on investment allocation that SWFs were not perfectly rational and tended to invest in countries with which they shared cultural traits, in particular, religion. While the authors noted that their findings may have captured informational advantages being harnessed by SWFs, rather than religious commonality, their findings did show that Balding's claim that SWFs are rational, profit-seeking actors was not supported in all instances.

Even the most heralded SWF, the Norwegian SWF, does not invest under perfect economic rationality. As mentioned previously, and highlighted by Beck and Fidora (2008), the Norwegian SWF's ethical guidelines prohibit investments in companies involved or implicated in military armament, human rights violations, or ignore environmental considerations. As a result, the Norwegian SWF has divested from firms regardless of the profitability of the investment. In another article studying the rationality of SWF investment, Bernstein, Lerner, and Schoar (2009) found that SWFs in which politicians were actively involved in management had a much greater likelihood of investing at home than SWFs directed by external managers and that this domestic bias led to lower returns on investment.

In a more recent study, Ciarlone and Miceli (2014) employed a broad set of independent variables and proprietary investment data to ascertain that SWFs were more likely to invest in countries characterized by a higher degree of economic development, a more developed financial market, a more effective protection of property rights, and a

more stable macroeconomic environment. The authors also found that the degree of

economic development and the degree of development of financial markets were

positively correlated with the amount of investment, once the decision to invest was

made. This is not surprising as most of the firms targeted by SWFs reside in advanced

economies. Of the 1,903 deals studied by the authors, almost 60% of the deals and 68%

of the money targeted firms in advanced economies. Left unaddressed by the authors

was the question as to whether the SWFs were specifically targeting these economies or

simply targeting the firms that happened to be headquartered in these advanced countries.

Does the Qatar Investment Authority buy the Canary Wharf Group because it wants to

invest in the United Kingdom or does it invest in the United Kingdom because they want

to own the Canary Wharf Group which happens to be located in London?

The most interesting finding from Ciarlone and Miceli's research was that SWFs

were more likely to invest in firms in countries experiencing a financial crisis (banking,

currency, sovereign domestic, sovereign external, inflation, or stock market). The

authors also found that these crisis economies were likely to attract more SWF

investment dollars than their non-crisis counterparts. However, with the amount of crises

suffered over the time period that the authors studied (1995-2010), it is difficult to

support the idea of SWFs willingly acting as contrarians. Of the 2,576 country-years

included in their study, the authors coded over 770 observations as crisis years. Their

robustness testing indicated that much of the evidence of SWFs being crisis investors was

sensitive to model specification and was only statistically significant when the most

recent financial crisis was included. These concerns stated, Ciarlone and Miceli's work

illustrated the fruition of initiatives to promote greater transparency among SWFs as they

reported on twenty-nine SWFs, including some of the funds known for being the least transparent such as the Kuwait Investment Authority, Brunei Investment Authority, and Abu Dhabi Investment Authority.

While most of the academic literature has focused on SWF investment in firms, there has been an increase in SWF's investing domestically, investing in alternative investments (real estate and infrastructure), and undertaking co-investments. Referring to the trend to invest domestically, Gelb (2014) underlined the need for SWFs to invest for competitive returns and to invest in such a way that the SWF invests independently of government influence. Gelb also advocated that SWFs consider their investment in the wider context of a government's investment strategy, looking for partners with which the SWF can share risk. These recommendations dovetail with the fact that most SWFs, whether investing domestically or internationally, are pursuing real estate and infrastructure investments in an attempt to diversify (Schena et al. 2013). Given the scope and size of these alternative investments, SWFs are much more apt to undertake joint ventures and co-investments to complete these acquisitions (PricewaterhouseCoopers Limited 2013; Reig 2014). While others see this trend slowing because of increased competition in the alternative investment space (Barbary 2015), these long-term real estate and infrastructure investments will remain in the portfolios of many SWFs and must be considered in any study of SWF investment decision-making.

It is evident that the current literature lacks an in-depth examination of countries creating SWFs. While there have been theoretical discussions of the benefits of SWFs, there are no doubt costs, and a clearer understanding of what types of countries willing to look past these costs is important. As the world of SWFs is dynamic, the research that

follows will correct strongly-held misunderstandings of what leads a country to create a SWF and provide new insights into the differing profiles of SWF-creating countries.

1.3   Dataset and Methodology

Although there has been progress, any work on SWFs remains impeded by data availability. While some SWFs such as Norway's Global Pension Fund Global, Australia's Future Fund, and the State Oil Fund of Azerbaijan provide annual reports audited by independent firms, other SWFs are so opaque that even the reports on the amount of assets under management are only estimates. As mentioned previously, studies looking at SWF transactions are largely based on a combination of transparent SWFs self-reporting and news reports on transactions undertaken by the less transparent funds. Although numerous authors have undertaken many hours of research to compile comprehensive lists of SWF investments, it is unlikely that any SWF transaction database has compiled every transaction. As a result, most works where the SWF is the unit of analysis tend to be biased to those SWFs which are the most transparent.

The unit of analysis for the work that follows are the countries that create SWFs. I contend that without an in-depth understanding of the types of countries creating SWFs, the motivations for countries to create SWFs, and the implications of these policies, comparing and contrasting them is without proper grounding. Comparing funds based on their stated mandates or the source of their wealth obfuscates the nuance of a country's circumstances. Two countries with wealth based on oil royalties considering creating a SWF may have very different viewpoints on the necessity of a SWF based on the diversification of their economy, local infrastructure needs, demographics, and a host of

other factors. To simply group these countries together and assert that they should pursue

similar policy strategies would lead to false conclusions. For a less biased analysis,

letting the data from the countries speak is far more prudent.

The chapters that follow look at the time periods leading up to when a country

created a SWF; therefore, the timing of when a SWF is created is the most crucial piece

of information from which the database is built. For this information, I relied on the

research compiled by the SWF Institute (2014d). The SWF Institute is cited in many

academic works on SWFs because of its comprehensive list of SWFs in which it lists the

name of the fund, the date of inception, and the amount of assets under management. It is

important to acknowledge that the population of SWFs studied in this work was a listing

of SWFs compiled by the SWF Institute as of March 2014. The list has changed since

that time period and SWFs in Bolivia and Senegal have been added. In my analysis,

these countries are considered not to have created SWFs. Furthermore, countries that had

created new SWFs from the remnants of prior SWFs or created a new SWF after the first

SWF disbanded were only included as if the first SWF had been created. This applies to

Nigeria, which created the Excessive Crude Account in 2004, before creating the

Nigerian Sovereign Investment Authority in 2011 and to Mexico, which created the Oil

Revenues Stabilization Fund in 2000 and the Fondo Mexicano del Petroleo in 2014.

The data for the countries studied was mostly compiled from the World Bank's

World Development Indicators. The indicators, published by the World Bank, are

compiled from officially-recognized sources. As most of the work in the chapters that

follow are based on macroeconomic conditions, the IMF is the officially-recognized

source for the preponderance of variables used. Each chapter provides a comprehensive

explanation of any auxiliary sources that were used to undertake the analysis. In order to avoid the findings being influenced by outlier observations, I constructed the dataset so tests were conducted on average time periods. All of the statistical analyses were completed using rolling three-, five-, seven-, and ten-year averages. In some cases, I performed robustness tests that looked at four-, six-, eight-, and nine-year averages as well. How these averages were constructed is explained in-depth in each of the chapters.

1.4   Looking Forward

The preceding sections have set forth the definition of SWFs from which I will work while providing an overview of how the discussion of SWFs has evolved over the past decade. As well, by summarizing most of the academic literature studying SWFs, gaps and areas needing more explanation have been identified. The work that follows fills one of these gaps and provides a new foundation for the field. With this overview complete, Chapter 2 looks at the macroeconomic factors that lead a country to create a SWF, and whether those conditions differ from those in countries creating CRSFs.

Appendix 1: Population of SWFs

Country	Name of First SWF	Assets (in billions)	Year of Inception
Norway	Government Pension Fund - Global	838.0	1990
United Arab Emirates	Abu Dhabi Investment Authority	773.0	1976
Saudi Arabia	SAMA Foreign Holdings	675.9	n/a
China	SAFE Investment Company	567.9	1997
Kuwait	Kuwait Investment Authority	410.0	1953
Hong Kong	Hong Kong Monetary Authority Investment Portfolio	326.7	1993
Singapore	Temasek Holdings	173.3	1974
Qatar	Qatar Investment Authority	170.0	2003[11]
Australia	Future Fund	88.7	2004
Russia	National Welfare Fund	88.0	2008
Algeria	Revenue Regulation Fund	77.2	2000
South Korea	Korea Investment Corporation	72.0	2005
Kazakhstan	Kazakhstan National Fund	68.9	2000
Libya	Libyan Investment Authority	60.0	2006
Iran	Oil Stabilization Fund	52.0	1999[12]
Malaysia	Khazanah Nasional	40.5	1993
Brunei	Brunei Investment Agency	40.0	1983
Azerbaijan	State Oil Fund of the Republic of Azerbaijan	34.1	1999
France	Strategic Investment Fund	25.5	2008
Ireland	National Pensions Reserve Fund	19.4	2001
New Zealand	New Zealand Superannuation Fund	18.5	2003
Iraq	Development Fund for Iraq	18.0	2003
Timor-Leste	Timor-Leste Petroleum Fund	14.6	2005
Oman	State General Reserve Fund	8.2	1980
Bahrain	Mumtalakat Holding Company	7.1	2006
Peru	Fiscal Stabilization Fund	7.1	1999
Chile	Pension Reserve Fund	7.0	2006
Botswana	Pula Fund	6.9	1994
Mexico	Oil Revenues Stabilization Fund of Mexico	6.0	2000

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[11] The Qatar Investment Authority was not formally founded until 2005, but by 2003 the Qatari Ministry of Finance had an in-house team investing budget surpluses and had already started hiring for the Qatar Investment Authority (SWF Institute 2014b).

[12] Information from the SWF Institute (2014a) indicates that the Iran Oil Stabilization Fund no longer exists and has been replaced by Iran's National Development Fund. However, the fact that I am pursuing information with regard to what leads a country to start their first SWF, I kept Iran as having started a SWF in 1999.

Italy	Italian Strategic Fund	6.0	2011
Brazil	Sovereign Fund of Brazil	5.3	2008
Angola	Fundo Soberano de Angola	5.0	2012
Trinidad & Tobago	Heritage and Stabilization Fund	5.0	2000
Nigeria	Nigeria Sovereign Investment Authority	1.5	2011
Panama	Fondo de Ahorro de Panama	1.2	2012
Palestine	Palestine Investment Fund	0.8	2003
Venezuela	FEM - Macroeconomic Stabilization Fund	0.8	1998
Kiribati	Revenue Equalization Reserve Fund	0.6	1956
Vietnam	State Capital Investment Corporation	0.5	2006
Gabon	Sovereign Fund of the Gabonese Republic	0.4	1998
Indonesia	Government Investment Unit of Indonesia	0.3	2006
Mauritania	National Fund for Hydrocarbon Reserves	0.3	2006
Mongolia	Fiscal Stability Fund	0.3	2011
Equatorial Guinea	Fund for Future Generations	0.1	2002
Ghana	Ghana Petroleum Funds	0.1	2011

Source: SWF Institute (2014d)*, updated March 2014*

Appendix 2: Number of SWF-having Countries

Number of SWF-having Countries
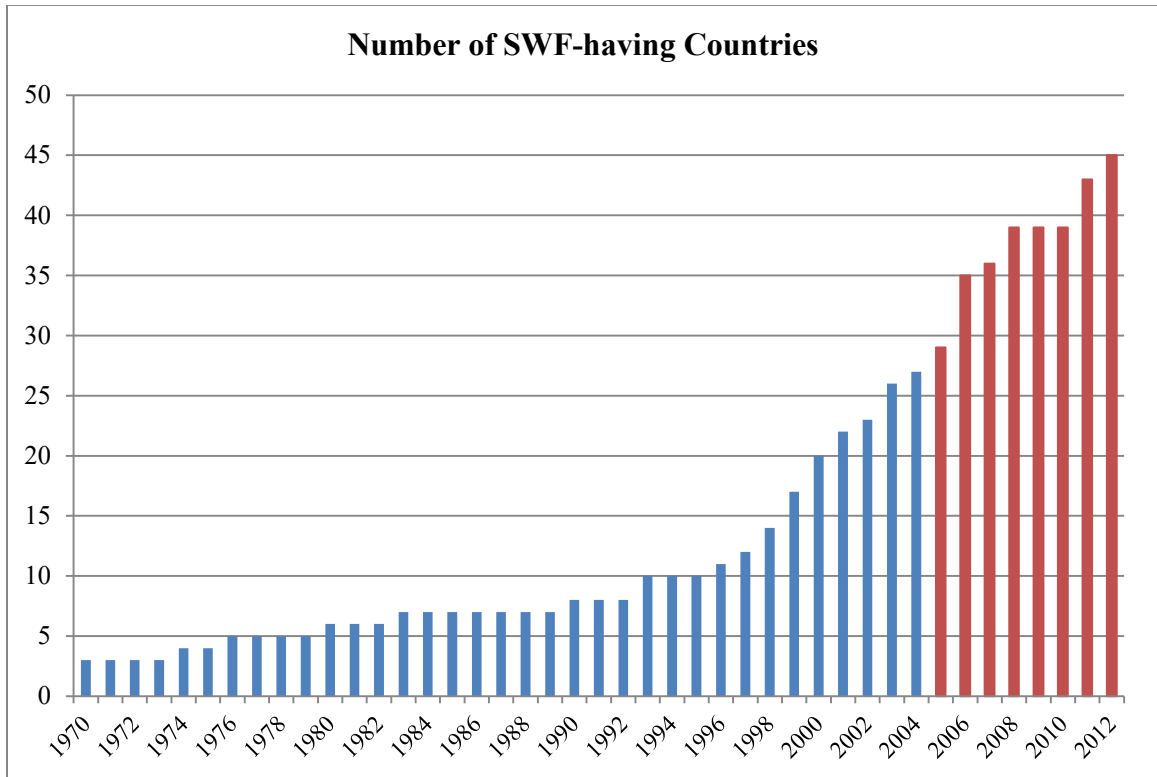
Chapter 2: What macroeconomic factors lead to SWFs, does political leadership matter and do the conditions of creation for CRSFs differ from those of SWFs?

In the previous chapter, I outlined how academic work describing SWFs has increased due to interest and data availability. Despite this increase in academic focus, the breadth of topics studied remained limited as the preponderance of quantitative studies continued to focus on the effects of SWF investments on stock performance (Bortolotti et al. 2009; Sun and Hesse 2009; Kotter and Lel 2008; Knill, Lee, and Mauck 2010) and non-economic reasons for SWF investment decisions (Beck and Fidora 2008; Bernstein, Lerner, and Schoar 2009; Chhaochharia and Laeven 2009). These studies, while making important contributions to an overall understanding of SWFs, have not addressed the shared characteristics of countries creating a CRSF or SWF and the influences that led the policymakers in these countries to make this decision. By taking SWF investments as the unit of analysis, these authors have missed how these investments may be influenced by the conditions under which the SWF was created.

In this chapter, I expand on the existing scholarship explaining the motivations of policymakers to establish a CRSF or SWF by providing a quantitative analysis of the macroeconomic conditions that lead countries to create CRSFs or SWFs. By introducing a regime type variable, a leadership turnover variable, and an exchange rate regime variable, I provide insight into the ways in which political leadership and monetary policy may complement macroeconomic reasons for CRSF or SWF creation. Moreover, by

dividing the population of observations based on: CRSF-based SWFs and non-CRSF-based SWFs; gross domestic product (GDP) per capita; whether a country is classified as a democracy or autocracy; and whether a country established a SWF prior to 2005, I bring forth nuanced conclusions that have been obfuscated in previous studies focused on the entire SWF population. This chapter confirms that countries dependent on resource extraction are more likely to have a SWF, while putting into question the previously-held belief that countries with chronic current account surpluses are more apt to create a SWF. As well, this chapter's main model shows that claims that international reserves significantly influence a country's decision to establish a SWF are tenuous and based on model specification. By reassessing previous models of SWF determinants, this chapter finds that, apart from dependence on resource extraction, GDP growth is the only other factor that consistently explains which countries have chosen to establish a SWF and which have not.

With respect to CRSFs, it is not surprising that the coefficient of the resource dependence variable is statistically significant in explaining a country's likelihood of creating a CRSF. What is particularly interesting is that for some of the model specifications, having a hard fixed exchange rate regime coupled with international reserves is inversely related to the establishment of a CRSF; fixed exchange rate regimes with higher international reserves are less likely to create CRSFs.

For countries with SWFs that have never been classified as stabilization funds, the resource dependence variable coefficient, understandably, is not statistically significant in explaining SWF creation; however, the GDP growth variable does. Specifically, this subsample of SWF-creating countries had an average GDP growth rate that was 1.7%

higher than the average GDP growth of non-SWF-creating countries. This difference

indicates some forethought on behalf of these high-growth countries to ensure fiscal

discipline in the face of a booming economy, whereas slower growing economies may

not have the luxury of such long-term planning. As well, the models looking at longer-

term averages indicate that current account surpluses are also a positive influence on

SWF creation among non-stabilization fund countries; however, this finding is less robust

over shorter time horizons.

      This analysis is original in three respects. First, while previous works have

provided quantitative analyses that claim to explain the determinants of having a SWF,

these analyses only captured the economic conditions of SWF-having and non-SWF-

having countries in either 2007 or 2008 (Aizenman and Glick 2009). Although

Aizenman and Glick's analysis was an important first attempt at quantitatively

investigating the determinants of SWF creation, by looking at whether a country has a

SWF in a specific year, their study was unable to determine if the macroeconomic factors

in question *led* to creating a SWF or if the SWF influenced the observed

macroeconomics. For example, including macroeconomic data on Norway for the years

leading up to 2007 does not speak to the conditions that led Norwegians to create a SWF

in 1990. To address this issue, the methodology employed in this chapter sheds light on

the conditions of SWF-having countries *before* the country chose to establish a SWF.

This work provides more nuanced insight when assessing which countries should

consider having a SWF and which countries should go without by comparing the

conditions of the countries in question to the common conditions of countries that already

chose to create a SWF.

The other two ways in which this chapter is original relate to sample size. First, by expanding the sample of SWF-having countries to reflect the International Forum of Sovereign Wealth Funds' (IFSWF) definition of a SWF, this analysis includes SWF-having countries which had previously been classified as not having a SWF. The analysis that follows includes the most number of positive cases of any quantitative study of SWFs, it also includes the most number of negative cases. Second, by conducting further analysis and disaggregating the larger sample, this chapter provides a greater understanding of the nuance between SWF-creating countries. There is yet to be a published study on SWFs which has disaggregated the sample of SWF creating countries to capture the dynamics of which types of countries are creating SWFs; this chapter completes this task.

This chapter is organized as follows: Section 2.1 discusses previous research and assertions as to why countries have SWFs and the limits of these works. Section 2.2 describes the methodology of this chapter's main model and outlines the different estimates used to subdivide the population to garner nuanced insight into SWF creation. Section 2.3 presents the findings from the main model and the robustness of these findings. Section 2.4 concludes by considering how this work may be used by academics and policymakers. In Appendix 5 and Appendix 6, I report the results of the estimates from the disaggregated samples and discuss the conclusions that can be derived from these findings.

2.1 Previous explanations of SWF creation

There have only been a limited number of cross-national studies of the entire

population of SWFs, despite the many case studies looking at individual funds or

countries (Parrado 2010; Liqun 2010; Orr 2010; Ekeli and Skancke 2010; Kazakevitch

and Trishkina 2010; Backer 2010a; Backer 2010b; Bazoobandi and Niblock 2011).

Moreover, the cross-national works looking at the conditions present before SWF

establishment have relied upon the theoretical postulates of why a country would start a

SWF. In their book on SWFs, Castelli and Scacciavillani (2012) stated that the

increasing number of SWFs was due to persistent large current account surpluses

resulting from three intertwined phenomena: a boom in commodity prices; a strong,

export-led growth model; and, a prudent (possibly over-cautious) macroeconomic policy

framework pursued by Asian and other emerging economies. While SWF-creating

countries may have been better off than fellow non-creating countries, the data do not

fully support Castelli and Scacciavillani's claim that current account surpluses lead to

SWF creation. For the 39 SWF-having countries on which there were data available for

at least three of the five years leading up to the country establishing a SWF, the average

SWF-creating country had an average current account deficit of 3.06% of their GDP.

Furthermore, the average SWF-creating country had been running a current account

deficit for two-and-a-half consecutive years prior to establishing a SWF.[13] While the

current account surplus reasoning should not be completely disregarded, these surpluses

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[13] France 2008, the median country-year of SWF-creating countries, had an average current account deficit of 0.17% for the five-years leading up to creating a SWF. Venezuela in 1998, Gabon in 1998 and Brazil 2008 represent the median of consecutive years having a current account surplus or deficit prior to establishing a SWF (one-year deficit).

Figure 1: Current Account Data for SWF-creating countries

Current Account to GDP
(5-year average leading up to SWF creation)

Current Account/GDP (five-year average) — Average
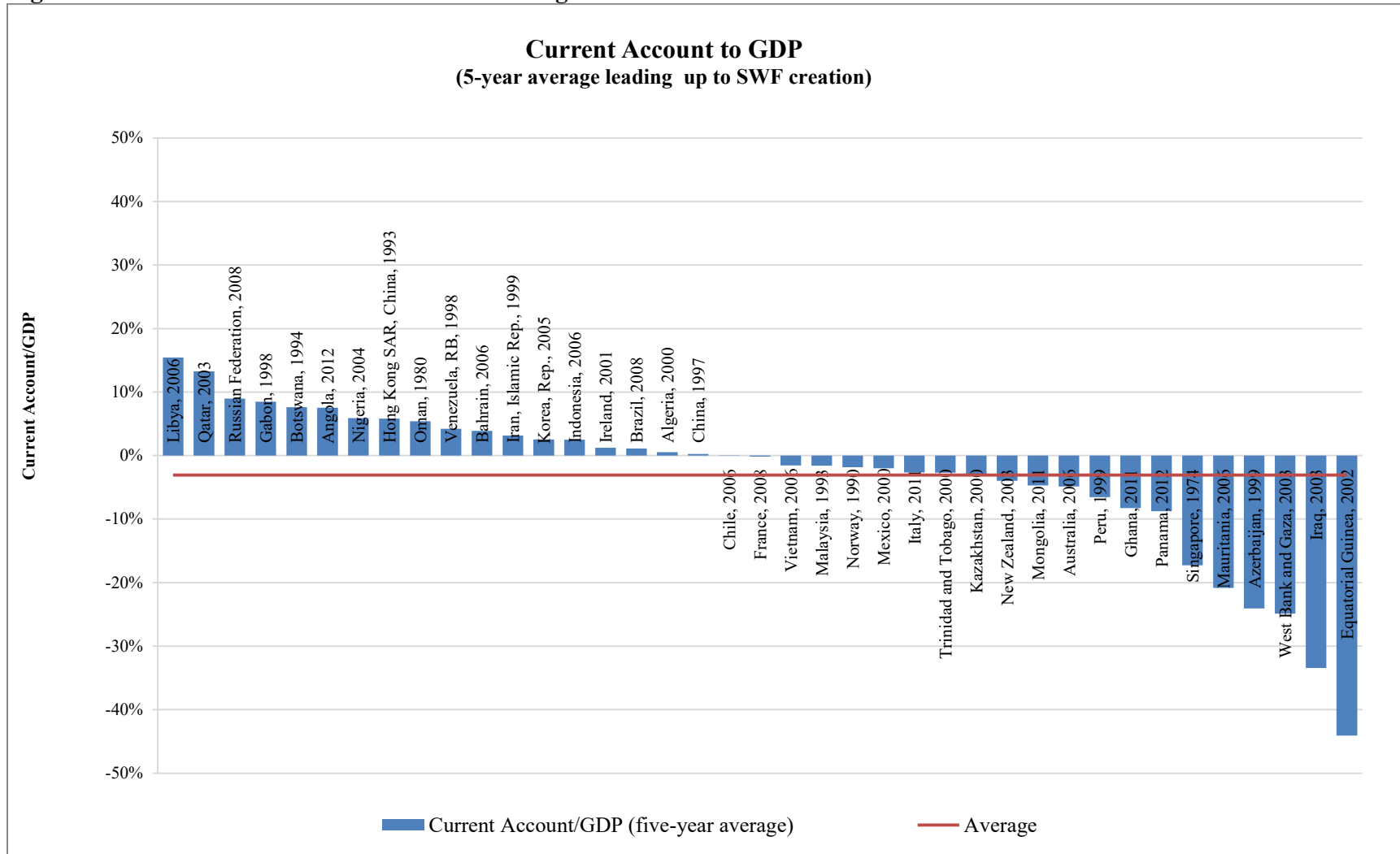
Figure 2: Consecutive Years of Current Account Surplus or Deficit

Consecutive Years of Current Account
Surplus (+ve)/Deficit (-ve)
(leading up to SWF creation)

Legend: Consecutive Years of Current Account Surplus (+ve)/Deficit (-ve) — Average
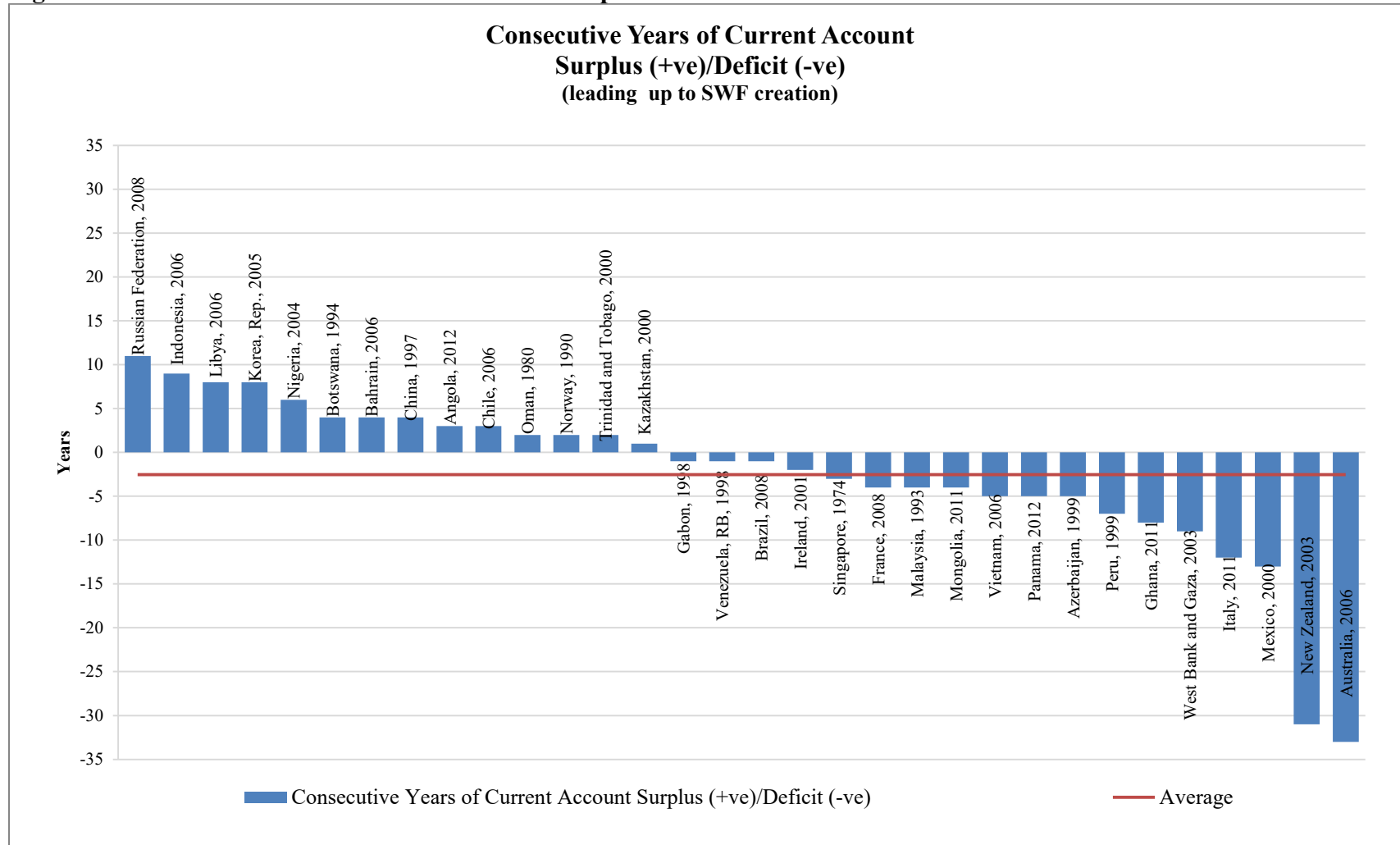
may be one factor in the policy decision to create a SWF.

To this point, the work of Aizenman and Glick (2009) has been one of two academic works that to employ a statistical model to find the determinants of a country having a SWF. Although aspects of their model will be further analyzed when presenting this chapter's model, their results provided an important foundation from which to work. From their quantitative analysis, they found that higher current account to GDP ratios, higher fuel exports to total export ratios, and higher levels foreign reserves to GDP ratios increased the probability that a country with a population of more than 250,000 people would have a SWF in 2007 or 2008. While their probit analysis was an important contribution to the SWF literature, it did not study the economic factors *prior* to a country establishing a SWF. Rather, their work provided a look at the economic conditions common among countries *having* a SWF; however, these conditions may have changed following the establishment of the SWF. If one is to believe that SWFs can contribute to managing capital inflows (Gomes 2008; Lu, Mulder, and Papaioannou 2010), then it is likely that the current account data and international reserve data captured after a SWF has already been created should be different than beforehand. My analysis in this chapter confirms that there are indeed differences between a country's economics before the creation of a SWF and the findings put forth by Aizenman and Glick.

The other statistical analysis of determinants of SWF creation was Chweiroth's (2014) work in which he expanded on the analysis of determinants beyond macroeconomic conditions and contended that the increase in the number of SWFs from 1980 to 2008 was a result of policy emulation; particularly among fuel exporters. This

contribution was innovative in two respects: first, it looked at non-economic reasons for creating a SWF and, second, it employed a Cox hazard model looking at the amount of time before a country established a SWF as well as the time between subsequent SWFs if a country created more than one. This second contribution is novel as most other analyses, including the one in this chapter, use probit or logistic regression models. Given that the Cox hazard model is best for repeatable events, Chwieroth's choice works best for his testing[14], but has less appeal for the testing in this chapter as I am investigating what leads a country to its first SWF. Although Chwieroth's work differs from the analysis below due to the fact that his sample size is smaller than that used in this work[15], his article did raise issues about the role of policy diffusion in explaining the increasing number of SWFs.

While all of these contributions added to the growing literature on SWFs and provided certain levels of nuance, the macroeconomic factors that *lead* a country to establish a SWF remained unknown. Although Chwieroth's analysis provided a wider view of issues that may influence the policy decision to create a SWF, there were some statistical issues that went unaddressed in his paper. For example, the fuel exporters peer variable and the fuel exports to GDP ratio variable were highly correlated (correlation coefficient of 0.78). Despite this fact, Chwieroth never presented findings where the fuel exports to GDP ratio variable was tested independently from the fuel exporters peer variable, but claimed that the peer group effect had a greater effect than a country's fuel-

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[14] Chwieroth included cases of SWF creation after the first creation event. See Jones and Branton (2005) for a discussion of why the Cox model may be superior to logit-probit models for studying repeatable events.

[15] Chwieroth relied on Truman's (2010) conception and listing of SWFs.

export specialization. While it is possible that the peer effect may be leading some countries to create a SWF, concluding the economic imperative as subservient to the idea that countries are following a fad should have been done cautiously if the appropriate testing was not completed.

The following section looks to improve the model presented by Aizenman and Glick in order to better understand the macroeconomic conditions that lead a country to create a SWF. Though Chwieroth's work does bring up interesting considerations with respect to the policy diffusion process, a comprehensive explanation of what Chwieroth refers to "as the functional imperatives" for creating a SWF has yet to be explained. The analysis that follows satisfies this task.

2.2   Description of Data, the Sample and Methodology

The data used in this analysis were predominantly sourced from the World Bank's *World Development Indicators* (WDI) and included annual figures for 214 countries from 1960 until 2012 (World Bank 2013). Data relating to the real exchange rates were calculated from Bruegel's database consisting of 178 countries (Darvas 2012). Regarding a country's exchange rate regime type, data were sourced from the work of Ilzetski, Reinhart and Rogoff (2011) and supplemented by the IMF's (2012a) classifications.[16] The Polity IV database provided the information on the type of leadership regime (ranging from autocracy to democracy along a 20-point scale), as well as the number of years that a country had remained under that type of regime (Marshall,

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[16] Exchange rate regimes coded by Ilzetski, Reinhart and Rogoff as "Dual market in which parallel market data is missing" were replaced by the IMF classification.

Gurr, and Jaggers 2014).[17] In order to ascertain the effect of leadership turnover, I

updated Goemans, Gleditsch and Chiozza's (2009a) database of the leaders of 176

countries from 1960-2004 to include the time period from 2004-2012.[18] I calculated the

number of leadership changes in rolling three-, five-, seven-, and ten-year periods to

provide insight into leadership stability. Although issues such as term limits and

constitutional issues may artificially infer instability, there are many cases where term

limits have been altered and may not constrain leadership tenure calculations.[19]

To avoid biased results arising from one-year spikes in the data, I calculated five-

year moving averages for most of the variables.[20] These averages were only calculated if

at least three of the previous five years had data available; moreover, averages were

calculated on the previous five-year period. As an example, the data points

corresponding to Norway creating its SWF in 1990 were the averages of variable data

from 1985 to 1989. As the Norwegian government made the decision to establish the

SWF in 1990, including the data for 1990 would not accurately capture the lead-up

period that influenced this decision. For the real exchange rate data, appreciation and

volatility values were calculated by taking the average of five-year increases or decreases

and standard deviations of the real exchange rate.[21]

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[17] The Polity IV duration variable is defined as "the number of years since the most recent regime change (defined by a three-point change in the Polity score over a period of three years or less) or the end of transition period defined by the lack of stable political institutions (denoted by a standardized authority score)" (Marshall, Gurr, and Jaggers 2013).

[18] For an introduction to the *Archigos* database, see Goemans, Gleditsch and Chiozza's (2009b) in *Journal of Peace Research*'s March 2009 issue.

[19] The most notable example of artificial instability is the yearly rotation of the Switzerland Presidency.

[20] The exceptions to these calculations were for real exchange rate volatility, real exchange rate appreciation, regime duration, and leadership turnover. For type of exchange rate regime, I calculated the mode of the previous three-, five-, seven- or ten-year period. Ties in the mode calculation were coded as the more recent regime.

[21] For specific data modifications and auxiliary sources used to overcome missing data, see Appendix 3.

To ascertain the probability that a country would create a SWF within a five-year period, I transformed the data into five-year averages and conducted probit regressions.[22] For countries not creating a SWF, I coded the dependent variable (SWF establishment) zero for ten five-year periods (1963-1967,…., 2003-2007, 2008-2012). In cases where a country did create a SWF, the dependent variable was coded one in the time period immediately before the SWF was created and I adjusted the previous five-year periods to reflect previous time periods where that country had not chosen to create a SWF. In order to accurately reflect Norway's decision and previous non-decisions, I transformed the five-year periods to correspond with the 1990 inception date (i.e. 1961-1965, …., 1981-1985,1986-1990), with only the 1986-1990 time period being coded one for the dependent variable. Once a country created a SWF, it was dropped from the sample. In the case of Norway, no data from 1990 onwards was included in the analyses. I also employed this method to create three-year, seven-year and ten-year time periods on which I conducted robustness checks.[23]

The population of the first statistical analysis contains 211 countries, 42 that have SWFs and 169 that do not. As mentioned in the previous chapter, three SWF-having countries– Kuwait, Kiribati, and Saudi Arabia–were eliminated from the population as their SWFs were either created prior to 1960 or, in the case of Saudi Arabia, little is known as to when Saudi Arabia Monetary Authority commenced investment activities.

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[22] To verify the results from the probit regressions, I also completed logistic regressions to ensure that my findings were not being influenced by the type of binary regression model chosen.

[23] In the case of the three-year average calculations, the calculation was only completed if data existed for two of the previous three years. For the seven-year averages, it was four of the previous seven years and for the ten-year averages it was five of the previous ten years.

There are more positive cases included in this chapter than in any previous SWF quantitative analysis. The first probit regression (the main model) includes forty-two SWF-having countries; thirteen more than the twenty-nine countries that Aizenman and Glick, and Chiweroth included in their analyses.[24] As well, in the pursuit of robust findings, this paper erred on the side of excluding observations when data was not verifiable. Because the landscape of SWF creation is prone to rumour and ambiguity, only countries listed by the SWF Institute (2014d) as having assets under management on March 1, 2014, were classified as SWF-having countries. Using the Aizenman and Glick's work as a foundation, I commenced my regression testing by including current account to GDP ratio, resource dependence, and foreign reserves to GDP ratio as independent variables. With respect to the resource dependence variable, Aizenman and Glick used fuel exports as a percentage of total exports. In cases where no data existed, they used the most recent figure they could find; a choice that may have biased their findings. For example, Aizenman and Glick used the fuel exports figure from 2001 for the UAE (91.8% of total exports). In 2007, the year after the data used by Aizenman and Glick, the UAE's fuel export ratio was 65.4%. This result of this data choice is that the influence of fuel exports on the decision made by policymakers to have a SWF is overstated in Aizenman and Glick's work.

In order to overcome the inconsistency of data reported on fuel exports as a percentage of total exports or ore and mineral exports as a percentage of total exports, I generated a binary variable that classified a country as resource dependent if the fuel export to GDP ratio or the oil and natural gas rents to GDP ratio was greater than 40%.

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[24] For a full comparison of the differences of the positive cases used, see Appendix 4.

As well, if the ore and mineral export to GDP ratio or the mineral rents to GDP ratio was greater than 40%, the country would be classified as resource dependent. This criterion led to a 32% increase in the potential number of SWF-having countries being included in the probit regression.[25]

Another independent variable prone to inconsistent reporting is the current account to GDP percentage. To circumvent this issue, Aizenman and Glick used balance of trade data from the *World Development Indicators* (WDI) when the current account data was unavailable.[26] For the data I employed in this chapter's analysis, the correlation coefficient between these the current account and trade balance data was 0.72. As a result, I avoided this tactic and gathered data from sources outside of the WDI to avoid missing data leading to dropped observations. These auxiliary sources are outlined in Appendix 3.

Variables that had not been included by Aizenman and Glick or by Chwieroth, but that I added in this analysis, are: GDP growth, real exchange rate appreciation, real exchange rate volatility, the type of exchange rate regime, Polity IV rating, duration of the Polity IV rating, and the number of leadership changes in a country.[27] As proven, formal theory regarding the reasons for SWF creation is scant, it is intuition and more policy-oriented works that led to the inclusion of these other variables. With respect to GDP growth, it is reasonable to think that as a country begins to prosper, it looks for

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[25] The potential increase for non-SWF-having countries was 52%.
[26] The balance of trade data includes exports and imports of merchandise and services, while current account data includes these same data but also includes primary and secondary income. Primary income refers to compensation of employees; dividends; reinvested earnings; interest; investment income attributable to policyholders in insurance, standardized guarantees, and pension funds; rent; and tax flows between residents and nonresidents. Secondary income personal transfers between residents and nonresidents (International Monetary Fund 2012b).
[27] Chwieroth included Polity IV rating data in his work.

different ways to maintain that prosperity. One way of doing this goal is by putting this prosperity to work in the form of foreign investment or domestic reinvestment. Instead of simply spending this growth, it is conceivable that a country and its citizens embrace the idea of a SWF because they feel there is a risk that this growth will not continue in perpetuity.

Counter to a country creating a SWF to take advantage of positive macroeconomic conditions, it is also plausible that a country may create a SWF to dampen negative influences on its economy. Two such negative influences would be real exchange rate appreciation and real exchange rate volatility. As SWFs have been highlighted as a possible way to mitigate Dutch Disease symptoms associated with real exchange rate volatility and appreciation (Monk 2010; Coulibaly, Omgba, and Raymond 2015), it is likely that a country would create a SWF as a pre-emptive policy to avoid other symptoms such as the sectoral displacement of workers (Corden and Neary 1982). For countries with a fixed exchange rate, SWFs are seen as a way to mitigate the rising costs of sterilization by pursuing more aggressive investments and forgoing a more traditional strategy of holding U.S. Treasury bills and bonds (Odonnat 2008).

With respect to the Polity IV and leadership turnover variables, I included these variables to investigate the political dynamics that relate to SWF creation. In their work on the political economy of natural resource funds, Humphreys and Sandbu (2007) argued that there are powerful incentives against accumulating reserve wealth. They stated that such accumulation is viewed more favourably by the leader when the leader thinks they will be able to fend off political rivals and employ the saved wealth in the future. Without this assurance, leaders are more apt to appease interest groups by using

the resource wealth to fund projects important to these interests. Interestingly,
Humphreys and Sandbu stated that rivals will not necessarily be against the idea of
saving resource wealth, if they feel that they stand a chance to control it in the future. In
his comparison of the SWFs of China and Singapore, Shih (2009) contended that some
authoritarian governments have used SWFs for domestic political survival by keeping
some assets domestically and investing in a manner to placate constituencies and
maintain power.   In the realm of the Polity IV and leadership data, one would suspect
that SWFs are more likely created by countries with stable Polity IV ratings (where
incumbents and rivals are familiar with how the regime operates) and low leadership
turnover, as incumbents and rivals demonstrate their ability to pursue longer time
horizons by employing the SWF as a saving mechanism.

Moving to the second statistical analysis, I created the second sample using the
same method as the previous test, but only included countries that had created a
stabilization fund. Drawing upon the work of Sugawara (2014) to determine which
countries have had CRSFs, I coded twenty-nine countries as having created a CRSF. Of
these twenty-nine countries, seven never created a SWF as the CRSF either remained a
domestic savings account with no international investing or the CRSF no longer exists.[28]
In the case of Brunei, where Brunei supposedly created a CRSF after having created a
SWF, Brunei was not included as a positive case in the CRSF sample as I was unable to
confirm the CRSF's existence.

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[28] Countries having CRSFs that never transitioned to a SWF include: Papua New Guinea, Tuvalu,
Colombia, and Ecuador.

For the third test, I looked at countries which created SWFs with no previous linkage to a CRSF. I removed countries that created CRSFs from the sample for the time period that the CRSF was created and onward. Returning to the example of Norway (classified by Sugawara as a CRSF), the time period of 1986-1990 and the time periods that followed were not included in this third test because it is unlikely that a country would create a CRSF and then create a SWF. In most cases, the CRSF had been reconsidered as a SWF over time and a secondary fund was never established. While I acknowledge that countries may create secondary funds with different mandates, this chapter answers what led to the *first* fund.

I performed multiple robustness tests to ensure the validity of my findings. Aside from performing the three regression analyses outlined above on the five-year averages, I also performed the same tests on three-year, seven-year, and ten-year averages. Since some of these tests gave slightly different results than the tests conducted on the five-year averages, findings that remained consistent throughout the different time specifications were given the most credence. To investigate the sensitivity of my findings, I circumscribed the data by eliminating data points that fell outside of three standard deviations of either side of the median for that variable. This method permitted me to keep 99.73% of the data points for all variables, while eliminating outliers that may adversely influence the interpretation of the results. The findings reported below are the original models and not the circumscribed data, but the results from working with this limited data will also be discussed to provide context to the original model's outcomes.

Apart from the tests mentioned above, I conducted three auxiliary analyses to ascertain whether the wealth of a country, its regime type, or timing of SWF creation had

some impact on the conditions explaining why countries create SWFs. In the case of wealth, I conducted the same tests as those mentioned above on countries which ranked among the top quartile in GDP per capita and those which ranked among the lowest quartile in GDP per capita. To understand the dynamics of regime type, I retested the main model on those countries classified as autocratic (countries scoring from -10 to -6 on the Polity IV scale) and on those countries classified as democratic (countries scoring from 6 to 10 on the Polity IV scale). While analyses build on the works of Aizenman and Glick (2009) and Chwieroth (2014) who included GDP per capita and Polity IV data as independent variables in their models, I deepened the analysis by investigating the factors among wealthy/poor or democratic/autocratic countries which may explain SWF creation. Finally, given the recent surge in SWF creation, I tested whether countries which created SWFs prior to 2005–when Andrew Rozanov (2005) first coined the term "sovereign wealth fund"–created their SWFs under different conditions than those countries which pursued SWFs from 2005 until 2012.

In the case of wealth, one would have expected that the most wealthy quartile of countries created SWFs to insulate their economies from the uneven effects that an increase in resource exports may have on their economy, or as a way to invest excess international reserves in higher-yielding assets. As mentioned previously, the level at which a country may deem international reserves to be in excess of what is required is based on many factors, but it is likely that wealthier countries would be required to hold fewer international reserves than poor countries. On that point, it would be expected that the coefficient of the international reserve variable would not be statistically significant when completing the analysis on the poorest quartile of countries. Moreover, countries in

the poorest quartile are most vulnerable to swings in commodity prices in terms of their

government budgets, so it is quite probable that resource dependence is influencing the

likelihood of these countries creating a SWF.

These disaggregated analyses, presented and thoroughly discussed in Appendix 5

and Appendix 6, provide nuance to the original question: what are the conditions that

matter to policymakers in countries considering a SWF?

2.3   Findings

The Main Model

Turning to the results, the main model in Table 1 illustrates three key points that

have been missing from previous SWF statistical analyses. First, the current account

balance coefficient estimates are not consistently statistically significant in explaining

SWF establishment.   Second, the statistical significance of the international reserves

variable regression coefficients are sensitive to model specification. Third, the GDP

growth variable coefficients, a condition not presented by Aizenman and Glick and used

as a grouping variable by Chwieroth, are positive and statistically significant. These

three findings point to the changing dynamics of the types of countries establishing SWFs

and the importance of updating these prior works.

To the first key finding, it is apparent from the first three estimation equations that

Aizenman and Glick's claim that current accounts influence a country having a SWF is

model-specific. In Aizenman and Glick's data, the five-year average current account

balance to GDP ratio of the 27 positive cases in their sample was 11.3%. Of the 31

countries in my expanded sample which had created a SWF prior to 2008, the average

Table 1: Determinants of SWF Creation

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Current Account/GDP	0.003 (0.34)	0.004 (0.49)	0.011 (1.38)	0.019 (1.60)	0.016 (1.26)	0.014 (1.13)	0.020 (1.60)	0.018 (1.37)	0.027* (1.72)	0.027* (1.74)	0.027* (1.74)
Resource Dependence	0.918*** (5.35)	0.938*** (5.35)	0.908*** (5.02)	0.870*** (4.71)	0.875*** (4.46)	0.852** (4.34)	0.768*** (3.89)	0.847*** (4.17)	0.857*** (4.46)	0.856*** (4.36)	0.857*** (4.43)
Reserves/GDP		0.012* (2.49)	0.007 (1.42)	0.008* (1.66)	0.012* (1.94)	0.011* (1.93)	0.010* (1.70)	0.011* (1.88)	0.006 (1.23)	0.006 (1.24)	0.006 (1.16)
GDP Growth			0.088*** (3.32)	0.092*** (3.41)	0.090*** (3.00)	0.088*** (3.02)	0.086*** (3.17)	0.092*** (3.09)	0.083*** (3.06)	0.082*** (3.05)	0.081*** (3.05)
REER Volatility				-0.00005 (-0.04)							
REER Appreciation				0.001 (0.54)	0.0009 (0.69)	0.0009 (0.70)	0.001 (0.54)	0.001 (0.68)	0.001 (0.57)	0.001 (0.56)	0.001 (0.63)
Number of Leadership Changes					-0.140* (-1.82)	-0.123* (-1.83)	-0.093 (-1.31)	-0.114* (-1.65)	-0.100 (-1.48)	-0.100 (-1.48)	-0.095 (-1.39)
Autocracy					-0.461* (-1.92)						
Democracy						0.195 (1.07)					
Autocracy x Duration of Polity IV							-0.002 (-0.26)				
Democracy x Duration of Polity IV								0.005* (2.04)			
Pegged Exchange Rate									-0.031 (-0.17)		
Pegged or Crawling Peg Exchange Rate										-0.013 (-0.07)	
Pegged, Crawling Peg or Band Exchange Rate											0.213 (0.63)
N	951	928	909	887	776	776	775	775	769	769	769
Pseudo R-square	0.088	0.110	0.158	0.156	0.170	0.161	0.150	0.160	0.158	0.158	0.160
Log Likelihood	-148.50	-141.17	-132.97	-129.71	-120.98	-122.26	-121.21	-119.73	-119.79	-119.80	-119.58
Chi-Square	31.30	37.63	43.10	46.16	42.39	41.95	40.46	41.71	45.86	47.66	46.96

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

current account balance to GDP ratio in the five-year lead-up to SWF creation was a

3.62% deficit. Given that many of the countries I studied were the same as those studied

by Aizenman and Glick, this result can only be explained by the differences in time

periods studied. For example, in my sample, I averaged the current account to GDP data

from 1995-1999 to calculate that in the years leading up to Algeria's choice to establish a

SWF in 2000, the current account to GDP figure was 0.52%. The figure used by

Aizenman and Glick, drawn from the mid-2000s and years after the Algerian SWF had

been established, was 24.24%. Other examples such as Malaysia (-1.61% in 1993,

12.81% used by Aizenman and Glick) and Nigeria (5.92% in 2004, 16.12% used by

Aizenman and Glick) illustrate the gulf between the data I have employed and the data

used by Aizenman and Glick, leading to the contradictory findings. These differences led

me to challenge their assertion that their analysis speaks to the motivation to create

SWFs. In order for that to be true, one need assume that current account improvement

and not current account management was that motivation; a differentiation not stated in

their work.

It is apparent that in regression equations that include fixed exchange rate regime

binary variables, the coefficient estimates for the current account variable is positive and

significant. While this lends some credence to the idea that positive (or less negative)

current account balances may lead a country to create a SWF, further investigation shows

that the primary reason for the coefficient estimate being significant in the latter

equations is due to Iraq being dropped from the sample as a result of missing data

regarding its exchange rate regime. With an average current account deficit of over 33%

of GDP for the five years prior to SWF inception, Iraq's exclusion from some of the

equations leaves this question of current account influence on SWF creation up for debate. Whether the regression coefficients of current account level variables are statistically significant or not, the impact of improved current account levels is relatively minimal on the SWF creation decision. At the mean of current account to GDP ratio data, a country increasing its current account to GDP percentage by one percentage point only increases its probability of creating a SWF by one-fifth of one percentage point. Therefore, although the statistical significance of the current account coefficient may be important to those continually relying on it to explain SWF creation, the finding of this analysis is that even in cases where the coefficient is statistically significant, the impact of improving current account balances seems to be only tangentially linked to SWF creation.

Digging further into the current account question, the duration of current account surpluses or deficits was tested to see if it was statistically significant in explaining SWF adoption; it was not. This finding indicates a clear need to nuance the idea of the "chronic surplus" country being likely to create a SWF. As discussed earlier in the chapter, the data do not support this idea; SWF-creating countries seem to be just as likely to have current account surpluses as to have current account deficits prior to creation. This fact acknowledged, a two-group mean comparison test indicated that there was a statistically significant difference in the average number of consecutive years that SWF-creating countries ran a current account deficit in comparison to the number of consecutive deficit years suffered by non-establishing countries. This result suggests that

even if the idea of the "chronic surplus" country establishing a SWF may be false, SWF-creating countries do seem to run deficit periods of shorter durations prior to creation.[29]

Table 2: Two-sample t-test: Current Account Duration (in years)[30]

Group	Obs.	Mean	Standard Error	Standard Deviation	95% Confidence Interval	
Non-SWF Country-Periods	1042	-5.222	0.282	9.095	-5.776	-4.670
SWF Country-Periods	32	-2.531	1.720	9.732	-6.040	0.977
Combined	1074	-5.14	0.278	9.121	-5.689	-4.596
Difference		-2.691	1.636		-5.901	0.518

t = -1.6454
degrees of freedom = 1072

Similar to issues that arise when trying to compare this paper's current account results to those of Aizenman and Glick, the international reserves to GDP ratio variable shows much greater sensitivity than was portrayed in Aizenman and Glick's paper. Of the ten equations in which I included the international reserves variable, the international reserves coefficient estimates were statistically significant in six of them. However, when I circumscribed the data as described in Section 2.2, the coefficients of the variable were not significant in any of the ten equations. This is due to Singapore in 1974, Botswana in 1994, and Libya in 2006, being eliminated from the sample because their international reserves to GDP ratios were greater than three standard deviations away from the median.[31] This result implies that while international reserves have been viewed

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[29] See Figure 1 and Figure 2.
[30] Two-sample t-test was conducted specifying that it was a two-tailed test, with equal variances on unpaired data. A two-group variance-comparison test was conducted to ensure variances should not be considered unequal.
[31] The average international reserves to GDP ratio for the five years leading up to SWF establishment for Singapore was 58.58%, for Botswana was 92.54% and for Libya was 80.85%. The median among SWF-establishing countries was 14.27%. For negative cases included in the main model estimates, the median was 8.54%.

as important to the SWF decision-making process, they are overstated as a motivating factor for most of the forty-five countries having SWFs.

Another cause of the divergence between my findings and those of Aizenman and Glick is related to the international reserve levels of those countries which established SWFs after Aizenman and Glick authored their paper. Of the thirty-one countries which created SWFs prior to 2008, on which there is data, the average percentage of international reserves to GDP was 20.5% for the five years leading up to the creation of their SWFs. For the eight countries that created SWFs in 2008 and afterwards, the percentage was just over 14%. As it will be pointed out when the sample is divided, this observation of more recent SWF adopters having lower international reserves relative to their GDP is more of a trend than a unique observation and has gone, thus far, unobserved in the literature.

On the whole, SWF-having countries have always had higher average international reserves to GDP figures than non-SWF-having countries. Aizenman and Glick's work captured this trend, but it did not show if this was the case for countries prior to creating the SWF. Countries with higher reserves may have important reasons for keeping these reserves and not creating a SWF. Given that a SWF may encumber these reserves, not investing may be more attractive than any potential returns which may accrue to a SWF. Knowing that international reserve levels may be a predictive variable in only some cases then raises the question of reserve adequacy and when a country has enough international reserves to create a SWF. This question only has contingent answers and is as intertwined with economic reasoning as it is with country-specific histories (Lu, Mulder, and Papaioannou 2010).

Figure 3: International Reserve to GDP Ratios, 1970-2012

International Reserves/GDP
SWF Countries vs. Non-SWF Countries

Legend: Number of SWF-Having Countries — SWF Countries — Non-SWF Countries
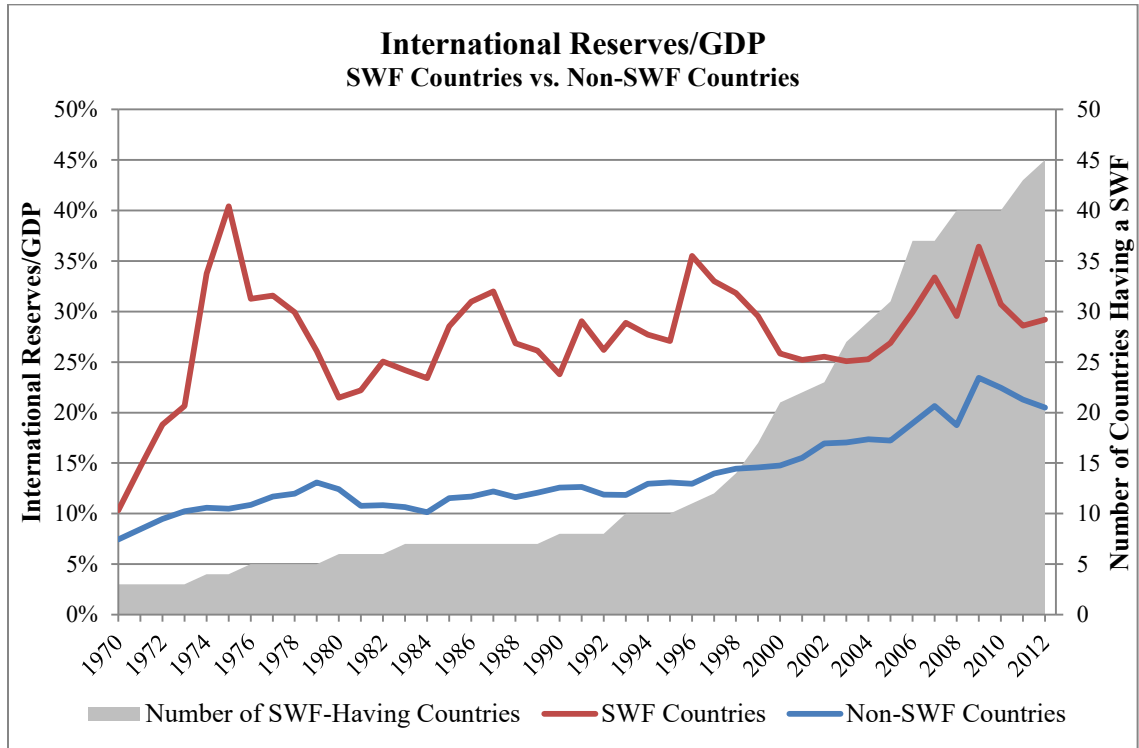
With respect to GDP growth, the data confirms that GDP growth in previous years does influence SWF establishment. Calculating the marginal effects of the variables of the fifth estimation[32] in Table 1, it is interesting to note that a 1% increase in GDP growth is associated with a 0.6% increase in the probability of establishing a SWF. This influence is particularly interesting given that GDP per capita does not significantly alter the possibility of establishing a SWF. While one may think that a certain level of economic wealth is a necessary condition to SWF establishment, the work of Aizenman

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[32] The fifth estimation equation was the one with the best goodness of fit measure.

and Glick, as well as my own testing, indicates that GDP per capita is not nearly as important as GDP growth.

Similar to the findings of previous studies, the regression analysis confirmed that a country's dependence on resource exports is a significant influence on the creation of a SWF. While the method I employed to code resource dependence as a binary variable differed from other studies that have separated fuel exporters and ore and mineral exporters, or have relied solely on export figures, employing a binary variable allowed for the retention of data points that would have been otherwise excluded.[33] Although the 40% threshold may seem arbitrary, analysis of the export data of 222 countries over the period of 1995-2013 indicated that the most important major export grouping[34] of a country accounted for over 51% of all merchandise exports (United Nations Conference on Trade and Development 2015). Given that this figure does not include exports of services, a 40% threshold to demonstrate dependence was deemed appropriate. This reasoning noted, auxiliary testing with 20%, 30% and 50% dependence thresholds did not significantly impact the results.

The above sections have discussed the results from the estimates on data averaged over five-year periods as had been completed by Aizenman and Glick. In order to check the robustness of these results, I conducted the same estimation procedure on data that

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[33] Despite previous studies separating fuel exports and ore and mineral exports as two different variables indicating dependence on extractive resources, this differentiation is largely artificial as reporting by the IMF (2015a) indicated that price volatility of metal and fuel prices are quite similar and that prices are highly correlated (correlation coefficient of 0.91). Therefore, fuel exporting countries and ore and mineral exporting countries face similar opportunities and challenges in managing the macroeconomic impact of their extractive practices.

[34] Major export groupings include: Food and live animals; Beverages and tobacco; Crude materials, inedible, except fuels; Mineral fuels, lubricants and related materials; Animal and vegetable oils, fats and waxes; Chemicals and related products; Manufactured goods; Machinery and transport equipment; Miscellaneous manufactured articles; and Commodities and transactions.

had been averaged over three-year, seven-year, and ten-year periods. The coefficient estimates of the resource dependence and the GDP growth variables were statistically significant in all estimations over the three other model specifications. From these robustness checks there were four things that stood out. First, the coefficients of the international reserves to GDP ratio variable were statistically significant in the three-year averaged estimates using the full dataset, but were no longer statistically significant once the three-year averages were circumscribed. This lack of statistical significance was also observed in the estimations using seven- and ten-year averaged data regardless of whether the data was circumscribed or not.

Second, the coefficients of the current account to GDP variable showed limited statistical significance in the estimates using five-year averaged data, but were statistically significant in some of the seven-year estimates and all of the ten-year averaged data estimates. Although this result may indicate that countries that have had longer-term positive current account balances seek SWFs to aid them in managing their trade aspirations, it may also be an issue of data availability. Singapore, Iraq, Equatorial Guinea, and Azerbaijan–SWF-creating countries that had double-digit current account to GDP deficits in the five-year data–did not have data points for the ten-year estimates. Therefore, while the robustness checks for the current account to GDP variable may lend some credence to the "chronic surplus" idea, it is more likely a result of the model specification choices outlined above.

Third, the estimated coefficients of the leadership turnover variable were statistically significant in three of the five-year estimates in Table 1, and were statistically significant in all of the three-year average estimates in which the variable was included.

However, in the estimates using the circumscribed data, the leadership turnover variable's estimated coefficients were not significant. Two-sample t-tests indicated that over the different averaged periods, the number of leadership changes in SWF-creating countries was less than non-SWF-creating countries; however, these t-test results were not statistically significant.

Fourth, and finally, the estimated coefficient for the autocracy binary variable was negative and statistically significant. Countries that had averaged a Polity IV rating from -6 to -10 in the years leading up to creating a SWF were less likely to create a SWF. This finding is particularly interesting given that much of the fear regarding SWF investments was the asset size of SWFs belonging to autocratic regimes such as Saudi Arabia, United Arab Emirates, Qatar, and China. More recently, however, SWFs are being created by countries that are more democratic, according to Polity IV ratings, than their SWF-having predecessors. Thus, the idea that SWFs are only implemented by autocratic regimes without the input of fellow policymakers or an electorate is outdated.

It must be pointed out that the regressions reported in Table 1 have lower goodness-of-fit measures than previous attempts to ascertain the determinants of having a SWF using quantitative methods. I replicated Aizenman and Glick's work using 2012 data and the conclusions remain the same with similar goodness-of-fit measures. However, what I have tested is different and explains the conditions present in a country *before* it creates a SWF. My lower measures are due to four main factors. First, by expanding the number of positive cases (countries that have a SWF), the task of explaining variation among them is much more difficult. Second, this paper opts not to impute data from previous years whereas other papers chose to do so. Third, by creating

the five-year periods, I have also increased the number of negative observations. With a

sample size of 769 observations, the eleventh, and smallest sample, is four times larger

than the number of observations in Aizenman and Glick's largest estimate. Finally, as

outlined numerous times above, this chapter and Aizenman and Glick's work study

different issues and to compare the goodness of fit ignores this consideration.

CRSF Model

As mentioned in the introduction to this chapter, CRSFs were the precursors to

SWFs. Before Rozanov (2005) coined the term "sovereign wealth fund", the literature on

what are now referred to as SWFs discussed commodity funds or natural resource

revenue funds. As the term SWF has come to encompass these funds, while adding

others, it is important to understand the effect the CRSF-transitioned SWFs have on the

analysis of all SWFs. To do this, I relied upon the list of CRSFs compiled by Sugawara

(2014), even though his list included funds that had never been considered SWFs as they

were no longer in operation or because they remained purely budget-support mechanisms

with no known international investment orientation. Furthermore, in situations where

countries created a CRSF prior to creating a SWF, the year the CRSF was created was the

observation included.[35] On this sample, I conducted the same estimates that I had for the

main model, as well as the same robustness tests.

The results displayed in Table 3 are not surprising; countries creating CRSFs are

dependent on fuel, ore and mineral revenue prior to establishing the CRSF. However, it

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[35] As an example, Botswana created a CRSF in 1972, but did not create the Pula Fund (Botswana's SWF) until 1994. In this case, the observation I included was Botswana in 1972.

is interesting that the coefficient estimate of the real exchange rate volatility variable is

not statistically significant in Table 3, but was positive and statistically significant when I

circumscribed the data using the methodology described in Section 2.2. As a country's

real exchange rate volatility increases, the country has a greater propensity to create a

CRSF. This shift in statistical significance was due to the elimination of two

observations of Nicaragua in the 1990s–negative observations stemming from

hyperinflation in the 1980s–being dropped. The influence of these two outliers on the

entire sample obfuscated the fact that real exchange rate volatility is an explanatory

variable with respect to CRSF creation.

Another variable with a statistically significant coefficient estimate from Table 3

is the fixed exchange rate variable. Countries that had hard-pegged[36] exchange rate

regimes were less likely to create a stabilization fund. This finding is surprising given the

previous observation that governments of resource-based economies are apt to create

CRSFs and the intuition that these governments would want to assure that the revenues

from these resources were not subject to currency fluctuations. However, by digging into

the data, it is apparent that less than twenty-five percent of CRSF-creating countries had a

hard-pegged regime, while over fifty percent of the entire sample had this type of peg.

The analysis indicates that countries adopting a hard-fixed regime were two percent less

likely to create a SWF. Interestingly, Equation 11 of Table 3 reveals that when a softer

definition of "fixed" is used to describe an exchange rate regime, the estimated

coefficient is positive and almost statistically significant.

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[36] For the purposes of this chapter, these are the exchange rate regimes coded as 1 by Ilzetski, Reinhart and Rogoff (2011) and are defined as regimes with no separate legal tender, a preannounced peg, a preannounced currency band of ±2% or a de facto peg.

Table 3: Determinants of CRSF Creation

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Current Account/GDP	-0.001 *(-0.10)*	0.0001 *(0.01)*	0.0004 *(0.05)*	0.001 *(0.10)*	0.001 *(0.08)*	0.001 *(0.04)*	0.002 *(0.16)*	0.001 *(0.09)*	-0.005 *(-0.41)*	-0.002 *(-0.20)*	-0.001 *(-0.13)*
Resource Dependence	1.035*** *(5.13)*	1.030*** *(5.10)*	1.058*** *(5.14)*	1.027*** *(4.91)*	1.085*** *(4.89)*	1.037*** *(4.66)*	1.112*** *(5.25)*	0.999*** *(4.41)*	1.123*** *(5.34)*	1.046*** *(4.85)*	1.065*** *(4.97)*
Reserves/GDP		-0.005 *(-0.88)*	-0.008 *(-1.30)*	-0.009 *(-1.29)*	-0.007 *(-1.01)*	-0.007 *(-1.02)*	-0.006 *(-0.88)*	-0.008 *(-1.05)*	-0.005 *(-0.77)*	-0.006 *(-0.89)*	-0.008 *(-1.04)*
GDP Growth			0.020 *(0.97)*	0.015 *(0.74)*	0.017 *(0.82)*	0.016 *(0.77)*	0.020 *(0.88)*	0.015 *(0.74)*	0.016 *(0.68)*	0.014 *(0.65)*	0.008 *(0.40)*
REER Volatility				-0.00003 *(-0.19)*							
REER Appreciation				0.001 *(0.39)*	0.0007 *(0.73)*	0.001 *(0.78)*	0.001 *(0.6)*	0.001 *(0.59)*	0.0003 *(0.32)*	0.0004 *(0.32)*	0.001 *(0.63)*
Number of Leadership Changes					0.059 *(0.69)*	0.081 *(1.08)*	0.060 *(0.7)*	0.092 *(1.16)*	0.049 *(0.61)*	0.057 *(0.81)*	0.074 *(1.04)*
Autocracy					-0.265 *(-0.95)*						
Democracy						-0.003 *(-0.02)*					
Autocracy x Duration of Polity IV							-0.014 *(-1.59)*				
Democracy x Duration of Polity IV								-0.003 *(-1.02)*			
Pegged Exchange Rate									-0.56** *(-2.52)*		
Pegged or Crawling Peg Exchange Rate										-0.089 *(-0.43)*	
Pegged, Crawling Peg or Band Exchange Rate											0.588 *(1.38)*
N	955	932	914	892	774	774	775	775	775	775	775
Pseudo R-square	0.123	0.123	0.138	0.128	0.129	0.124	0.134	0.126	0.154	0.128	0.138
Log Likelihood	-95.14	-94.57	-89.40	-86.77	-84.03	-84.51	-83.55	-84.37	-81.67	-84.14	-83.14
Chi-Square	29.97	31.47	34.88	39.11	34.72	33.99	38.52	38.29	50.40	42.55	39.54

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

Conducting the same robustness tests as I had for the main model, I observed the results of the five-year average data to be quite consistent over the three-, seven-, and ten-year estimates. The regression coefficients for the resource dependence variables were positive and statistically significant in all of the estimates. Similar to the case with the five-year averages, the real exchange rate volatility variable's coefficient estimates were statistically significant and positive when the data were circumscribed for the seven- and ten-year averages, but were not statistically significant when all of the data were included. With respect to the coefficient estimates of the hard-fixed exchange rate regime variable, they were negative and statistically significant in all of the estimates; attesting to the robustness of this finding.

The most interesting findings from the robustness tests were results from the estimates conducted on the circumscribed seven- and ten-year data. In these estimates, the international reserves to GDP ratio variable was found to have negative and statistically significant estimated coefficients. While this result may indicate a propensity for "reserve-poor" countries to gravitate toward creating CRSFs instead of accumulating traditional international reserves, it is more likely that the elimination from the sample of Timor-Leste (a CRSF creator, with the highest international reserve to GDP ratio) when the number of years averaged increased past five. That sensitivity acknowledged, it is still interesting that international reserves do not appear to contribute to the establishment of a CRSF and may actually diminish the probability of a country creating a CRSF.

Non-CRSF SWF Model

Having looked at the commonalities of countries creating CRSFs, I applied a

similar quantitative procedure to analyze SWF-creating countries that never had a CRSF.

These are the countries that didn't follow the "traditional" route of a CRSF turning into a

SWF (or a CRSF simply being considered a SWF), but rather countries that simply

established SWFs. As mentioned in Section 2.2, countries which had already created a

CRSF or a CRSF which was considered a SWF were eliminated from the sample for this

set of estimations.

Looking at Table 4, the most striking result is the importance of GDP growth for

this subsample of SWF-creating countries. The five-year averaged annual GDP growth

of these SWF-creating countries was 7.78% in the years leading to establishing a SWF; in

non-SWF-creating countries it was 3.68%. This finding is remarkable given the

heterogeneous nature of the positive cases. Although this grouping of twenty SWF-

creating countries includes seven high-growth Asian countries, it also includes countries

such as France, Italy, Ireland, Australia, and New Zealand; wealthier countries (on a GDP

per capita basis) with, historically, moderate growth. Of these five countries, the three

that were created as supplements to national pension schemes (Ireland, Australia, and

New Zealand) had higher annual GDP growth than the average country in the wealthiest

quartile of countries. This result points to policymakers in these high-growth countries

believing that SWFs provide an opportunity to take advantage of GDP growth to address

Table 4: Macroeconomic Determinants of non-CRSF SWF Creation

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Current Account/GDP	-0.009 *(-0.65)*	-0.004 *(-0.27)*	0.010 *(0.76)*	0.021 *(1.17)*	0.013 *(0.68)*	0.013 *(0.67)*	0.035** *(2.40)*	0.033** *(2.13)*	0.037** *(2.07)*	0.038** *(1.97)*	0.038** *(2.00)*
Resource Dependence	0.399 *(1.58)*	0.426* *(1.68)*	0.295 *(1.00)*	0.384 *(1.34)*	0.256 *(0.86)*	0.359 *(1.24)*	-0.030 *(-0.09)*	0.139 *(0.42)*	-0.009 *(-0.03)*	0.014 *(0.04)*	0.016 *(0.05)*
Reserves/GDP		0.008 *(1.39)*	0.001 *(0.12)*	0.002 *(0.30)*	0.006 *(0.79)*	0.005 *(0.72)*	0.002 *(0.16)*	0.005 *(0.60)*	-0.003 *(-0.48)*	-0.004 *(-0.55)*	-0.004 *(-0.54)*
GDP Growth			0.135*** *(3.59)*	0.152*** *(3.61)*	0.148*** *(3.25)*	0.169*** *(3.40)*	0.150*** *(3.82)*	0.178*** *(3.51)*	0.143*** *(3.97)*	0.149*** *(3.89)*	0.147*** *(3.93)*
REER Volatility				-0.017 *(-1.42)*							
REER Appreciation				-0.002 *(-0.37)*	-0.001 *(-0.38)*	-0.001 *(-0.43)*	-0.002 *(-0.62)*	-0.003 *(-0.58)*	-0.002 *(-0.61)*	-0.002 *(-0.59)*	-0.002 *(-0.56)*
Number of Leadership Changes					-0.103 *(-1.29)*	-0.149 *(-1.63)*	-0.067 *(-0.86)*	-0.115 *(-1.49)*	-0.071 *(-0.97)*	-0.077 *(-1.05)*	-0.075 *(-1.04)*
Autocracy					-0.231 *(-0.79)*						
Democracy						0.47** *(2.17)*					
Autocracy x Duration of Polity IV							0.0002 *(0.02)*				
Democracy x Duration of Polity IV								0.008*** *(3.14)*			
Pegged Exchange Rate									0.312 *(1.30)*		
Pegged or Crawling Peg Exchange Rate										-0.068 *(-0.25)*	
Pegged, Crawling Peg or Band Exchange Rate											0.065 *(0.15)*
N	900	877	860	839	728	728	727	727	724	724	724
Pseudo R-square	0.017	0.024	0.155	0.177	0.178	0.193	0.183	0.226	0.193	0.182	0.182
Log Likelihood	-86.75	-81.83	-70.61	-68.42	-63.24	-62.09	-59.69	-56.58	-58.91	-59.71	-59.73
Chi-Square	2.60	4.68	14.81	23.64	11.53	15.85	17.35	26.94	24.00	17.02	17.50

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

long-term domestic structural issues; an observation that would need to be substantiated by qualitative study.

From Table 4, it is also notable that the resource dependence coefficients are only statistically significant in one of the estimates. This sensitivity reflects that when the GDP growth variable is added to estimates, the importance of resource dependence is diminished because of the high rates of growth in extraction-dependent countries. Of the twenty countries that created SWFs without having a CRSF beforehand, five of the nineteen on which I had data were classified as resource dependent. The average GDP growth for these five countries in the five years leading up to SWF creation was thirteen percent. This division of explanatory power between the resource dependence variable and GDP growth variable for this group of resource-dependent, high-growth countries led to the resource dependence variable being less influential as other variables were added.

Similar to the results of the main model, the current account variable's coefficients are positive and statistically significant as more variables are added and the number of observations decreased. As mentioned previously, this result is due to Iraq being eliminated from the sample because of missing data with regard to Iraq's exchange rate regime. If the Iraq observation were to be included in the five-year estimates in which the current account coefficient estimates are statistically significant, the coefficients would no longer remain statistically significant.

The other noteworthy finding is the coefficients of the democracy binary variable being statistically significant. Of the seventeen SWF-creating countries on which I had Polity IV data, eight were democracies; 47% of these SWF-creating countries. Of the other 1,251 five-year averaged observations that could possibly have been included in the

regressions, 38% were classified as democracies. This 9% difference amounted to a statistically significant difference between the SWF-creating and the non-SWF-creating group. This finding was robust for the five-, seven-, and ten-year averaged data, as well as the circumscribed samples over these time periods.

By reconstructing the sample using three-, seven-, and ten-year averages, I repeated the estimates to test the robustness of the five-year average results. The GDP growth variable's coefficients were statistically significant and positive for all of these tests. However, when I limited the data, the coefficients were not statistically significant in the estimates using the three-year averaged data. The resource dependence regression coefficients were only statistically significant in the five-year averages and not at all for the three- and seven-year averages. As well, when I circumscribed the data, the coefficients were no longer statistically significant in any of the three-, five- or seven-year average estimates.

There were two other notable findings from the robustness tests. First, the coefficients for the international reserves to GDP ratio variable were only significant in some of the seven- and ten-year estimates; and they were negative. This result is particularly interesting given how much has been made about SWFs as a way to manage low-yielding international reserves and that many of the positive cases in this sample are countries viewed as reserve accumulators (Aizenman and Glick 2009; Lu, Mulder, and Papaioannou 2010). While this result may indicate that countries are on a "path to accumulation" and act pre-emptively to establish a SWF in order to manage projected

accumulations, it is actually more likely that this finding was obfuscated in the shorter time periods by more reserve-accumulating countries.[37]

The second important result from the robustness testing was the statistical significance of the regression coefficients for the current account variable in the estimations using seven- and ten-year averages. In most of the seven- and ten-year models, the current account to GDP variable's coefficient estimates were positive and statistically significant in explaining SWF establishment; a finding that held for the circumscribed data as well. Although some may see this finding as supporting the "chronic surplus" narrative, further analysis indicates otherwise. The number of years that a SWF-establishing country has run a current account surplus does not vary significantly compared to non-SWF-establishing countries; it is a question of the magnitude of the current account differences. These robustness tests indicated that over seven- and ten-year horizons, SWF-creating countries had significantly higher current account to GDP ratios than their non-SWF-creating counterparts; it says nothing about the duration of the surpluses.

The results discussed above challenge the accepted wisdom in the current SWF literature. The important conclusion to be drawn from the main model is that resource dependence and annual GDP growth are the most influential variables in explaining which countries establish SWFs, and that large accumulations of reserves offer an adequate explanation for only a handful of SWF-creating countries. Furthermore, the idea that SWFs are created by "chronic surplus" countries is not supported by the work

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[37] For SWF-creating countries, the average three-year average international reserves/GDP figure was 17.22%; for five-year averages, it was 16.79%, for seven-year averages, it was 15.60%; and for ten-year averages, it was 14.39%.

above and needs to be reconsidered. This analysis, combined with the work of Aizenman and Glick, suggests that SWFs are not created by "chronic surplus" countries, but that SWFs may help countries to enjoy current account surpluses after their formation.

One main reason for the difference between the work in this chapter and the work of Aizenman and Glick may be related to the investment patterns of a country once it discovers a resource. Some countries, upon discovery of the resource, would be likely to undertake large-scale investment to harvest the resource. While this investment may come from foreign direct investment or other foreign inflows of capital, it may also end up being financed indirectly from the country's international reserves.[38] Therefore, it should be expected that international reserves are lower prior to creating a SWF because of the investment undertaken by the government, but that these international reserves would increase once the resource extraction and exporting began. Moreover, it would be likely that this domestic investment would show itself in increased GDP growth figures. This type of an investment pattern would corroborate the findings of this chapter while also lending support to the findings of Aizenman and Glick. At this juncture, it is evident that further research would be required to support the idea that SWFs are created by resource-finding countries soon after the discovery is made and that it is this type of pattern that links the analysis in this chapter the work of Aizenman and Glick.

With respect to the CRSF estimates and the non-CRSF-SWF estimates, there are clear linkages between the results from the main model and the findings of the other two.

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[38] Specifically, the need for new investment in the extractive sector would increase domestic expenditures and generally cause the balance of payments to shift towards a deficit. This deficit could be offset directly by inflows of foreign capital or, possibly and indirectly, from foreign reserves. This latter effect would be most likely in countries operating a fixed exchange rate.

The CRSF estimates verified that resource dependence was influential in a country deciding to create a CRSF. For those countries which created a SWF without ever having had a CRSF, annual GDP growth was the one, constant explanation. While the coefficients of the exchange rate regime and the type of political regime variables were found to have some statistical significance in some of the models, the pattern was not consistent and should be viewed as an impetus for future research; not concrete conclusions.

2.4   Conclusions

The conventional wisdom in SWF research has been that SWFs are created by two types of countries. The first type are countries which are oil-, natural gas-, or mineral-enriched and are looking for a way to either hedge their economy against commodity price swings or want to transfer natural resource wealth across generations, or both. The second type of countries are those which consistently run current account surpluses, build international reserves and employ SWFs to either obtain higher returns on these reserves or to alleviate the pressure on their currency, or both. This chapter has found that while the wisdom regarding the first type of SWF-creating country remains true, the second should be questioned. By looking at the data in the time leading up to SWF creation, this chapter offers new insight to the economic conditions that lead a country to create a SWF, not the conditions after the fact. By prodding and subdividing the data, this chapter has demonstrated the shifting dynamic of the economic reasoning of SWFs and the sensitivity of the results on which the conventional wisdom has been built. This chapter's approach provides a much clearer understanding of the economic

imperatives underlying SWF creation and provides a platform from which to conduct further study with regard to other, noneconomic, factors which may influence the SWF decision.

Appendix 3: Data Modifications

SWF-having countries that are missing data

Country, Year	Missing Data/Data Transformed	Solution
Algeria, 2000	Current Account/GDP Financial Account/GDP	Sourced current account data from Banque d'Algerie (2006).
Azerbaijan, 1999	REER Appreciation	REER Appreciation, when calculated over a 5-year span indicated hyperinflation and Azerbaijan would have been eliminated from the data set because it was such an outlier. To avoid this, I calculated 3-year appreciation.
Botswana, 1994	Resource Dependence	Coded zero (no resource dependence) as data from 2000-2012 indicated that Botswana did not have fuel exports that were greater than 1% of total exports. Seems unlikely that fuel exports were 40% of exports prior to 1996.
Equatorial Guinea, 2002	Current Account/GDP Financial Account/GDP	Sourced current account data from Banque des Etats de l'Afrique Centrale (2010).
Hong Kong SAR, 1993	Current Account/GDP	Sourced current account data from IMF's (2011) World Economic Outlook database.
Iran, 1999	Current Account/GDP International Reserves/GDP	Sourced current account data from IMF's (2011) World Economic Outlook database. Sourced international reserves from IMF Balance of Payments Yearbook (2003a).
Iraq, 2003	Current Account/GDP	Sourced current account data from Central Bank of Iraq (2012).
Ireland, 2001	GDP growth	Sourced from Penn World Tables (Feenstra, Inklaar, and Timmer 2013).
Mauritania, 2006	Current Account/GDP Financial Account/GDP	Sourced current account data from IMF's (2011) World Economic Outlook database. Sourced financial account data from Banque Centrale de Mauritanie (2006).
Qatar, 2003	Current Account/GDP GDP growth Financial Account/GDP	Sourced current account data and GDP growth from IMF's (2011) World Economic Outlook database. Sourced financial account data from Qatar Central Bank (2003).
Singapore, 1974	Current Account/GDP Financial Account/GDP	Included 1974. Average was taken from 1972-1974.

Appendix 4: Sample Comparison

Aizenman and Glick	SWF-only (from SWFI)	Stabilization Funds Sample	Non-Stabilization SWF Sample
Singapore, 1981	Singapore, 1974		Singapore, 1974
United Arab Emirates, 1976	United Arab Emirates, 1976		United Arab Emirates, 1976
Oman, 1980	Oman, 1980	Oman, 1980	
Brunei Darussalam, 1983	Brunei Darussalam, 1983		Brunei Darussalam, 1983
Norway, 1990	Norway, 1990	Norway, 1990	
Hong Kong SAR, China, 1993	Hong Kong SAR, China, 1993		Hong Kong SAR, China, 1993
Malaysia, 1993	Malaysia, 1993		Malaysia, 1993
Botswana, 1993	Botswana, 1994	Botswana, 1972	
China, 2007	China, 1997		China, 1997
Gabon, 1998	Gabon, 1998		Gabon, 1998
Venezuela, RB, 2005	Venezuela, RB, 1998	Venezuela, RB, 1998	
Azerbaijan, 1999	Azerbaijan, 1999	Azerbaijan, 1999	
Iran, Islamic Rep., 2000	Iran, Islamic Rep., 1999	Iran, Islamic Rep., 1999	
	Peru, 1999	Peru, 1999	
Algeria, 2000	Algeria, 2000	Algeria, 2000	
Kazakhstan, 2000	Kazakhstan, 2000	Kazakhstan, 2000	
Mexico, 2000	Mexico, 2000	Mexico, 2000	
Trinidad and Tobago, 2007	Trinidad and Tobago, 2000	Trinidad and Tobago, 2000	
	Ireland, 2001		Ireland, 2001
	Equatorial Guinea, 2002		Equatorial Guinea, 2002
	Iraq, 2003		Iraq, 2003
	New Zealand, 2003		New Zealand, 2003
Qatar, 2005	Qatar, 2003	Qatar, 2000	
	West Bank and Gaza, 2003		West Bank and Gaza, 2003
Nigeria, 2003	Nigeria, 2004	Nigeria, 2004	
Korea, Rep., 2005	Korea, Rep., 2005		Korea, Rep., 2005
Timor-Leste, 2005	Timor-Leste, 2005	Timor-Leste, 2005	
	Australia, 2006		Australia, 2006
	Bahrain, 2006	Bahrain, 2006	

Chile, 2006	Chile, 2006	Chile, 1985	
	Indonesia, 2006	Indonesia, 2006	
Libya, 2006	Libya, 2006	Libya, 1995	
	Mauritania, 2006	Mauritania, 2006	
	Vietnam, 2006		Vietnam, 2006
	Brazil, 2008		Brazil, 2008
	France, 2008		France, 2008
Russian Federation, 2008	Russian Federation, 2008	Russian Federation, 2004	
	Ghana, 2011	Ghana, 2011	
	Italy, 2011		Italy, 2011
	Mongolia, 2011	Mongolia, 2011	
	Angola, 2012		Angola, 2012
	Panama, 2012		Panama, 2012
Sudan, 2002		Papua New Guinea, 1974	
Sao Tome and Principe, 2004		Tuvalu, 1987	
		Colombia, 1995	
		Ecuador, 1998	
		Sudan, 2002	
		Chad, 2008	
		Turkmenistan, 2008	

Appendix 5: Further Testing: The Disaggregated Samples

Having looked at the conditions common to countries creating SWFs and CRSFs,

I conducted further testing to see if the explanatory variables were altered by pre-existing

conditions. To investigate these influences, I divided the main model data along three

parameters: wealth, autocracy/democracy and timing of creation. I employed the same

methodology as the main model estimates. The regression tables are presented in

Appendix 6.

Wealth

To determine if a country's level of wealth had any influence on the explanation

of why a country would establish a SWF, I divided the sample into quartiles of GDP per

capita. From there, I conducted the estimates on countries in the highest quartile of GDP

per capita and another set of estimates on the lowest quartile of GDP per capita. Given

the smaller sample size and the lack of variation among exchange rate regime binary

variables, I employed Firth's penalized likelihood approach to complete the estimations

without removing observations.[39] As before, I conducted the estimates on three-, seven-

and ten-year averaged data to check for robustness.

For the five-year averaged data of the least wealthy countries, I found that the

only statistically significant regression coefficients were those of the resource

dependence and autocracy duration interaction variables. For the wealthiest quartile of

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[39] Firth's (1993) penalized likelihood approach is used to overcome issues related to probit regression models not converging due to small sample sizes. Unfortunately, Stata does not produce a goodness-of-fit measurement for the Firth procedure.

countries, resource dependence and annual GDP growth accounted for SWF

establishment. The fact that the GDP growth variable was more explanatory in

explaining SWF creation among wealthier countries was surprising as one would assume

that wealthier countries would have more moderate growth. The main reason for this

finding has little to do with GDP growth and more to do with the other variables in the

equations. In the testing of poorer countries, the average SWF-creating country had a

larger current account to GDP deficit than their average non-creating counterpart. For the

wealthier quartile, the current account to GDP averages were similar. Therefore, in the

case of poorer countries, the current account to GDP difference among creating and non-

creating countries was undermining the explanatory power of the GDP growth difference

among the creating and non-creating group. For the wealthiest quartile, the current

account to GDP statistics among creators and non-creators were similar, leaving more

explanatory power for the GDP growth variable. These findings remained the same when

the data sample was limited as described in previous sections.

The seven- and ten-year averaged data corroborated the five-year findings for the

wealthiest quartile of countries. The three-year average estimates did not yield

coefficients for the GDP growth and resource dependence variables that were

consistently statistically significant. This divergence from the standard results is most

likely due to the number of positive observations (wealthy countries creating SWFs)

being less of a proportion of the sample than in other model specifications, making it

more difficult to ascertain a difference between SWF-creating countries and their non-

creating counterparts. For the poorest quartile of countries, the seven- and ten-year

estimates indicated that there was no variable that consistently explained SWF creation,

although the coefficient estimates for the resource dependence and the autocracy-Polity IV duration interaction variables were statistically significant for some of the equations.

In the regressions using the three-year averaged data of the poorest quartile of countries, it was noteworthy that the coefficient estimates for the resource dependence variable remained consistently positive and statistically significant while those of the current account to GDP ratio variable were negative and statistically significant. This was not surprising given that four of the five SWF-creating poor countries on which I had current account data had current account deficits prior to creating a SWF. However, because the average current account to GDP ratio of negative cases (non-SWF-creating poor countries) was -6.63%, it is interesting that these four countries, on average, were doing worse; indicating that their deficits may be influencing the decision to save their extraction wealth (three of the five countries were resource dependent).

Autocracies and Democracies

While there has been much consternation regarding the opaque operations of SWFs created by autocracies (Truman 2008; Bazoobandi and Niblock 2011), there has not been any work on what has driven some autocracies to create SWFs. As discussed earlier, there seems to be countering narratives with regard to why autocracies, and democracies for that matter, may decide to create a SWF. The estimates from the main model, the CRSF model, and the non-CRSF-SWF model indicated that being an autocratic or democratic country (as rated by the Polity IV project) has counterintuitive influences on SWF creation. To hone in on the differences among the countries classified as autocracies or democracies, I conducted the same estimation procedures on

countries classified as autocracies (having an average Polity IV score between -6 and -10) and those classified as democracies (having an average Polity IV score between 6 and 10). Similar to the previous testing, because of the smaller sample sizes, I utilized Firth's penalized likelihood approach to carry out the estimations.

Before presenting the findings from the autocracy sample, it is important to note that the samples for all of the period specifications are small. The number of countries considered to be autocratic has been declining and this trend resulted in a smaller number of countries on which to conduct the estimates. For this reason, I warn that these findings are particularly sensitive and should be seen as a gateway for further investigation, not the final word on SWF-creating autocratic countries.

The results from the estimates are inconsistent and do not explain SWF-creation among autocracies. For the three-year averaged data, the coefficients for the resource dependence and international reserves to GDP ratio variables were statistically significant and positive. For the five-year data, the coefficient estimates of these two variables remained statistically significant in some of the estimates and the coefficients of the GDP growth variable was statistically significant in others. The seven-year data corroborated the statistical significance of the GDP growth variable coefficients, but also indicated that current account to GDP ratio coefficient estimates were also statistically significant. Estimations using ten-year averages yielded no consistent, statistically significant results. Consequently, not much can be taken from the analysis except that the heuristic of SWFs being created by autocratic monarchies in the Middle East has been diluted by the inclusion of China, Azerbaijan, Vietnam, and Libya, as autocratic, SWF-creating countries that have different profiles than the Arab monarchies.

As the sample of democratic countries is much larger, the findings from these estimates were much clearer and less sensitive to the addition of variables. The estimates using the five-, seven-, and ten-year averaged data indicated that resource dependence and GDP growth were associated with the creation of SWFs in democratic countries. As well, the coefficient estimates for the real exchange rate volatility variables were positive and statistically significant for all of the averaged time period estimates. For some of the model specifications, the coefficient estimates of the current account to GDP ratio variables were positive and statistically significant, but this finding was not robust. While these findings suggest that democracies may be more inclined to employ a SWF as a policy measure to react to GDP growth, such conclusions should be forwarded carefully and with a deeper understanding of the policy process in these democracies.

Timing

As mentioned at the start of this chapter, CRSFs were the precursors to SWFs and the term "sovereign wealth fund" originated in Rozanov's (2005) article in *Central Banking*. While there may have been multiple reasons for Rozanov writing the article when he did, the article was, nonetheless, written during a period when the cumulative number of countries with a SWF was increasing dramatically. Prior to 2005, twenty-seven countries had CRSFs/SWFs; by 2012, the number of countries was forty-five.[40] Although Chwieroth (2014) viewed this increase as a result of countries emulating the policies of other countries, the varying economic profiles of SWF-creating countries in recent years makes me skeptical of such conclusions. Therefore, using Rozanov's

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[40] See Appendix 2 at end of Chapter 2.

publication as a point of division, I investigated whether the macroeconomic conditions of countries creating their SWF prior to Rozanov's article (the period leading up to 2005) were different from those conditions of SWF-creating countries that followed the article (from 2005 to 2012).

The results from the pre-2005 period corroborate some of the conventional wisdom of why countries create SWFs. For the five-year averaged data, the coefficients for the resource dependence and international reserves to GDP ratio variables were both positive and statistically significant in explaining SWF creation. Furthermore, the regression coefficients of the GDP growth variable (positive), the autocracy binary variable (negative), and the leadership turnover (negative) were also found to be statistically significant. When the sample was circumscribed, the real exchange rate volatility variable was also found to be statistically significant in explaining SWF creation. These findings also understated the influence of resource dependence as Saudi Arabia, Kuwait, and Kiribati were not included in the sample. Given that two of these three countries (Saudi Arabia and Kuwait) were labelled as autocracies in the first years that the authors of the Polity IV dataset established a score for these countries, it is likely that the coefficient of the autocracy binary variable being negative and statistically significant is overstated. Nevertheless, these results do reinforce the ideas of SWFs being employed as a hedge for resource-dependent countries, a tool for return-seeking reserve holders, and a lever to control the real exchange rate.

With the exception of the real exchange rate volatility finding, the results from the five-year averages of SWFs created prior to 2005 were replicated when the three-year averaged data was used. For the seven- and ten-year averaged data, the coefficients for

the resource dependence and GDP growth variables remained statistically significant, but the coefficients of the international reserves to GDP ratio were no longer. In some cases, the estimated coefficients for the real exchange rate volatility, real exchange rate appreciation, and current account to GDP ratio variables remained positive and statistically significant. These results indicate that while this chapter has given good reason to question the prevailing narrative around SWF creation, there is a statistically-based reason for this narrative. Yet, if the pre-2005 SWF creation estimates hold with the SWF creation narrative, the 2005 to 2012 period must be at odds with some of the prevailing beliefs.

The estimates for the 2005 to 2012 period paint a different picture than the pre-2005 period. The five-year averaged estimates suggested that resource dependence was the only variable with a statistically significant coefficient estimate in every estimation in which it was included, while the estimated coefficients for GDP growth were statistically significant when the sample was limited to remove outliers. Surprisingly, the current account to GDP ratio coefficient estimates (which were not statistically significant in the main model) were statistically significant in some of the estimations of the 2005 to 2012 period. However, when variables taking into consideration the political climate in a country (autocracy binary variable, democracy binary variable, Polity IV interaction variables) were included, the current account to GDP ratio coefficient estimates were no longer statistically significant.

The findings of resource dependence, current account to GDP, and GDP growth being associated with SWF creation in the 2005 to 2012 period were corroborated by the robustness tests on the seven- and ten-year averaged data. As a final point, the real

exchange rate appreciation coefficient estimate was negative and statistically significant for the seven- and ten-year estimates, but not in the case of the seven-year estimates when the sample was limited. This result underlines that there is a second generation of countries creating SWFs for reasons other than those on which the conventional wisdom of SWF creation is based.

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Appendix 6: Macroeconomic Determinants of SWF Creation (Disaggregated Data)

Table 5: Least Wealthy Quartile of Countries (Firth's Logit Regressions)

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Current Account/GDP	-0.039 *(-0.92)*	-0.039 *(-0.89)*	-0.037 *(-0.80)*	-0.033 *(-0.72)*	-0.046 *(-0.93)*	-0.040 *(-0.83)*	-0.078 *(-1.57)*	-0.037 *(-0.77)*	-0.037 *(-0.74)*	-0.044 *(-0.85)*	-0.047 *(-0.87)*
Resource Dependence	1.951** *(2.51)*	1.928** *(2.50)*	2.031** *(2.57)*	1.995** *(2.54)*	1.917** *(2.49)*	1.904** *(2.43)*	2.087** *(2.49)*	1.916** *(2.46)*	1.910** *(2.45)*	2.114** *(2.49)*	1.850** *(2.36)*
Reserves/GDP		0.014 *(0.32)*	-0.002 *(-0.04)*	-0.007 *(-0.12)*	0.010 *(0.18)*	0.003 *(0.06)*	0.033 *(0.81)*	0.002 *(0.03)*	-0.005 *(-0.10)*	-0.0004 *(-0.01)*	-0.008 *(-0.14)*
GDP Growth			0.203 *(1.26)*	0.207 *(1.29)*	0.199 *(1.24)*	0.207 *(1.24)*	0.075 *(0.52)*	0.217 *(1.30)*	0.222 *(1.29)*	0.247 *(1.39)*	0.216 *(1.25)*
REER Volatility				-0.0001 *(-0.29)*							
REER Appreciation				0.006 *(0.73)*	0.003 *(1.33)*	0.003 *(1.31)*	0.002 *(1.08)*	0.003 *(1.36)*	0.003 *(1.31)*	0.004 *(1.47)*	0.003 *(1.31)*
Number of Leadership Changes					0.303 *(0.74)*	0.275 *(0.68)*	0.472 *(1.18)*	0.256 *(0.64)*	0.229 *(0.57)*	0.252 *(0.66)*	0.247 *(0.62)*
Autocracy					0.554 *(0.62)*						
Democracy						0.073 *(0.07)*					
Autocracy x Duration of Polity IV							0.078*** *(2.63)*				
Democracy x Duration of Polity IV								0.013 *(0.37)*			
Pegged Exchange Rate									0.364 *(0.43)*		
Pegged or Crawling Peg Exchange Rate										0.920 *(0.88)*	
Pegged, Crawling Peg or Band Exchange Rate											0.744 *(0.49)*
N	238	233	231	224	221	221	221	221	196	196	196
Log Likelihood	-21.12	-17.86	-14.86	-1.26	-7.60	-7.84	-1.15	-4.66	-7.10	-6.70	-7.34
Chi-Square	6.95	7.09	8.22	9.44	9.35	9.04	13.09	8.93	8.37	8.13	8.23

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

Table 6: Wealthiest Quartile of Countries (Firth's Logit Regressions)

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Current Account/GDP	-0.002	0.001	0.015	0.033	0.026	0.026	0.019	0.022	0.063	0.069	0.066
	(-0.09)	(0.03)	(0.72)	(1.15)	(0.82)	(0.82)	(0.63)	(0.72)	(1.07)	(1.12)	(1.09)
Resource Dependence	2.216***	2.060***	2.044***	1.520*	2.985**	2.985**	2.369*	2.391**	2.099**	2.126**	2.167**
	(2.99)	(2.62)	(2.79)	(1.91)	(2.31)	(2.31)	(1.69)	(2.35)	(2.36)	(2.48)	(2.46)
Reserves/GDP		0.008	-0.012	0.026	-0.012	-0.012	-0.015	-0.003	0.013	0.013	0.015
		(0.29)	(-0.43)	(0.80)	(-0.26)	(-0.26)	(-0.31)	(-0.07)	(0.30)	(0.34)	(0.34)
GDP Growth			0.221*	0.344**	0.324**	0.324**	0.290*	0.313**	0.239	0.306*	0.249
			(1.88)	(2.37)	(2.07)	(2.07)	(1.81)	(2.00)	(1.50)	(1.77)	(1.58)
REER Volatility				-0.026							
				(-0.37)							
REER Appreciation				0.017	0.009	0.009	0.011	0.014	0.011	0.011	0.011
				(0.74)	(0.53)	(0.53)	(0.68)	(0.86)	(0.62)	(0.59)	(0.59)
Number of Leadership Changes					-0.088	-0.088	0.004	-0.017	-0.009	-0.133	-0.027
					(-0.25)	(-0.25)	(0.01)	(-0.06)	(-0.03)	(-0.43)	(-0.09)
Autocracy					-1.399						
					(-0.89)						
Democracy						1.399					
						(0.89)					
Autocracy x Duration of Polity IV							-0.014				
							(-0.22)				
Democracy x Duration of Polity IV								0.008			
								(1.05)			
Pegged Exchange Rate									0.094		
									(0.12)		
Pegged or Crawling Peg Exchange Rate										-1.091	
										(-1.44)	
Pegged, Crawling Peg or Band Exchange Rate											-0.490
											(-0.51)
N	207	202	200	192	169	169	170	170	187	187	187
Log Likelihood	-31.87	-28.13	-24.11	-16.76	-15.27	-15.27	-12.42	-9.96	-15.58	-14.56	-15.84
Chi-Square	9.90	9.66	12.95	13.69	14.13	14.13	13.67	12.89	12.91	13.48	12.76

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

Table 7: Autocratic Countries (Firth's Logit Regressions)

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Current Account/GDP	-0.016	-0.023	0.013	0.013	0.006	0.003	0.003	0.001
	(-0.58)	*(-0.79)*	*(0.36)*	*(0.37)*	*(0.17)*	*(0.09)*	*(0.09)*	*(0.03)*
Resource Dependence	2.233***	2.309***	2.179***	2.139***	2.015***	2.058***	2.057***	2.025***
	(3.96)	*(4.00)*	*(3.70)*	*(3.62)*	*(3.43)*	*(3.50)*	*(3.49)*	*(3.42)*
Reserves/GDP		0.040*	0.037*	0.036	0.034	0.036	0.035	0.031
		(1.87)	*(1.66)*	*(1.61)*	*(1.46)*	*(1.55)*	*(1.51)*	*(1.32)*
GDP Growth			0.095*	0.096*	0.068	0.064	0.061	0.055
			(1.80)	*(1.82)*	*(1.31)*	*(1.22)*	*(1.18)*	*(1.08)*
REER Volatility				-0.00002				
				(-0.05)				
REER Appreciation				0.004	0.003	0.003	0.003	0.004
				(0.59)	*(1.62)*	*(1.42)*	*(1.42)*	*(1.59)*
Number of Leadership Changes					-0.755	-0.733	-0.709	-0.687
					(-1.47)	*(-1.40)*	*(-1.35)*	*(-1.34)*
Pegged Exchange Rate						-0.130		
						(-0.21)		
Pegged or Crawling Peg Exchange Rate							0.018	
							(0.03)	
Pegged, Crawling Peg or Band Exchange Rate								1.140
								(0.75)
N	247	242	240	236	236	215	215	215
Log Likelihood	-40.52	-35.30	-30.34	-16.37	-21.40	-19.67	-19.84	-19.84
Chi-Square	16.36	17.57	19.73	20.19	20.28	19.87	19.78	19.59

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

Table 8: Democratic Countries (Firth's Logit Regressions)

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Current Account/GDP	0.035	0.054	0.039	0.088*	0.053	0.057	0.056	0.057
	(0.93)	*(1.49)*	*(1.14)*	*(1.76)*	*(0.99)*	*(1.03)*	*(1.00)*	*(1.04)*
Resource Dependence	1.595***	1.588***	1.664***	1.484**	1.487**	1.586***	1.505**	1.594***
	(2.76)	*(2.73)*	*(2.82)*	*(2.49)*	*(2.49)*	*(2.65)*	*(2.49)*	*(2.67)*
Reserves/GDP		0.013	0.003	0.0003	0.002	0.002	-0.0001	0.002
		(1.00)	*(0.23)*	*(0.02)*	*(0.11)*	*(0.10)*	*(-0.004)*	*(0.17)*
GDP Growth			0.155	0.240**	0.223**	0.220*	0.231**	0.218*
			(1.63)	*(2.20)*	*(2.01)*	*(1.93)*	*(1.99)*	*(1.93)*
REER Volatility				0.001*				
				(1.91)				
REER Appreciation				0.002	0.001	0.001	0.001	0.001
				(0.13)	*(0.06)*	*(0.10)*	*(0.06)*	*(0.07)*
Number of Leadership Changes					-0.034	-0.059	-0.079	-0.056
					(-0.14)	*(-0.24)*	*(-0.32)*	*(-0.23)*
Pegged Exchange Rate						-0.112		
						(-0.19)		
Pegged or Crawling Peg Exchange Rate							-0.482	
							(-0.93)	
Pegged, Crawling Peg or Band Exchange Rate								-0.224
								(-0.30)
N	518	509	495	482	417	408	408	408
Log Likelihood	-69.52	-60.05	-55.96	-42.21	-44.62	-43.27	-42.81	-43.59
Chi-Square	9.25	13.60	16.45	18.58	13.81	14.63	15.12	14.78

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

Table 9: Pre-Rozanov Article (pre-2004) Countries (Probit Regressions)

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Current Account/GDP	-0.006	-0.003	0.009	0.012	0.011	0.009	0.018	0.013	0.023	0.024	0.024
	(-0.49)	*(-0.30)*	*(0.77)*	*(0.80)*	*(0.70)*	*(0.68)*	*(1.15)*	*(0.83)*	*(1.03)*	*(1.09)*	*(1.08)*
Resource Dependence	0.965***	1.036***	1.035***	1.000***	1.179***	0.909***	0.968***	0.990***	0.999***	1.010***	1.005***
	(4.63)	*(4.77)*	*(4.50)*	*(4.35)*	*(4.30)*	*(3.62)*	*(3.70)*	*(3.63)*	*(4.05)*	*(3.86)*	*(4.07)*
Reserves/GDP		0.016***	0.012*	0.012*	0.015*	0.019**	0.014	0.017*	0.009	0.009	0.009
		(2.79)	*(1.91)*	*(1.90)*	*(1.66)*	*(2.39)*	*(1.52)*	*(1.88)*	*(1.23)*	*(1.26)*	*(1.21)*
GDP Growth			0.097**	0.094***	0.110**	0.082**	0.098**	0.087**	0.083**	0.081**	0.080**
			(2.42)	*(2.61)*	*(2.09)*	*(2.35)*	*(2.43)*	*(2.34)*	*(2.40)*	*(2.38)*	*(2.36)*
REER Volatility				-0.00002							
				(-0.14)							
REER Appreciation				0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
				(0.67)	*(1.32)*	*(0.93)*	*(0.95)*	*(0.97)*	*(0.87)*	*(0.85)*	*(1.03)*
Number of Leadership Changes					-0.353**	-0.158	-0.241*	-0.221*	-0.205*	-0.196	-0.187
					(-2.12)	*(-1.56)*	*(-1.76)*	*(-1.89)*	*(-1.65)*	*(-1.64)*	*(-1.58)*
Autocracy					-0.959***						
					(-3.02)						
Democracy						-0.141					
						(-0.58)					
Autocracy x Duration of Polity IV							-0.018				
							(-1.19)				
Democracy x Duration of Polity IV								0.005			
								(1.59)			
Pegged Exchange Rate									-0.051		
									(-0.22)		
Pegged or Crawling Peg Exchange Rate										0.082	
										(0.31)	
Pegged, Crawling Peg or Band Exchange Rate											0.361
											(0.84)
N	670	652	635	618	545	545	545	545	525	525	525
Pseudo R-square	0.103	0.149	0.211	0.199	0.271	0.226	0.220	0.219	0.209	0.209	0.212
Log Likelihood	-89.80	-81.88	-75.40	-73.43	-62.48	-66.38	-64.30	-64.36	-64.66	-64.63	-64.35
Chi-Square	21.55	28.98	29.16	33.46	32.82	38.42	35.02	36.17	47.82	63.29	41.84

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

Table 10: Post-Rozanov Article (2005-2012) Countries (Probit Regressions)

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Current Account/GDP	0.026* *(1.95)*	0.031** *(2.20)*	0.029** *(2.04)*	0.034* *(1.82)*	0.029 *(1.45)*	0.032 *(1.53)*	0.028 *(1.37)*	0.030 *(1.41)*	0.037* *(1.92)*	0.036* *(1.86)*	0.036* *(1.89)*
Resource Dependence	0.891*** *(2.90)*	0.893*** *(2.93)*	0.842*** *(2.72)*	0.720** *(2.09)*	0.719** *(2.16)*	1.006*** *(2.85)*	0.690** *(2.03)*	0.794** *(2.37)*	0.814** *(2.44)*	0.811** *(2.42)*	0.813** *(2.42)*
Reserves/GDP		-0.006 *(-0.66)*	-0.008 *(-0.81)*	-0.008 *(-0.90)*	-0.007 *(-0.67)*	-0.003 *(-0.31)*	-0.010 *(-0.94)*	-0.002 *(-0.25)*	-0.004 *(-0.42)*	-0.003 *(-0.36)*	-0.003 *(-0.36)*
GDP Growth			0.057 *(1.24)*	0.076 *(1.45)*	0.073 *(1.41)*	0.106* *(1.85)*	0.074 *(1.46)*	0.091* *(1.74)*	0.075 *(1.44)*	0.081 *(1.54)*	0.077 *(1.50)*
REER Volatility				0.011 *(1.03)*							
REER Appreciation				-0.0006 *(-0.08)*	-0.003 *(-0.43)*	-0.007 *(-0.98)*	-0.002 *(-0.27)*	-0.005 *(-0.69)*	-0.004 *(-0.69)*	-0.005 *(-0.71)*	-0.004 *(-0.69)*
Number of Leadership Changes					0.042 *(0.52)*	-0.033 *(-0.36)*	0.050 *(0.63)*	0.009 *(0.10)*	0.001 *(0.01)*	-0.009 *(-0.12)*	0.002 *(0.03)*
Autocracy					0.584 *(1.37)*						
Democracy						0.617** *(1.99)*					
Autocracy x Duration of Polity IV							0.019* *(1.72)*				
Democracy x Duration of Polity IV								0.003 *(0.83)*			
Pegged Exchange Rate									-0.093 *(-0.33)*		
Pegged or Crawling Peg Exchange Rate										-0.204 *(-0.67)*	
Pegged, Crawling Peg or Band Exchange Rate											-0.150 *(-0.25)*
N	281	276	274	269	231	231	230	230	244	244	244
Pseudo R-square	0.101	0.104	0.116	0.136	0.116	0.132	0.125	0.108	0.123	0.126	0.123
Log Likelihood	-55.21	-54.72	-53.91	-52.44	-51.41	-50.49	-50.80	-51.78	-51.79	-51.61	-51.81
Chi-Square	14.15	16.66	20.10	21.84	16.52	21.22	17.71	18.33	18.43	17.69	18.68

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

Chapter 3: To what extent are the mechanisms of policy diffusion contributing to the number of SWFs being created?

The most important takeaway from the previous chapter is that the commonly-held beliefs about SWF creation need to be reconsidered because of the ever-expanding number of countries having SWFs. The previous chapter highlighted important macroeconomic disparities among SWF-creating countries and the necessity of nuance when discussing these countries on the whole. In this chapter, I expand on the previous chapter's findings by including new variables to investigate whether international policy diffusion mechanisms influence a country's decision to create a SWF. These new variables test the viability of Chwieroth's (2014) claims that countries create SWFs to emulate the policies of similar countries that have already created a SWF. By modifying the model from the previous chapter, I consider noneconomic reasons for SWF creation and conduct a complementary analysis to Chwieroth's assertions of policy diffusion influencing countries to create SWFs.

This chapter is organized as follows: Section 3.1 provides an overview of the policy diffusion literature and discusses the methodology used by Chwieroth to assess the influence of diffusion on SWF creation. Section 3.2 outlines my methodology for testing for international policy diffusion effects and discusses the different variables I added to the main model from the previous chapter to conduct this testing. Section 3.3 presents the results of the modified model estimates and contextualizes how these findings should be considered with regard to the work of the previous chapter. Finally, Section 3.4

concludes and reflects on the utility of the international policy diffusion literature explaining SWF creation.

3.1   Policy Diffusion, Fiscal Policy, Monetary Policy, and SWFs

While the literature on policy-making has largely centered on the domestic influences on governments to create, change, or abandon certain policies, there is a well-developed subfield which studies the diffusion of policies across countries. In their work on the global diffusion of public policies, Simmons, Dobbin, and Garrett (2007) divided the theorists working in this subfield into four groups: constructivist theorists, coercion theorists, competition theorists, and learning theorists. Intuitively, some of these groupings are more applicable than others in discussing the diffusion of SWFs, but it is important to discuss each to understand the implications of my methodological choices when expanding on the statistical model from Chapter 2.

According to Simmons, Dobbin, and Garrett, constructivist theorists studying global policy diffusion are focused on how a public policy becomes socially accepted and how this acceptance leads to diffusion. They argued that acceptance is created by: i) leading countries being exemplars of policy adoption, ii) expert groups theorizing about the positive impacts of a policy, or iii) specialists making contingent claims that under certain conditions, the policy is appropriate. For constructivist theorists, the spread of American–created securities regulations (McNamara 1998), the power of NGOs setting global human rights norms (McNeely 1995; Boli and Thomas 1999; True and Mintrom 2001), and the socio-cultural similarity between American and British populations

leading to the contingent acceptance of policies (Rose 1993) are distinct examples of the three ways acceptance is garnered.

This way of thinking about global policy diffusion dovetails with the work of Dolowitz and Marsh (2000), who created a continuum of international policy transfer mechanisms from voluntary to coercive with lesson-drawing as the most voluntary. For their part, Dolowitz and Marsh stated that this lesson-drawing can take place under conditions of perfect rationality or bounded rationality. Provided Dolowitz and Marsh admitted it is rare for actors to act perfectly rational because of an absence of perfect information, most voluntary acceptances of international policy transfers are undertaken under a condition of bounded rationality. In this case, constructivists would contend it is the leading countries, expert groups, or specialists that are influential in setting forth the types of policies among which countries choose.

Coercion theorists point to the forcible imposition of policies in countries under threat from fellow countries, international organizations, or NGOs. While some authors have outlined different ways fellow governments have utilized coercive tactics (Owen 2002), much of the work has focused on international organizations acting coercively when negotiating conditional loans or aid programs (Mosley, Harrigan, and Toye 1995). While it may be unlikely that international organizations such as the IMF or the World Bank would coerce countries into creating SWFs, it is evident, given their involvement in the formation of the International Forum of Sovereign Wealth Funds (IFSWF) and their discussion of SWFs in Article IV reports, the IMF does have an active interest in countries implementing SWFs as policy tool to promote fiscal responsibility.

Though much of the coercion literature has focused on the international financial institutions, there are others in academia who have studied the coercive nature of the European Union (Dimitrakopoulos and Passas 2004), as well as free trade (Cardwell and Ghazalian 2015) and international investment agreements (Peterson 2004). Whereas Dolowitz and Marsh questioned whether these other arrangements can actually be deemed coercive given a country's ability to opt-in and opt-out of the agreements, others noted the mere negotiation of some agreements are unequal because of the level of expertise at the negotiating table (Rollo 2007). While unlikely that the IFIs invoked explicit coercive tactics to influence countries to adopt a SWF, the IFIs are among the only international organizations with the capacity and opportunity to do so and must be studied when discussing SWF policy diffusion.

For theorists advocating that policy diffusion is the result of countries competing with each other, corporate tax policy to incentivize foreign direct investment (Gastanaga, Nugent, and Pashamova 1998) and capital account liberalization (Rodrik 1997; Simmons and Elkins 2003) are two frequently cited examples of this type of diffusion. For Marsh and Dolowitz, this type of policy transfer was voluntary, but was based on policymakers' perceptions that integrating the policy was necessary. They stated that groups internal and external to the country create an environment which, depending on the amount of pressure and who is applying the pressure, could be conceived as coercive. They pointed to voluntary international policy transfer processes led by politicians and policy entrepreneurs as being less coercive than processes led by interest groups, that while still voluntary, can be more coercive due to the status of the interest groups. Moreover, Marsh and Dolowitz also noted that the level of freedom available to those charged with

implementing internationally transferred policies can vary based on the social, economic, and political conditions of the country. Countries in economic turmoil may have much less capacity to withstand policy change seen to make their country more economically competitive than a country with a mature, stable economy.

Before turning to learning theorists, it is important to discuss one area where constructivist and competition theorists connect with respect to SWF creation: esteem, pride, prestige, and status. Finnemore and Sikkink (1998) outlined that governments, more specifically their leaders, succumb to "peer pressure" and pursue policies that boost their esteem and conform to norms set by peers. This argument builds on Fearon's (1997) contention of government leaders following norms so as to not have others think badly of them. Although this notion may seem like a departure from the economic imperative argument that was the basis of the last chapter, it does provoke thoughtful consideration of why some of the countries which had been predicted to not create a SWF did so regardless of their economics. As well, the idea of pursuing prestige and esteem may provide insight into curious investment decisions made by SWFs; specifically, Qatar's purchase of Harrods or Abu Dhabi's purchase of Time Warner's headquarters in New York (Barnard 2014).

The last set of theorists discussed by Simmons, Dobbins, and Garrett are learning theorists. Without delving too far into the different types of information required for decision-making, it is most prudent to assume that governments make policy decisions in an atmosphere of less-than-perfect information. For learning theorists, diffusion occurs when a government observes the results of a policy's implementation in another country and updates their less-than-perfect information. While the extent to which outside

information and these observations are sought has been questioned (Weyland 2005),

some assumption of information-seeking by policymakers is plausible. Chwieroth argued

that learning closely resembled emulation and countries considering a SWF would have

difficulty learning from countries already having SWFs because of the opaqueness of

SWFs. Although I acknowledge his point, there has been a more recent push toward

transparency of SWF operations as a result of efforts by the IFSWF and other monitoring

organizations such as the Extractive Industries Transparency Initiative (EITI)

International Secretariat. Moreover, Woochan Kim (2012), former leader of a Korean

mission to Singapore and Hong Kong to learn about SWFs, outlined how SWF-creating

countries learn from their SWF-having predecessors and that this learning may not

require the release of public reports.[41]

Although there are different types of policies that can be diffused amongst

countries, the creation of SWFs is, essentially, a question of fiscal and monetary policy.

The work of Simmons and Elkins (2004) on the diffusion of liberal economic practices

spoke to this nexus as they studied the ways in which countries competed with regard to

their current account, capital account, and exchange rate regime policies.   While the

authors pointed to evidence explaining the influence international economic competition

had on the diffusion of policies, they also noted that countries monitored the policies of

their sociocultural peers. They found evidence of clustering of economic liberalization

(or restriction) efforts over certain time periods among certain countries.

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[41] Kim's paper provided a detailed account of the creation and the evolution of Korea Investment
Corporation (KIC). In it, he described policymakers at the Korea Ministry of Finance and
Economy travelling to Singapore and Hong Kong to meet with officials to discuss how these other two
governments managed foreign reserves and to observe the operations Singapore's Government of
Singapore Investment Corporation (GIC), one of Singapore's SWFs.

Looking at the results of Simmons and Elkin's analysis, international economic competition was found to be a causal mechanism for international policy diffusion, with the authors differentiating between competition for global capital and competition over export market share. The authors found that governments tended to liberalize when countries with similar risk ratings and FDI inflow characteristics already had. Evidence that trade rivals liberalized in order to maintain a competitive balance was not statistically significant. This finding is particularly interesting for the work that will follow on SWFs as it is likely that creating a SWF would be more related to a country wanting to signal financial stability to potential investors in their economy and less as a tool compete for trade market share.

In their work on the capital tax policies of OECD countries from 1980 to 1997, Basinger and Hallerberg (2004) found the influence of domestic political costs impacted the altered payoffs for countries enacting tax reform. They argued that as the domestic costs of implementing tax reform diminished, the likelihood of adopting reform increased. However, the authors also found that as a country observed a rival country's inability or unwillingness to enact tax reforms due to the rival's domestic politics, there was less incentive to enact the reforms itself. Therefore, while the argument for international policy diffusion as a result of countries reacting to competitive forces is persuasive, the fact that rival OECD countries continue to have varied tax programs indicates a country's domestic dynamics cannot be ignored.

Instead of competition being the main driver of international policy diffusion, Simmons and Elkins (2004) observed that the coefficients of their cultural similarities variables were statistically significant in explaining the diffusion of economic

liberalization policies. Countries with similar dominant religions were more likely to diffuse liberalizing policies amongst themselves; a finding that was both statistically significant and robust. This conclusion was particularly interesting when contrasted with the point that communication ties via bilateral investment treaties or trade agreements were not significant in explaining fiscal and monetary policy diffusion. Cultural similarities resonated where direct communication did not.

In an attempt to ascertain some of the noneconomic determinants of SWF creation, Chwieroth (2014) turned to the international policy diffusion literature. In his work, Chwieroth tested whether countries which created their SWF more recently were emulating the practices of the SWF-having countries with which they identified. This peer identification was based on a common dependency on natural resource extraction or similar economic policies. For Chwieroth, the first iteration of SWFs were created as a best practice for countries having a certain set of characteristics and a country creating a SWF during the second iteration only did so once their country's characteristics matched those of countries already having a SWF. Chwieroth claimed that as the number of SWF-having countries in a country's peer group escalated, a country was more likely to emulate their peers; perhaps, at the expense of weighing other policy options.

Although Chwieroth's work mainly focused on the learning and emulation mechanisms of international policy diffusion, he also investigated to see if SWFs may have been created to support a country's efforts to compete for export market share. He stated that because governments create SWFs to export investment rather than attract investment, it was unlikely competition for capital would be a driving influence on SWF creation. This idea does not acknowledge that countries may have been employing SWFs

to signal to investors the openness of their economies; an idea touched upon in the broader SWF literature (Shields and Villafuerte 2010). Moreover, a SWF would not necessarily indicate a country is only exporting capital, but may indicate the country has a policy to manage the economic pressures which accompany rapid capital inflows.

Having looked at the theoretical underpinnings of his policy diffusion model, how Chwieroth tested for this diffusion is particularly informative to expanding my main model. To capture the possibility of emulation and learning as the reason for SWF diffusion, Chwieroth created spatial lag variables for peer groups based on fuel exports as a proportion of GDP, ore and mineral exports as a proportion of GDP, and international reserves as a proportion of GDP. The peer groups were created from the top decile of country-years for each of these three variables. Chwieroth sought to assess if countries specializing in one of these three variables reacted to the weighted average of SWFs created by countries in its peer group. To test his belief that competition among countries was leading to SWF creation, Chwieroth created an export market similarity measure from the *IMF Direction of Trade* statistics and an export product similarity metric from the World Bank's *World Development Indicators*. Unfortunately, how these metrics were calculated in relation to his sample of SWF-having countries was not disclosed by Chwieroth.

In his findings, Chwieroth stated that his results suggested that fuel exporters were likely to emulate the practices of other fuel exporting countries in their peer group. However, Chwieroth found that mineral and ore exports and international reserve accumulators did not follow this emulative practice. He explained this divergence as based on the "fashionableness" of creating a SWF among fuel exporters. As fuel

exporters were noticing other fuel exporters creating SWFs and the number of fuel-exporting countries with SWFs increased, fuel exporters not having a SWF were outside the normative and epistemic community embracing the appeal of SWFs. Chwieroth claimed ore and mineral exporters and reserve accumulators never reached this critical mass of SWF-creating countries and, thus, did not impose the same peer effect. Although Chwieroth's explanation was consistent with his statistical findings, the fact that he stated that the emulation effect is greater than macroeconomic factors which precede this emulation provided an opportunity to build upon my main model from Chapter 2 to test this statement.

3.2   Methodology for Testing Policy Diffusion and SWFs

My approach to assessing diffusion differs from Chwieroth's in two ways. First, instead of Chwieroth's survival analysis, I continue to employ probit models to test the robustness of the base effects (the variables employed in the main model) and ascertain the influence of diffusion effects on the SWF creation decision. It is also important to note that I am only using five of the variables from the Chapter 2 model, as these were the five variables with regression coefficients that were consistently statistically significant.[42] Second, having tested to see if there are correlation issues among the base variables and the diffusion variables, there is no reason to exclude base variables as Chwieroth did.[43] When including the diffusion variable related to fuel exports, Chwieroth eliminated the fuel exports/total exports variable. Although he acknowledged

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[42] These variables are: current account to GDP ratio, resource dependence, international reserves to GDP ratio, GDP growth, and number of leadership changes.
[43] See Appendix 8 for correlation tables.

issues of multicollinearity among his diffusion variables and his base variables, my data had no such issue.

Following Chwieroth's lead and adhering to Dobbin, Simmons, and Garrett's (2007) classification of contending theories of policy diffusion, I created five new variables to test whether policy diffusion via methods of emulation, learning, coercion, competition, or the influence of epistemic communities and international organizations supplemented my explanation of the SWF creation decision process. While these five variables do not encompass every noneconomic influence on a country considering a SWF, the variables do offer a response to many untested hypotheses for SWF diffusion. By including variables that test the influence of similar countries having a SWF, the effect of the number of SWF-having countries in a country's region, the impact of inward foreign direct investment trends, and the relevance of interactions with international financial institutions, I tested the validity of many of the auxiliary reasons that have been employed to explain SWF creation.

The first variable I created was the percentage of the number of resource-dependent countries having SWFs among all resource-dependent countries. In the previous chapter, I set the threshold to classify a country as resource-dependent at resources accounting for forty percent of total exports or resource rents accounting for forty percent of GDP; I kept the threshold at this level.[44] I made no distinction as to whether these exports or rents were derived from petroleum and fuel operations or if they were derived from harvesting ore and minerals. Chwieroth, as mentioned previously,

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[44] I did create and test a variable that captured the number of SWF-creating countries with resources accounting for twenty percent of total exports or resource rents accounting for twenty percent of GDP as a percentage of all countries with these same attributes.

created his peer group by including countries with the highest decile of fuel exports as a percentage of GDP. He also created a separate peer group consisting of the highest decile of ore and mineral exporters and international reserve accumulators. While I understand differentiating international reserves accumulators from resource exporters, dividing the types of resource exporters is not supported by theory or evidence. Although the type of operations and the resources required to engage in extraction are different among these two types of economies, their prices on the world market have been similarly volatile and why a country would manage their economy differently based on the type of resource being extracted needs to be clarified. The desire to hedge against volatility and save the monetization of physical resources is not dependent on the type of physical resource; by separating them, Chwieroth indicated some form of difference that he left unexplained.

To expand on Chwieroth's conception of emulation, I created a second variable by subdividing the sample of countries into eight regions and inputted the number of SWFs that already existed in a country's region for each of their country-year data points.[45] Although arguments could be made that such groupings are artificial and that opportunities for learning and emulation are minimal among heterogeneous countries, this notion fails to recognize the impact of common membership to supranational agreements and organizations. Meetings of organizations such as the European Union, African Union, Gulf Cooperation Council, and initiatives such as the Asia-Pacific Economic Cooperation and North American Free Trade Agreement offer fora where members of these regional groupings exchange ideas and learn from each other on a multitude of issues. Simmons and Elkins (2004) conducted similar testing when they

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[45] See Appendix 7 for the division of countries among the eight regions.

included a geography variable in an attempt to explain the diffusion of economic
liberalization policies.

To test whether countries in competition with each other are using SWFs to signal
competence in dealing with FDI inflows, I created a third variable by dividing a country's
annual FDI inflows by its annual GDP. Similar to the variables in Chapter 2, this FDI
inflow measure was averaged among the different time horizons in the years leading up
to SWF creation. If there is competition among FDI-seeking countries, one would
assume these countries would have a higher percentage of FDI inflows in the years
leading up to SWF creation than that of non-creating countries. Using FDI inflows as a
competition metric is more logical than trade as FDI inflows have a certain amount of
stickiness and indicate longer-term prosperity for a country more than year-to-year trade
figures.

The most difficult explanation of SWF policy diffusion to assess is the use of
coercion by fellow countries or intergovernmental organizations. Nevertheless, I created
two different variables capturing potential influence that the IFIs may have had on SWF-
creating countries. For the first variable, I divided a country's amount of outstanding
IMF credit by the country's total reserves as an indicator of IMF leverage over a country.
In order to capture a softer form of coercion, I created a second variable counting the
number of times a country reached a lending arrangement with the IMF[46] or an

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[46] These include: Standby Arrangements, Extended Fund Facility Arrangements, Structural Adjustment
Facility Arrangements, Poverty Reduction and Growth Facility Arrangements, Standby Credit Facility
Arrangements, Rapid Credit Facility Arrangements, Precautionary and Liquidity Lines, Flexible Credit
Lines and Rapid Financing Instruments

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adjustment loan with the World Bank.[47] Despite recognizing that many countries do not

access IMF credit facilities and that there is no absolute evidence that the IMF supports

the creation of SWFs in all cases, it is true that the IMF advocates for prudent financial

management of public funds and has discussed SWFs as a tool to accomplish this goal in

Article IV consultations (International Monetary Fund 2008b; International Monetary

Fund 2014a; International Monetary Fund 2014b). Furthermore, the IMF's twin

intergovernmental organization, the World Bank, often works in concert with the IMF to

provide loans and other forms of development funding to strengthen the institutions of

member countries. Although their mandates, on the whole, may differ, both

organizations readily celebrate their collaborative working arrangements (Driscoll 1996).

If the IMF or World Bank were to coercively influence countries to create SWFs, one

would expect that the amount of outstanding IMF credit and the number of engagements

with the IFIs would increase the likelihood of SWF creation.

3.3   Modified Main Model Findings

Percentage of Dependent Countries having a SWF (Emulation and Learning)

In his survival analysis, Chwieroth found that while the coefficient of the peer

effect variable for fuel exporters was statistically significant in explaining SWF creation,

the coefficient of the peer effect variable amongst mineral and ores exporters was not.

Even more surprising, given my results in Chapter 2, was Chwieroth's report that the

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[47] These include: Structural Adjustment Loans, Special Structural Adjustment Loans, Programmatic
Structural Adjustment Loans and Sector Adjustment Loans.

coefficients of the minerals and ores exports/GDP variable was statistically significant in accounting for the establishment of a SWF, but the fuel exports/GDP variable did not have the same impact (when peer effect variables were included in the equation). In essence, fuel exporters were more prone to respond to the peer effect than the economic imperatives of fuel dependence, but mineral exporters were more likely addressing economic imperatives than the peer effect when creating their SWFs.

The results from adding the variable capturing the percentage of resource dependent countries already having a SWF are strikingly similar to the findings of the main model in Chapter 2. Although the coefficient estimate of this new variable is statistically significant for the five-year averaged equations in which it was included, most of the other variables are unaffected. The coefficient estimates of the resource-dependent binary variable and GDP growth variable remain positive and statistically significant. It was not the case, as one would expect given Chwieroth's results, that the new variable dramatically undermined the explanatory power of the resource-dependent binary variable. In the main model from Chapter 2, a country "becoming" resource dependent would increase the likelihood of SWF creation by 6.8%; in the new model, with the new variable, this number actually increased to 7.1%. Moreover, a 10% increase in the number of resource-dependent countries having a SWF would only increase the probability of SWF creation by 1.3%. Although this finding does not directly refute that of Chwieroth, it does challenge his methodological choices and conclusions.

Table 11: Determinants of SWF Creation, including Political Diffusion Variables

Explanatory Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Current Account/GDP	0.011	0.014	0.010	0.177**	0.028	0.010	0.074**	0.073***
	(1.18)	*(1.44)*	*(1.14)*	*(2.02)*	*(1.27)*	*(1.07)*	*(3.84)*	*(3.87)*
Resource Dependence	0.855***	0.929***	0.846***	0.802***	0.675***	0.852***	0.643***	0.618**
	(4.63)	*(4.78)*	*(4.53)*	*(4.22)*	*(2.9)*	*(4.61)*	*(2.58)*	*(2.54)*
Reserves/GDP	0.007	0.007	0.007	0.006	0.008	0.007	0.0003	0.001
	(1.49)	*(1.23)*	*(1.27)*	*(1.11)*	*(0.98)*	*(1.35)*	*(0.02)*	*(0.06)*
GDP Growth	0.089***	0.089***	0.085***	0.087***	0.051	0.086***	0.046	0.042
	(3.01)	*(2.70)*	*(2.94)*	*(2.80)*	*(1.26)*	*(3.02)*	*(1.18)*	*(1.10)*
Number of Leadership Changes	-0.091	-0.096	-0.089	-0.078	-0.137	-0.094	-0.186	-0.172
	(-1.35)	*(-1.36)*	*(-1.31)*	*(-1.18)*	*(-1.43)*	*(-1.44)*	*(-1.58)*	*(-1.52)*
% of Resource Dependent Countries		0.017***					0.024***	
		(4.20)					*(3.22)*	
Number of SWFs in Region			0.027				-0.097**	-0.066
			(1.09)				*(-1.99)*	*(-1.42)*
FDI In/GDP				0.022*			0.098***	0.105***
				(1.95)			*(2.83)*	*(3.01)*
Outstanding IMF Credit/ Reserves					-0.075		-0.249	-0.252
					(-1.01)		*(-1.31)*	*(-1.33)*
Number of Engagements with IMF and World Bank						-0.025	0.055	0.055
						(0.51)	*(1.04)*	*(1.08)*
N	835	833	835	810	574	833	562	562
Pseudo R-square	0.160	0.203	0.163	0.165	0.124	0.161	0.239	0.221
Log Likelihood	-127.19	-120.68	-126.75	-123.01	-81.74	-126.97	-70.69	-72.30
Chi-Square	41.47	66.20	46.01	39.82	28.80	41.88	41.65	39.30

Notes: Test statistics (for the hypothesis of no effect) in italics and parentheses below. ***, ** and * denote significance at 1%, 5% and 10%, respectively, using robust errors. Constants included, but not reported.

The other finding of note is that the international reserves to GDP ratio variable, whose coefficient estimate in the previous model was statistically significant and positive in some of the equations, was not statistically significant in the diffusion model. Of the SWF-having countries with considerable international reserves, only Libya and Iraq were also oil-dependent, and created their SWFs more recently. As the percentage of resource dependent countries having SWFs increased, the model is less apt to ascribe Libya and Iraq's SWF creation to international reserves and more apt to attribute the decisions of these countries to create a SWF to policy emulation. Whether Libya and Iraq were emulating other economies would need to be verified by further qualitative work, but both were created during or following important political events. In the case of Iraq, the Development Fund for Iraq was created in 2003 by the *United Nations Security Council Resolution 1483* transferring control over Iraq's oil revenue from the United Nations to the Coalition Provisional Authority during the second Iraq conflict (United Nations Security Council 2003). For Libya, the Libyan Investment Authority was created in 2006 following the end of economic sanctions on foreign investment to Libya (O'Harrow Jr. and Grimaldi 2011). A deeper analysis is needed to determine whether these were created due to the UNSC and the Libyan government deciding to emulate the policies of other resource-dependent countries or as a way to deal with built-up international reserves. However, the first step of testing has indicated that the economic imperative of resource dependency cannot be ruled out as the key factor in the SWF decision.

I tested the robustness of these findings by completing the regression testing using three-, seven-, and ten-year averaged data, as well as circumscribing the data as I had in Chapter 2. For the new variable, the percentage of resource dependent countries already

having created a SWF, the coefficient estimates were positive and statistically significant for all of the robustness checks. As noted above, the presence of this new variable did not impact the established findings of the resource dependence binary variable; the coefficient estimates for all of the robustness checks remained positive and statistically significant. Moreover, the robustness checks confirmed that the marginal effects of a percentage point increase in the number of resource-dependent countries having already created a SWF were quite minimal compared to the resource dependence variable and the other key variable from the main model: annual averaged GDP growth. The coefficient estimates of the annual averaged GDP growth variable from these robustness tests were very similar to those found in the main model. In only one equation, using seven-year averaged data, was the annual GDP growth variable coefficient estimates no longer statistically significant once the new variable had been introduced.

Despite the fact that the new resource-dependence emulation variable was underwhelming when looking at the marginal effects of a percentage point increase, its inclusion in the model enhanced the models overall explanatory power. Comparing the goodness-of-fit of the Chapter 2 model to the modified model including the new emulation variable, the increase in the pseudo-R^2 value to 20.3% demonstrates the value of this new variable. This increase is even more impressive when acknowledging that more observations were included in this chapter's diffusion model. Therefore, while the actual statistical impact of the increasing number of resource-dependent countries creating SWFs is minimal, adding the emulation variable has aided the model in explaining the entire population.

Number of SWFs in a Region (Emulation and Learning)

Further testing the notion of emulation and learning, I created a variable counting the number of SWFs created in a region. The list of how countries were split among different regions is in Appendix 7. Given that the number of countries varies among the different regions, it was best to use the total number of SWFs created in the region rather than a percentage of SWF-having countries in the region. For example, while the MENA region, Asia, and Africa are home to nine, ten, and seven SWF-having countries respectively, the number of countries in the different regions are twenty, twenty-nine, and forty-nine. Under a percentage system, the MENA region would have 30% more SWFs per country than Asia and three times more than Africa, despite all three regions having a similar number of countries with SWFs.

For his part, Chwieroth included a regional peer variable based on regions prescribed by the World Bank. In his findings, he noted that the regional peer variable gave some indication of negative effects and then cited an interview with the former Governor of the Bank of Trinidad and Tobago in which the governor said Trinidad and Tobago was more interested in the Norwegian SWF model than the Chilean SWF model (E. Williams 2012). Chwieroth offered no further insight as to other examples of countries going outside of their regions for advice, nor did he discuss why the regional peer coefficient was statistically significant and negative. Specifically, in the case of the MENA region, there was no discussion as to how one should accept his idea that the explosion of SWFs in the region is more a product of fuel export peer learning than these countries' geographic proximity to each other.

Turning to my results, it is evident the coefficient of the variable capturing the number of SWF-having countries in a region is not statistically significant and has little marginal effect on the SWF creation variable. Furthermore, the presence of the region variable did not challenge the conclusions drawn from the main model. The coefficient estimates for the resource dependence and annual GDP growth variables remained positive and statistically significant. The only difference between the main model and the model which includes the SWF regions variable was that the coefficient estimates for the international reserves to GDP ratio variable were no longer statistically significant when the region variable is included. This divergence was due to minor correlation between the region variable and the international reserves to GDP ratio variable.[48] The correlation captures that regions with the most SWF-having countries are also the regions with countries most apt to have higher levels of international reserves.

From Equation 7 in Table 11, it is noteworthy that the coefficient estimate of the number of SWFs in the region variable is statistically significant and negative. This surprising finding is due to the number of SWFs in the region variable being highly correlated with the percentage of resource dependent countries already having a SWF variable. Essentially, the latter variable is drawing the explanatory power from the former variable. This correlation is not particularly surprising given the centralization of resource-dependent countries in the MENA region; as a MENA country created a SWF, it increased the percentages of both variables.

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[48] The correlation coefficient of the region variable and the international reserves to GDP ratio variable was 0.37.

For the seven- and ten-year averaged data, the results were very similar to the five-year averaged data results and the main model results, whereas the three-year averaged data was supportive of the idea that the number of SWFs in a region may influence a country's likelihood to create a SWF. In the case of the three-year data, the region variable coefficient estimate was positive and statistically significant. Looking at the marginal effects, however, indicates that while the regression coefficient may have been significant, the effect of one more country in a country's region creating a SWF increased the latter country's likelihood of creating a SWF by 0.2%. The actual influence of the region variable to explain SWF creation is minimal.

Looking at the goodness-of-fit scores when the region variable is included, it is evident that the inclusion of the variable did not enhance the model's explanatory power. Simply being in the region of SWF-having countries did not motivate a country to pursue a SWF. As such, how was Chwieroth's model coefficient negative and statistically significant? Although it is possible that the fuel peer effect variable was claiming whatever explanatory power the region variable may have had, without problematizing this possibility and discussing it, as I have here, Chwieroth left this important question unanswered.

Inward Foreign Direct Investment/GDP (Competition)

As mentioned in my summary of the SWF literature, a government may decide to create a SWF to send a signal to investors in their economy (Shields and Villafuerte 2010). Specifically, governments looking to attract inward FDI want to alleviate fears of asset bubbles and resource curses that are thought to be associated with capital inflows.

Although many of the negative externalities associated with capital inflows are traditionally associated with portfolio investment and incidence of capital flight, in some cases, longer-term increases in inflation or exchange rate appreciation have been associated with FDI inflows (Corden and Neary 1982; Corden 1984; Kawai and Lamberte 2010). While decision makers at multinational corporations may not worry about these effects when considering whether to invest in a country, a SWF may signify sound economic governance and transparency. One would think that, *ceteris paribus,* a country would choose to invest in a country with a SWF rather than one without, as the SWF signifies the government's desire for a healthy economy based on fiscal responsibility and stability. Taking this a step further, it is feasible to think that the government's desire for a prosperous economy would include providing an atmosphere conducive to making the company's investment in that host country more profitable. In this way, the SWF acts as a signal to potential investors.

Before turning to results, it is important to point out that one would expect correlation issues associated with the inclusion of foreign direct investment inflows in the probit regression equations. Specifically, the current account to GDP ratios and the FDI inflows to GDP ratios should be negatively correlated; however, this negative correlation would be altered by portfolio investment or a change in international reserves. The correlation tables in Appendix 9 show that the correlation between the three variables directly implicated in the balance of payments did not adversely influence the interpretation of the regression results.

The results indicate that FDI inflows have some influence on SWF creation. In every model specification using the three-, five-, and seven-year averaged data, the

coefficient estimates for the FDI inflow variable were positive and statistically significant. The resource dependence variable and GDP growth variable coefficient estimates remained positive and statistically significant. While there were some cases in seven- and ten-year data where the GDP growth coefficient estimates were not statistically significant, this finding was sporadic and similar to the findings generated from the main model.

As predicted, the current account to GDP ratio variable was the most sensitive variable to the inclusion of the FDI inflow variable. From the five-year averaged data and the seven-year averaged data, the coefficient estimates of the current account variable were statistically significant after the FDI inflow variable was included, but not statistically significant under other specifications. Many of the observations having positive FDI inflow values explaining SWF creation also had negative current account values. The regression testing placed more value on the positive current account to GDP ratio observations in explaining the remaining SWF creation events as the negative values had been accounted for by the positive FDI inflow observations. For the three-year averaged data, the current account variable's coefficient estimates were not statistically significant, but were positive and statistically significant when all of the diffusion variables were included.

While these results support the notion that FDI inflows may influence the SWF creation decision, this influence is minor. For the five-year averaged data equations, a one percent increase in the FDI inflow to GDP value increased the probability of SWF creation by one-fifth of a percent. Although the coefficient estimates may have been consistently significant, the actual significance of FDI inflows in influencing SWF

creation was quite minor. Noting this, it must also be mentioned that the inclusion of the FDI inflow variable improved the goodness-of-fit measurements for all of the equations in which it was included.

Outstanding IMF Credit/International Reserves (Coercion)

As previously discussed, it is unlikely that the IMF would demand that a country create a SWF; however, the IMF has been the leading institution in studying the efficacy of SWFs. Moreover, the former Governor of the Central Bank of Trinidad and Tobago stated that the World Bank, the IMF's sister organization, provided technical assistance during that country's SWF creation process. He also noted that his country created a SWF following an IMF program in the 1980s and a World Bank structural adjustment program (E. Williams 2012). Although the Trinidad and Tobago situation is only one case, it does provide some insight as to the possibility that the IMF or the World Bank could provide advice or assistance in the SWF decision-making process. Taking this one step further, it is possible that receiving such advisement or assistance from a creditor may have more influence than advice from other parties. For this reason, testing to see if the level of outstanding IMF credit as a function of international reserves has any influence on SWF creation is reasonable.

Despite the intuition laid out above, the findings from the regressions offer little support for this hypothesis. The coefficient estimates for the IMF credit variable are not statistically significant for any of the estimated equations for any of the different model specifications. It must be noted, however, these findings are based on a much smaller sample size due to the number of missing values associated with IMF credit use.

Specifically, the *World Development Indicators*, the source of much of my data, do not

indicate a zero-value in cases where a country does not use IMF credit, but rather leaves

the data blank. Countries such as Canada, France, Germany, Japan, and the United

States, who were unlikely to access IMF credit, are not included in these regressions.

Yet, even when I coded these countries as zero to test if these missing observations

influenced the findings, the coefficient estimate of the IMF credit variable was still not

statistically significant.

Number of IMF and World Bank Engagements (Coercion and Learning)

In the past, the IMF and World Bank have used their financial assistance to

influence recipient countries' policies. Whether this has been done coercively or

collaboratively has been studied by others (Naim 2000; Singh 2002; Rodrik 2006), but a

combination of collaboration and the unstated threat of coercion is most likely present in

most negotiations among individual countries and the IFIs. If the amount of outstanding

credit owed to the IMF can be viewed closer to a coercive influence on policy

acceptance, it seems equally likely the sheer number of engagements between IFIs and

their member countries would suggest a more collaborative working relationship. As

mentioned previously, given both the IMF's and World Bank's interest in the prudential

financial management of countries, it is reasonable that SWFs would be a policy option

discussed when governments and IFIs meet. For this reason, I tested whether the number

of engagements between IFIs and member countries explained the diffusion of SWFs.

Surprisingly, the number of engagements among the IFIs and their member

countries was shown not to have an effect on SWF creation. The coefficient estimates of

the variables capturing the number of engagements in the last three, five, seven, or ten

years were not statistically significant. As well, the regression coefficients were both

positive and negative depending on the model specification. One explanation may be that

the IMF and World Bank have become less forceful during their engagements in response

to the criticisms of past practices. It may also be true that countries tending to engage

with the IMF are in financial peril and discussing a country's long-term financial health

at that juncture may not be viewed as possible or appropriate. One could envision a

scenario where a domestic social or economic crisis would be a far more pressing

conversation than how the IMF or World Bank sees a government saving resource wealth

for long-term financial sustainability or development goals.

3.4   Concluding Remarks

This chapter set out to test the idea of policy diffusion explaining the SWF

creation process. The results are not convincing that global policy diffusion is a

significant explanatory piece of the SWF creation puzzle. By reassessing Chwieroth's

work on the emulative practices of countries creating SWFs, this chapter has broadened

the discussion of which methods and models are best to test this phenomenon. The only

thing which can be said with confidence is that the decisions made by Chwieroth and

those made in this analysis in the pursuit to answer this global policy diffusion question

were different, and as a result our findings are at odds. While this chapter does not

completely refute Chwieroth's work due to the different methodological choices, it does

challenge his conclusions.

Looking at four methods by which scholars have classified policy diffusion: learning, emulation, competition and coercion, I attempted to ascertain if there had been a noticeable influence of any of these factors on SWF creation. In only two cases, the percentage of countries that were resource dependent already having a SWF and the level of foreign direct investment as a percentage of GDP, did the results indicate some level of diffusion. These results indicate that SWFs may be the result of countries emulating the practices of countries they deem similar to them and that countries may be employing SWFs as a signal of fiscal responsibility to potential investors. With regard to the FDI inflows, it is also possible that multinational corporations were already investing in the country and the country created a SWF to undermine some of the negative macroeconomic externalities associated with capital inflows. The answer to this question is more likely context-specific to each country's pre-SWF economics and more difficult to assess in quantitative analyses.

Despite these two findings, the policy diffusion argument remains unsettled. Chwieroth's work posits that diffusion among fuel producers is much more important than their fundamental reliance on fuel exports. The analysis above claims the opposite; that while there may be some diffusion mechanisms that influence the SWF creation decision, the economic determinants are much more powerful in explaining who creates a SWF and who does not. Although the work in this chapter and Chwieroth's work are different in the time periods looked at, which SWFs are studied, and the method by which they are studied, such a vast difference of conclusions leads me to believe that more in-depth, qualitative work is needed to discover the different ways that the idea of SWF creation has diffused and which countries have been most influenced by this diffusion.

Appendix 7: Regional Classifications

North America	Latin America		Europe	
Canada	Antigua and Barbuda	Guatemala	Albania	Isle of Man
United States	Argentina	Guyana	Andorra	Italy
	Aruba	Haiti	Armenia	Kosovo
	Bahamas, The	Honduras	Austria	Liechtenstein
	Barbados	Jamaica	Belgium	Luxembourg
	Belize	Mexico	Bosnia	Macedonia, FYR
	Bermuda	Nicaragua	Bulgaria	Malta
	Bolivia	Panama	Channel Islands	Monaco
	Brazil	Paraguay	Croatia	Montenegro
	Cayman Islands	Peru	Cyprus	Netherlands
	Chile	Puerto Rico	Czech Republic	Norway
	Colombia	Sint Maarten (Dutch part)	Denmark	Poland
	Costa Rica	Suriname	Faeroe Islands	Portugal
	Cuba	Trinidad and Tobago	Finland	Romania
	Curacao	Turks and Caicos Islands	France	San Marino
	Dominica	Uruguay	Germany	Serbia
	Dominican Republic	Venezuela, RB	Greece	Slovak Republic
	Ecuador	Virgin Islands (U.S.)	Greenland	Slovenia
	El Salvador		Hungary	Spain
	Grenada		Iceland	Sweden
	Guam		Ireland	Switzerland
				United Kingdom

Middle East-North Africa	Asia		Africa	
Algeria	Afghanistan	Maldives	Angola	Madagascar
Bahrain	Bangladesh	Micronesia, Fed. Sts.	Benin	Malawi
Egypt, Arab Rep.	Bhutan	Mongolia	Botswana	Mali
Iran, Islamic Rep.	Brunei Darussalam	Myanmar	Burkina Faso	Mauritania
Iraq	Cambodia	Nepal	Burundi	Mauritius
Israel	China	Northern Mariana Islands	Cameroon	Mozambique
Jordan	Hong Kong SAR, China	Pakistan	Cape Verde	Namibia
Kuwait	India	Palau	Central African Republic	Niger
Lebanon	Indonesia	Philippines	Chad	Nigeria
Libya	Japan	Singapore	Comoros	Rwanda
Morocco	Korea, Dem. Rep.	Sri Lanka	Congo, Dem. Rep.	Sao Tome and Principe
Oman	Korea, Rep.	Thailand	Congo, Rep.	Senegal
Qatar	Lao PDR	Timor-Leste	Cote d'Ivoire	Seychelles
Saudi Arabia	Macao SAR, China	Vietnam	Djibouti	Sierra Leone
Syrian Arab Republic	Malaysia		Equatorial Guinea	Somalia
Tunisia			Eritrea	South Africa
Turkey			Ethiopia	South Sudan
United Arab Emirates			Gabon	Sudan
West Bank and Gaza			Gambia, The	Swaziland
Yemen, Rep.			Ghana	Tanzania
			Guinea	Togo
			Guinea-Bissau	Uganda
			Kenya	Zambia
			Lesotho	Zimbabwe
			Liberia	

Oceania	Russia and Former States
American Samoa	Azerbaijan
Australia	Belarus
Fiji	Estonia
French Polynesia	Georgia
Kiribati	Kazakhstan
Marshall Islands	Kyrgyz Republic
New Caledonia	Latvia
New Zealand	Lithuania
Papua New Guinea	Moldova
Samoa	Russian Federation
Solomon Islands	Tajikistan
St. Kitts and Nevis	Turkmenistan
St. Lucia	Ukraine
St. Martin (French part)	Uzbekistan
St. Vincent and the Grenadines	
Tonga	
Tuvalu	
Vanuatu	

Appendix 8: Data Correlation Tables

Three-Year Data Correlation Table

No. of observations: 562	Current Account/ GDP	Resource Dependence	Reserves/ GDP	GDP Growth	Number of Leadership Changes	% of Resource Dependent Countries	Number of SWFs in Region	FDI In/ GDP	IMF Credit/ Reserves	Number of Engages with IMF and World Bank
Current Account/GDP	1									
Resource Dependence	0.1039	1								
Reserves/GDP	-0.0006	-0.0421	1							
GDP Growth	0.0074	-0.0239	0.2169	1						
Number of Leadership Changes	0.0295	-0.0933	0.0596	-0.1184	1					
% of Resource Dependent Countries	-0.0419	-0.0578	0.3395	0.2038	0.037	1				
Number of SWFs in Region	0.0518	-0.0126	0.3711	0.255	-0.0022	0.7679	1			
FDI In/GDP	-0.4154	0.0324	0.3628	0.1894	0.0229	0.4048	0.2583	1		
IMF Credit/ Reserves	-0.0799	0.0131	-0.1817	-0.1076	-0.0526	-0.0956	-0.1334	0.0187	1	
Number of Engagements with IMF and World Bank	-0.0792	-0.0653	-0.2548	-0.2193	-0.0119	-0.2569	-0.2895	-0.1598	0.0938	1

Five-Year Data Correlation Table

No. of observations: 932	Current Account/ GDP	Resource Dependence	Reserves/ GDP	GDP Growth	Number of Leadership Changes	% of Resource Dependent Countries	Number of SWFs in Region	FDI In/ GDP	IMF Credit/ Reserves	Number of Engages with IMF and World Bank
Current Account/GDP	1									
Resource Dependence	0.1409	1								
Reserves/GDP	0.0001	-0.0298	1							
GDP Growth	0.0038	-0.0014	0.1825	1						
Number of Leadership Changes	0.0294	-0.0844	0.0478	-0.1184	1					
% of Resource Dependent Countries	-0.0568	-0.0571	0.342	0.1427	0.0538	1				
Number of SWFs in Region	0.0413	0.0095	0.3726	0.2095	0.004	0.7422	1			
FDI In/GDP	-0.4506	0.0146	0.3448	0.1553	0.0333	0.3768	0.2485	1		
IMF Credit/ Reserves	-0.0247	-0.0285	-0.1146	-0.0928	-0.0361	-0.0646	-0.0916	-0.0211	1	
Number of Engagements with IMF and World Bank	-0.0596	-0.049	-0.203	-0.1511	-0.0024	-0.2227	-0.2512	-0.1254	0.0186	1

Seven-Year Data Correlation Table

No. of observations: 397	Current Account/ GDP	Resource Dependence	Reserves/ GDP	GDP Growth	Number of Leadership Changes	% of Resource Dependent Countries	Number of SWFs in Region	FDI In/ GDP	IMF Credit/ Reserves	Number of Engages with IMF and World Bank
Current Account/GDP	1									
Resource Dependence	0.1466	1								
Reserves/GDP	0.0056	-0.0388	1							
GDP Growth	0.0099	0.0228	0.2469	1						
Number of Leadership Changes	0.0322	-0.0933	0.0926	-0.1211	1					
% of Resource Dependent Countries	-0.0365	-0.0266	0.351	0.1774	0.0707	1				
Number of SWFs in Region	0.0669	0.0343	0.3563	0.2831	0.0142	0.7702	1			
FDI In/GDP	-0.3848	0.0343	0.3322	0.0709	0.0566	0.4011	0.2323	1		
IMF Credit/ Reserves	0.0083	-0.0306	-0.1082	-0.2613	-0.0279	-0.0826	-0.0901	0.2837	1	
Number of Engagements with IMF and World Bank	-0.0917	-0.087	-0.2632	-0.1894	0.0012	-0.2712	-0.3055	-0.1648	0.0045	1

Ten-Year Data Correlation Table

No. of observations: 301	Current Account/ GDP	Resource Dependence	Reserves/ GDP	GDP Growth	Number of Leadership Changes	% of Resource Dependent Countries	Number of SWFs in Region	FDI In/ GDP	IMF Credit/ Reserves	Number of Engages with IMF and World Bank
Current Account/GDP	1									
Resource Dependence	0.1615	1								
Reserves/GDP	0.0175	-0.0161	1							
GDP Growth	0.0626	0.0022	0.2527	1						
Number of Leadership Changes	0.048	-0.1122	0.1013	-0.1207	1					
% of Resource Dependent Countries	-0.024	-0.0322	0.3512	0.0939	0.0944	1				
Number of SWFs in Region	0.0787	0.0227	0.3971	0.2871	0.0404	0.7756	1			
FDI In/GDP	-0.3706	0.0367	0.3795	0.0758	0.0212	0.4447	0.2973	1		
IMF Credit/ Reserves	-0.0211	-0.0423	-0.1124	-0.3018	-0.04	-0.0751	-0.1013	0.2748	1	
Number of Engagements with IMF and World Bank	-0.1092	-0.0485	-0.2794	-0.2822	-0.0074	-0.179	-0.2711	-0.1746	0.0344	1

Appendix 9: Correlation Tables with FDI Inflows/GDP

Three-Year Averaged Data			
	Current Account/GDP	FDI Inflow/GDP	Reserves/GDP
Current Account/GDP	1		
FDI Inflow/GDP	-0.1801	1	
Reserves/GDP	0.1961	0.1902	1

Five-Year Averaged Data			
	Current Account/GDP	FDI Inflow/GDP	Reserves/GDP
Current Account/GDP	1		
FDI Inflow/GDP	-0.1949	1	
Reserves/GDP	0.2096	0.2214	1

Seven-Year Averaged Data			
	Current Account/GDP	FDI Inflow/GDP	Reserves/GDP
Current Account/GDP	1		
FDI Inflow/GDP	-0.1973	1	
Reserves/GDP	0.2177	0.2249	1

Ten-Year Averaged Data			
	Current Account/GDP	FDI Inflow/GDP	Reserves/GDP
Current Account/GDP	1		
FDI Inflow/GDP	-0.2013	1	
Reserves/GDP	0.2145	0.222	1

Chapter 4: Based on the economic factors that lead a country to adopt a SWF, how should SWFs be grouped and which countries did not create a SWF when they were predicted to do so?

As demonstrated in the first three chapters, the applicability of the existing SWF literature is diminishing because of the changing landscape of countries creating SWFs. As much of the previous literature on the determinants of SWF creation has relied upon antiquated notions of why a country would pursue a SWF, so has the classification of SWFs. Previous works classified SWFs based on stated mandates or the sources of the wealth being managed without much discussion of the other variables that may lead a country to pursue the SWF policy path. In this chapter, I develop the first statistically-derived typology of SWFs. By employing the variables found in Chapter 2 to have statistically significant regression coefficients, I perform a statistical cluster analysis to classify SWF-having countries.[49] Following the introduction of the main typology, I conduct a classification analysis[50] on the three-, five-, seven-, and ten-year averaged data to determine which SWF-creating countries were most and least likely to create a SWF. As an extension of this analysis, I discover which countries did not create SWFs despite macroeconomic statistics indicating that these countries would have been likely to have.

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[49] The cluster analysis only includes country-years on which I have complete data. Following the statistical clustering, I manually catalogue the remaining SWF-having countries to the different categories based on the limited data available.

[50] In the statistics literature there is some confusion over the distinction between discriminant analysis and classification analysis. For this chapter, I will use the term classification analysis which is similar to what others term as predictive discriminant analysis (Rencher and Christensen 2012).

This analysis is original for two reasons. First, as outlined in the previous chapters, there is a significant dearth of analysis of SWF-creating countries in the lead-up to their creation. Previous typologies of SWF-creating countries have relied on information provided by the SWF-having countries with regard to their mandates, not statistics. The cluster analysis that I present in this chapter goes beyond this method and employs data to cluster these countries in a way in which the level of similarity among these countries is measurable. It is also noteworthy that the use of clustering in international affairs literature has been limited, and its usage in this chapter is a function of adapting a procedure that is much more prevalent in other fields. Although its limited usage as an analytical technique in international affairs may induce questions regarding its appropriateness, the rigor with which I apply the technique and the robustness of the typology developed answers these questions and should induce others to apply it to their own work.

The second point of originality is the classification analysis. There has yet to be any work in the SWF literature which employs data to assess if the conditions of a country prior to SWF creation are similar to those having already created a SWF–in essence, to assess the appropriateness of a country creating a SWF. Although it would be unwise to claim with certainty that a country with a given set of conditions should or should not pursue a SWF, the previous chapters provide an outline of the conditions common among those that have already taken the SWF creation decision. The classification analysis then assesses the likelihood of a particular country taking the SWF decision based on the presence of these conditions in a country prior to its SWF creation. This analysis provides insight as to which countries were most likely to create a SWF

based on these prior conditions and identifies specific cases for further study in Chapter 5. Moreover, the classification analysis also provides information with regard to countries which have conditions similar to other SWF-creating countries, but for some reason have decided against a SWF; a further opportunity for qualitative study.

This chapter is organized as follows: Section 4.1 provides a brief discussion of the previous methods for classifying SWFs and outlines the limited ways which cluster analysis has been used to classify countries in other fields of international affairs. Section 4.2 describes the methodology of the cluster and the classification analyses while outlining the advantages and disadvantages associated with these methodological choices. Section 4.3 presents the typology derived from the cluster analysis and the robustness of this categorization. This section also reports the results from the classification analysis. Finally, Section 4.4 concludes by discussing the importance of having a robust typology and the ways in which academics and policymakers can use this typology to improve their comparative studies.

4.1   Previous SWF Classifications

Prior works classified SWFs on the basis of the source of their wealth, or upon their stated objectives, or both. In his discussion of governance issues regarding SWFs, Truman (2008) split the population of SWFs among non-pension and pension funds. In another example, the IMF (2008) analyzed the assets under management of SWFs in oil and gas exporting countries; Asian exporters; and others countries claiming that SWFs have at least one of five objectives: stabilization, savings, reserve investment, development, or to act as a contingent pension fund. While the IMF's work

acknowledged that a SWF may have multiple objectives, the methodology of how the IMF classified these SWFs remained unclear. One assumes that the classification was based on fund objectives derived from their stated mandates in spite of such assumptions being flawed. It is entirely possible that a SWF's stated mandate can be contrary to its country's underlying economics and, as an example, may state that the SWF is a savings mechanism although its most likely usage is macroeconomic stabilization or development. Simply, it is possible that countries establish a SWF with one idea in mind and employ the SWF for other reasons. The Fondo do Brasil has the stated objective of promoting investments in Brazil and abroad, generating public savings, mitigating the effects of economic cycles, and fostering strategic projects at home and abroad (Lula da Silva and Mantega 2008). However, in 2012, the Brazilian government raided the fund to cover budgetary shortfalls (SWF Institute 2014c). While this decision may fit into the purpose of mitigating the effects of economic cycles, it does run contrary to the other objectives of the fund and clouds any idea of the Fondo do Brasil being a certain type of fund.

In another example, Kunzel et. al. (2011) classified Azerbaijan, Trinidad and Tobago, and Bahrain as all having SWFs sourced from oil and natural gas and having dual policy purposes: macrostabilization and savings. Although this rationale is solidly based in the stated mandates of the three different funds, the table below highlights that these three funds were created under very different economic conditions and classifying them as the same understates their heterogeneity.

Table 12: Dual Purpose SWFs

Country Year	Current Account/ GDP	Fuel Exports/ Total Exports	Ore and Mineral Exports/ Total Exports	GDP Growth	Average REER Appreciation	Average REER Volatility
Azerbaijan, 1999	24.1%	65.6%	1.2%	-2.9%	112.2%[51]	24.8%
Trinidad and Tobago, 2000	2.7%	49.5%	0.3%	4.6%	-9.4%	5.6%
Bahrain, 2006	3.9%	72.5%	17.0%	6.1%	-5.6%	5.3%

It is evident from these examples that the current literature aiming to classify SWFs is inadequate. With such variation within the traditional groupings of SWF-having countries, conducting any type of rigorous comparison should be done cautiously. Employing the cluster analysis methodology allows for a much more rigorous classification and a better understanding of the levels of divergence among the different types of funds, while properly taking into account the differing macroeconomic conditions from which SWFs are created.

Cluster analysis is the generic term for procedures which seek to uncover groups in data (Everitt et al. 2011). In the case of the cluster analysis conducted for this chapter, the data are countries creating SWFs. Whether undertaking hierarchical or non-hierarchical clustering techniques, a differentiation that will be discussed in Section 4.2, the goal of any clustering procedure is similar: homogeneity within the groups and heterogeneity among the groups. Yet, it is important to keep in mind that many early papers on cluster analysis warned against the potential benefits of advancing computational powers and the ability to create a typology where one does not exist

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[51] This figure is based on the data transformation outlined in Appendix 3 in Chapter 2. If the data would not have been transformed, the REER appreciation figure would have been over 4400%.

(Cormack 1971; Gordon 1987). However, methods of testing the null hypothesis (no structure or typology) have been linked to randomly filled or evenly filled multidimensional space, which is not the case with the data clustered in this chapter (Sneath 1967). For this chapter, I employ the different averaged data to produce multiple clustering outcomes and check these outcomes for consistency to ensure that a pattern and typology does exist.

In their work explaining cluster analysis, Everitt, Landau, Leese, and Stahl (2011) outlined that the use of cluster analysis is prevalent in fields such as biology, botany, medicine, psychology, geography, marketing, image processing, psychiatry, and archaeology. In providing examples for each of these fields, it is readily apparent how cluster analysis can be applied to the SWF question. In an example cited by Everitt and his colleagues, Chakarapani (2004) outlined how a sports car manufacturer believes that buying a sports car is not only about income and age, but rather a confluence of factors. As such, the manufacturer employed cluster analysis to find patterns of lifestyle associated with buying a sports car and tailored their marketing to the result. Similarly, this chapter is seeking to establish the different patterns (or lifestyles) of countries that establish SWFs (bought a sports car).

As mentioned previously, while developing typologies and classification systems are seen throughout the various subfields of international affairs, the use of statistical methods to aid this process remains rare. In what can be considered most similar to the work presented in this chapter, Wolfson, Madjd-Sadjadi and James (2004) clustered national cross-sectional social, economic, and political data for 1967, 1974, 1981, 1988, and 1995, to study how clusters of countries have shifted over these time periods. They

found the 'advanced state' cluster to be robust for all of the different periods; countries

which were classified as advanced states remained classified as advanced states. Other

clusters which remained persistent were what the authors referred to as poor, anocratic

states with low conflict involvement, as well as poor autocracies with low conflict

involvement. While Wolfson, Madjd-Sadjadi, and James' work captured the dynamics of

the countries over time, my clustering is based on employing different time horizons with

the same end date (SWF creation) to test the robustness of the clusters. Nevertheless, the

method utilized in their clustering (Ward's method) is the same method used in this

chapter

Other studies in the field of international affairs which employed cluster analysis

are Abu Sharkh and Gough's (2009) work on welfare regimes, Chenoweth and

Lowham's (2007) article classifying terrorist events, as well as Plechanovova's (2011)

study of voting blocs within the European Union. The total number of studies employing

cluster analysis to develop typologies or as a tool for hypothesis generation has been

minimal. This is surprising given the number of typologies and classifications present in

the various subfields throughout international affairs. Nevertheless, this dearth of

statistically-derived typologies provides an opportunity for this chapter to make a

contribution to the SWF literature and the wider field of international affairs.

Classification analysis techniques–in the case of this chapter, logistic discriminant

analysis–are also a rarely used statistical technique in international affairs. Given that the

decision to undertake a SWF is a binary decision, the logistic discriminant technique is

more appropriate than linear discriminant analysis, which assumes fully distributional

solutions and distribution-free techniques (Albert and Lesaffre 1986; Kurita, Watanabe,

and Otsu 2009). While Albert and Lesaffre discussed extensions of logistic discriminant analysis to include mutual groups, they underlined the fact that the groups must be qualitatively distinct. In the case of the research in this chapter, the groups I am investigating are qualitatively distinct: countries creating SWFs and those countries that do not create SWFs.

4.2   Clustering and Classification Analysis Methodology

Three decisions need to be made prior to undertaking any cluster analysis: which data to cluster; which clustering method to employ; and which variables to use to cluster. I will explain the second and third choices before delving into the first, as the first choice is the most complex.

Choosing which clustering method to employ is a question of choosing between hierarchical and partition methods of clustering. Hierarchical methods are characterized by their versatility and their ability to produce multiple partitions in a visual manner (dendrograms), allowing the user to choose the desired level of similarity at which to cluster. Hierarchical clustering is either divisive or agglomerative[52] and the process is non-reversible. Once a "path" is chosen under which two countries are clustered together, these countries will not be split, regardless of the other variables that may influence the "strength" of their pairing. Partition methods require that the number of clusters is pre-determined. With this target set, partition methods undertake an iterative

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[52] In divisive hierarchical clustering, all objects initially belong to one cluster and are successively divided in to sub-clusters until they are divided into their own sub-cluster or some other cluster structure is obtained. In agglomerative hierarchical clustering, each object is initially its own cluster and is successively merged with other objects to form clusters (Rokach and Maimon 2005).

process whereby the number of clusters increases from one to the desired number by employing an error minimization algorithm (Rokach and Maimon 2005). This error minimization algorithm is usually calculated using the means or medians of the clusters. Although the partition method is advantageous because its iterative process allows for reforming clusters (reversibility), the need to pre-determine the number of clusters is a serious drawback for my work in this chapter. Given that I am following Vayssieres and Plant's (1998) assertion that clustering is a process of partitioning a set of items when little or nothing is known about the category structure, what they referred to as unsupervised clustering, I chose hierarchical clustering so as to avoid pre-determining the clustering structure.

Within agglomerative hierarchical clustering there are numerous possible methods. In their chapter on hierarchical clustering, Everitt, Landau, Leese, and Stahl (2011) outlined seven standard ways of hierarchical clustering and outlined some of the advantages and disadvantages of these different methods. The authors cited tests whereby the different methods of clustering were compared against one another to assess how these various methods performed when the structure of the raw data (number of objects, dispersion of objects, and presence of outliers) differed. Everitt and his colleagues surmised that despite the conflicting evidence, Ward's method was popular because of its propensity to return tight, distinct clusters, but warned it may impose spherical structures in Euclidean space where none exist. Ward's method may find clusters that may not really be clusters.

Ward's (1963) method is based on minimizing the total within-cluster variance. One by one, the number of clusters is reduced as objects are added to the clusters in

which they will generate a maximal value of the objective function (the objective

function in Ward's method clustering is the minimization of within-cluster variance).

Essentially, the clusters grow by adding as little as possible to the overall variance within

their respective clusters until one cluster remains. In the numerical example put forward

by Ward, the variance calculated within the cluster is the sum of squares between the

object and the mean of the cluster. For the purposes of this chapter, this would look like

the squared difference between a resource dependent country, such as Nigeria, and the

mean value of all resource-dependent countries. Everitt et. al. noted that a weakness of

Ward's method is that it assumed points can be represented in Euclidean space for

geometrical interpretation; however, this weakness does not pertain to the analysis in this

chapter.

There are numerous formulas to calculate the distance between two objects in

Euclidean space (the distance being the required input of Ward's minimization function).

For the purposes of this analysis, I employed squared Euclidean distance[53] as it is the

Stata default when using Ward's method of linkage to cluster the observations. It is

important to note that squared Euclidean distance should not be used when there are

binary variables or when the variables are on very different scales. These types of

variables amplify the distance calculation and give the appearance of observations being

more dissimilar than they actually are. In terms of this thesis, the difference between a

country considered to be resource-dependent[54] and one that is not, could be one percent

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[53] Han, Kamber and Pei (2011) define the Euclidean distance between object i and j as:

$$d\,(i,j) = \sqrt{\left(x_{i1} - x_{j1}\right)^2 + \left(x_{i2} - x_{j2}\right)^2 + \cdots + \left(x_{ip} - x_{jp}\right)^2}$$

[54] Fuel and oil exports and/or ore and mineral exports greater than forty percent of total exports and/or natural gas and oil rents or mineral rents comprising over forty percent of GDP.

of total exports or one percent of GDP. If resource dependence was included as a binary variable in the squared Euclidean distance calculation, that difference would be exacerbated and it is highly unlikely that the two countries would be clustered even if their resource profiles were similar, but on different sides of the forty percent threshold.

With the clustering method chosen, the next decision is to choose which variables are to be employed to calculate the squared Euclidean distance. From the previous chapters, it is evident that the statistical analyses of different lead-up periods yielded differing reasons for undertaking a SWF. Of the fourteen variables included in the different analyses of Chapter 2, the coefficient estimates of nine variables were found to be statistically significant in at least one of the model specifications.[55] Three of these nine variables were binary variables or interaction variables dependent on a binary variable, so I eliminated these three variables from the clustering process to avoid issues associated with clustering binary variables. The other six variables, regardless of how many times their coefficient estimates were found to be significant, were included in the cluster analysis as I was hesitant to eliminate explanatory variables.

As mentioned above, because of the chosen method of clustering, certain transformations of the raw data were needed. In order to proactively address the issues that arise when including variables with different scales, I standardized five of the six variables. For four of the variables, this standardization was computed using the traditional z-score formula, which is also the default in Stata, with the mean of each

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[55] See Appendix 10.

variable computed to be zero and the variance equal to one.[56] In their work on the

standardization of variables for cluster analyses, Milligan and Cooper (1988) discussed

the different ways in which variables can be standardized and the best ways to

standardize based on the clustering method employed. For Ward's method, they noted

that the z-score variable is among the superior group of methods of standardization and,

thus, I deemed it appropriate for this case.

   With respect to the resource dependence variable, I reverted to the underlying

data and standardized these figures. To capture the effect of resource dependence, I

standardized the fuel exports to total exports, ore and mineral exports to total exports, the

oil and natural gas rents to GDP, and the mineral rents to GDP data. In cases where there

were data for more than one of these values, I included the maximum value in the

clustering.

   The final variable included in the cluster analysis is the number of leadership

changes variable. Given that the raw data of this variable are concentrated around small

numbers, there is no need to scale the leadership data to make it comparable to the other

standardized variables. Depending on the averaged period considered, the means of

leadership changes ranges from 0.55 changes for the three-year averaged period to 1.85

for the ten-year averaged period; the standard deviations ranged from 0.88 to 2.03

respectively. Although one may think that this would give this variable undue weight in

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[56] The variables were current account to GDP ratio, international reserves to GDP ratio, GDP growth, and REER appreciation

the clustering process, because it is the only noneconomic variable included in the

clustering, any undue weight is acceptable.[57]

The last decision to discuss is the question of which data to cluster. In the

previous chapter, I conducted the regression analyses on the five-year averaged data, with

the three-, seven-, and ten-year averaged regression testing included to verify the

robustness of the five-year findings. In this chapter, I cluster these averaged periods

separately and present the different dendrograms in Appendix 12. Further to this, I

averaged the average periods and clustered these results by calculating the squared

Euclidean distance between each dyad of SWF countries in each averaged period and

averaged these four squared Euclidean distances. As an example, I found the squared

Euclidean distance of the three-, five-, seven-, and ten-year averaged data between the

lead up to Angola's SWF creation in 2012 and Norway's SWF creation in 1990. With

these four distances, I created an average. These averaged dyadic squared Euclidean

distances were then employed in the clustering of these countries using Ward's method.

The benefit of this fifth cluster (an average of the other four time horizons) is it offers a

more stable understanding of which countries should be grouped together. It is

conceivable that by simply looking at one time period and ignoring the others, the

clustering could be sensitive to anomalous data. The averaged squared Euclidean

distance smooths the results and allows for greater confidence in the clusters presented.

Having discussed the methodological choices required before undertaking the

clustering process, there is another choice that is required after the data has been

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[57] I also clustered with the standardized leadership data to verify and there were no changes to the cluster structure.

clustered. By employing a hierarchical clustering procedure and not choosing the number of clusters beforehand, the decision of the optimal number of clusters has to be made after the procedure has been completed. Although this can be done visually with the aid of dendrograms, Milligan and Cooper (1985) listed over thirty different ways that this decision can be informed by employing statistics. In their work, Milligan and Cooper stated that the two best methods were the techniques introduced by Calinski and Harabasz (1974) and Duda and Hart (1973). In Stata, these are the two calculations to determine the appropriate number of clusters. For both the Calinski/Harabasz Index and the Duda/Hart Index, larger values indicate more distinct clustering. For the Duda/Hart procedure, the lower calculated pseudo T^2 values also indicate more distinct clustering. Despite these statistical aids, it was rare that the two indices agreed on the number of optimal clusters and qualitative assessments, informed by the dendrograms, had to be made. The calculations of the indices are included for the different clustering procedures in Appendix 12.

Turning to the classification analysis section of this chapter,   Albert and Lesaffre (1986) described logistic discriminant analysis as a partially parametric method residing between parametric methods such as linear discriminant analysis and non-parametric methods such as the kth-nearest-neighbour method. It must be pointed out that there is an overlap in terminology that can create confusion. In his work, Huberty (1994) outlined that the term discriminant analysis should be separated among descriptive discriminant analysis and predictive discriminant analysis. For their part, Rencher and Christensen (2012) used the term discriminant analysis to designate descriptive discriminant analysis, but used classification analysis when discussing what Huberty referred to as predictive

analysis. Given that a descriptive discriminant analysis would be redundant because of the thoroughness of Chapter 2 and the similarity between descriptive discriminant analysis and probit regression analyses, this chapter includes a predictive discriminant analysis or classification analysis.

Similar to the decisions that need to be made prior to clustering, choices with respect to how to classify must be made before undertaking the classification analysis. Specifically, if the classification analysis is going to provide information with regard to which countries would be expected to have SWFs and which one would not, I had to determine the variables and time periods informing that analysis. In order to remain consistent with the cluster analysis, I utilized the same variables for the classification analysis that I had used for the cluster analysis.[58] To extend this similarity, I averaged the posterior probabilities generated for the different time periods in the classification analysis. As an example, Norway predicted probabilities of creating a SWF in 1990, based on the three-, five-, seven-, and ten-year averaged data, were 43.5%, 50.1%, 60.8%, and 62.9%.[59] The process of averaging the probabilities alleviated any concerns that the probabilities were being skewed by methodological choices.

4.3   Clustering and Classification Analysis Results

Returning to the cluster analysis, the dendrogram presented in Figure 4 illustrates much of what one would expect given the findings of the probit analysis in Chapter 2.

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[58] For a summary of the variables chosen, see Appendix 10.
[59] For an illustration of the volatility of the three-year averaged data posterior probability calculations, see Appendix 11.

Figure 4: Dendrogram produced from average dissimilarity matrix
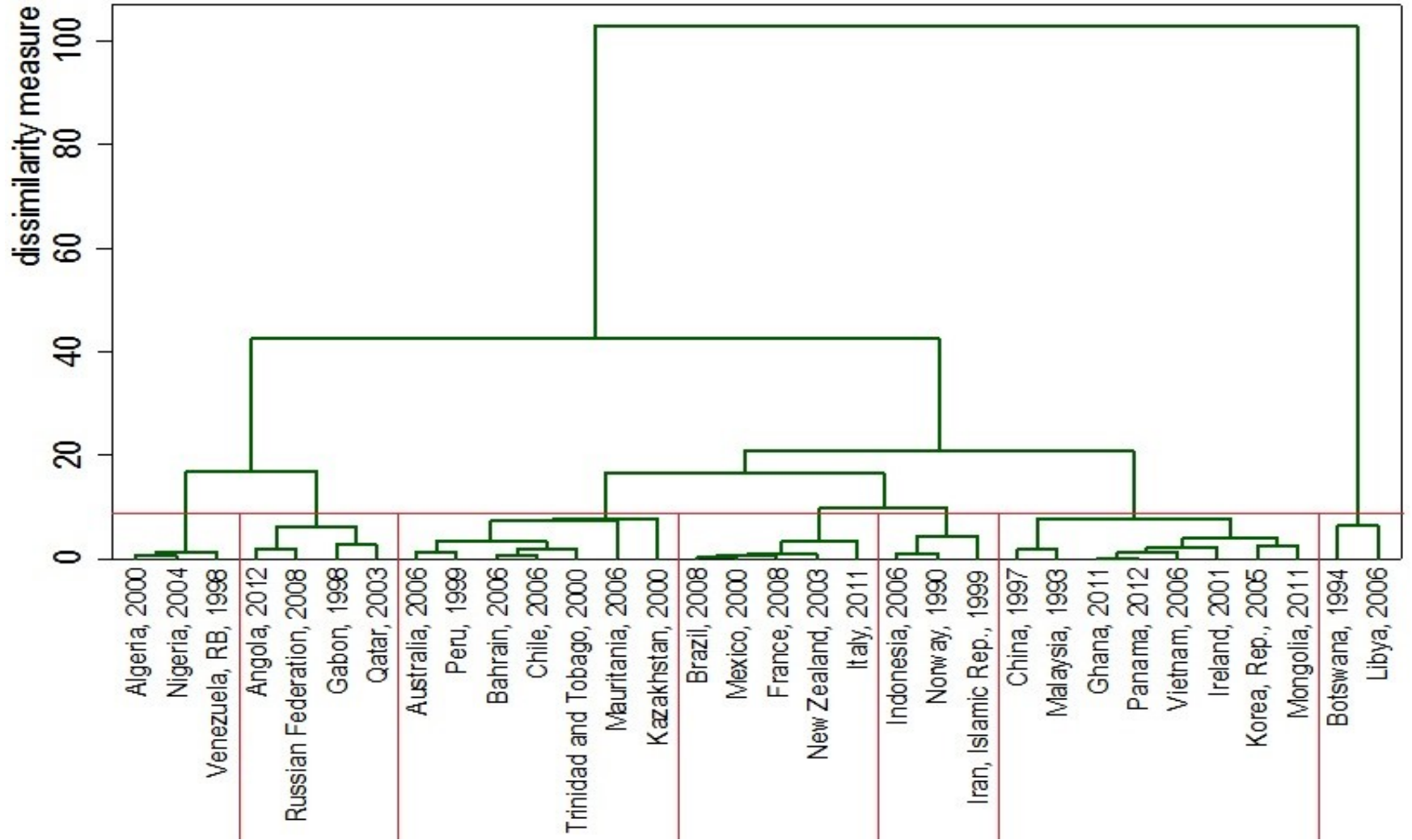
A visual inspection indicates that, from the averaged dissimilarity data, certain distinct groupings emerge. The most obvious grouping is that of oil and natural gas-dependent countries. On the dendrogram, these are the left-most countries (from Algeria to Qatar). However, even amongst these seven countries, there are two sub-groupings that can be delineated. The first group, Algeria, Nigeria, and Venezuela, are very dependent on oil with oil and natural gas exports making up 95%, 98%, and 78% of total exports, respectively.[60] Although the second subgroup, Angola to Qatar, is also very dependent on fuel exports, it, as a group, has higher current account surpluses and higher GDP growth figures than the countries in the first group. This observation gives some indication that while other scholars have chosen to aggregate these countries under the heading of 'oil exporters' for ease of analysis, these countries are actually distinct. It also speaks to the possibility that the second group of countries may have been undertaking continued investment in the years prior to creating a SWF and that this investment was creating higher levels of GDP growth; an issue discussed in Chapter 2.

Before turning to the other groups generated by the cluster analysis, it is important to explain how to interpret the dendrogram. Given that it is an agglomerative process utilizing Ward's method, the dendrogram is created by first creating a node between the two least dissimilar countries (in the case of the dendrogram presented above, these countries are Panama and Ghana). Once these two countries are paired, the pairing acts as a unit trying to find a third country to pair with while causing the least amount of variance increase within the new triplet. While this search for a third country is happening, other pairings of similar countries are being created. In the case of the Panama and Ghana pairing, this third country is Vietnam. This is not to say that Panama

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[60] These are the average fuel export to total export figures for the five years leading up to SWF creation.

is most like Ghana and then, most like Vietnam or that Ghana is most like Vietnam (although this could be true). The 'pairing' of Panama and Ghana is most like Vietnam.

The horizontal distance between countries is meaningless. Algeria and Libya are not the most dissimilar dyad; their distance from each other on the dendrogram is a reflection of the how the information is presented vertically.[61] What is most important is determining the level of dissimilarity where groupings should be formed and where these groupings exclude new membership. While the dendrograms in Appendix 12 present the Calinski-Harabasz and Duda/Hart indices, the dendrogram presented above is derived from the averaged dissimilarity matrix data and could not be aided in this way as these indices cannot be calculated for matrices. As a result, an appropriate cut point needed to be created visually. The horizontal line is that cut point; breaking the countries into seven distinct groups. The decision to put the cut point at a level so as to make seven groups is corroborated by the calculations outlined in Appendix 12.

Returning to the dendrogram, the third and fifth groups (left to right) are similar because of their reliance on resource extraction, but distinct given the other macroeconomic conditions included in the clustering procedure. Specifically, of the countries in the third group (Australia to Kazakhstan) and the fifth group (Indonesia to Iran), only six were consistently classified as resource dependent (meeting the forty percent threshold) in the regression analyses of Chapter 2; but all ten countries had resource exports that were more than twenty percent of total exports or resource rents that were more than twenty percent of GDP. Where these groups diverge is the countries in the third group being much more apt to suffer current account deficits prior to SWF creation than those countries in the fifth group. Moreover, while the average annual GDP

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[61] Libya and Italy are actually the most dissimilar observations.

growth was similar between the groups depending on the time horizon, the average country in the third group had between ten and twenty-four percent more international reserves as a function of their GDP than the average country in the fifth group.[62]

The fourth group is distinguishable by its averageness. The grouping of Brazil, Mexico, France, New Zealand, and Italy, does not lead any of the other groupings in any of the six variables used in the clustering procedure. In fact, the only variable on which the group is distinguishable from the other groups is that it has the lowest ratio of international reserves to GDP. Of the five countries in the group, only Brazil had international reserves worth greater than ten percent of its GDP in the year the SWF was created. While this may seem insignificant, it does indicate two things: first, these are large economies that may have accumulated large amounts of international reserves, but that these reserves are small as a percentage of the overall economy; and second, an access to credit markets. These countries, for the most part, are able to issue traditional forms of debt financing and accumulating low-yielding reserves as a buffer for times of financial instability may not be an attractive policy.

The sixth group (China to Mongolia) is the high-growth group. Many in this group, specifically China and Korea, have been thought to have created their SWFs in response to their international reserve accumulation; however, the data undermine this notion. In the year in which they created their first SWF, the average SWF-creating country held international reserves at a rate of 21.5% of GDP; in the case of China and Korea, their figures were 15.4% and 24.9% respectively. Therefore, the idea that China and Korea had such large international reserves that a SWF was necessary is not backed by fact. Rather, it is more likely that this narrative is based on how China and Korea are

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[62] Differences in third and fifth groups depend on the averaged data used to calculate the differences.

currently perceived, where the international reserves to GDP figures have grown to 40.5% and 28.6% as of 2012. It is much more likely, taking into account the findings of the previous chapters, that GDP growth and projected increases in international reserves holdings were both influential factors for policymakers considering a SWF.

This sixth group also constitutes the high-growth SWF-establishing countries that are not dependent on natural resource extraction. In the year of SWF creation, the average rate of annual GDP growth for countries in the sixth grouping was 10%; for all other SWF-creating countries, the average annual GDP growth rate was 4.4% in the year of SWF creation. This statistical grouping of high-growth countries suggests these countries were observing their economic growth as a long-term phenomenon and they saw the creation of a SWF as a policy tool to manage this growth going forward. An attempt to disaggregate the influence of the SWF on economic growth or decline post-creation would be an interesting area for further research. Although, simply acknowledging that these countries did not create SWFs as a result of reserve hoarding would be a good first step.

The final group is comprised of countries having an abundance of international reserves relative to their annual GDP. In the year that they created their SWFs, Botswana and Libya had international reserves that were more than 78% of their annual GDP.[63] In the context of the entire population used for the regression testing, Botswana and Libya's values for the international reserves to GDP ratio variable were more than 5.7 standard deviations away from the mean value. Therefore, while Libya is also heavily dependent on oil exports, its international reserves value is such an anomaly that its pairing with Botswana and not with other oil-dependent countries is understandable.

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[63] For Botswana in 1994, international reserves were three percent higher than its annual GDP.

In Table 13, I present the typology derived from the cluster analysis and the dendrogram above. Due to some countries lacking all of the necessary data to be included in the cluster analysis, I manually included these countries in the typology. In most cases, the reason countries were classified as they were is based on what is disclosed in the first years that data are made available. As well, in cases where a country has only some variables missing data, I relied upon the data that did exist to classify these excluded countries manually. Only in the cases of Kiribati, West Bank and Gaza, and Timor-Leste, where there was so little data that any classification would be purely speculative, did I exclude a country from the typology. For those I did classify manually, the countries italicized in Table 13, the rationale for these classifications are included in Appendix 13.

The main point to note from this process of manual classification was the need to add a new grouping. With the highest GDP growth and the largest current account deficit among SWF-creating countries, Equatorial Guinea's SWF-creating profile is unlike any other country. While it is very oil-dependent, like the countries in Group 1 and Group 2, its high growth rates and current account deficits set it apart. As can be seen in Appendix 12, the dendrograms using the different averaged data support considering Equatorial Guinea apart from assumed similar countries. By considering Equatorial Guinea an outlier, there is increased confidence that the variation within the other groupings is as low as possible, making points of comparison among countries within these groups more nuanced and more informative.

Table 13: Statistically-based Typology

Group 1	*Very oil-dependent with lower GDP growth*	Algeria, 2000	Nigeria, 2004	Venezuela, 1998	*Brunei, 1983*	
Group 2	*Oil-dependent with higher GDP growth and current account surpluses*	Angola, 2012	Russia, 2008	Gabon, 1998	Qatar, 2003	*Saudi Arabia, unknown*
		Kuwait, 1953	*United Arab Emirates, 1976*	*Oman, 1980*		
Group 3	*Limited resource dependence with international reserves and current account deficits*	Australia, 2004	Peru, 1999	Bahrain, 2006	Chile, 2006	Trinidad and Tobago, 2000
		Mauritania, 2006	Kazakhstan, 2000	*Azerbaijan, 1999*		
Group 4	*Low Growth*	Brazil, 2008	Mexico, 2000	France, 2008	New Zealand, 2003	Italy, 2011
Group 5	*Extractive Countries with Limited Dependence*	Indonesia, 2006	Norway, 1990	Iran, 1999		
Group 6	*High Growth Economies*	China, 1997	Malaysia, 1993	Ghana, 2011	Panama, 2012	Vietnam, 2006
		Ireland, 2001	Korea, Rep., 2005	Mongolia, 2011	*Hong Kong, 1993*	
Group 7	*International Reserve Accumulators*	Botswana, 1996	Libya, 2006	*Iraq, 2003*	*Singapore, 1974*	
Group 8	*Fuel Dependent Outlier*	*Equatorial Guinea, 2002*				

Note: Kiribati (1956), West Bank and Gaza (2003), and Timor-Leste (2005) were not included due to a lack of data

Having created a typology of SWF-establishing countries based on their characteristics prior to establishment, I turn to the results of the classification analysis to discover which of these countries were most likely to establish SWFs. This analysis is valuable as it sheds light on which countries created SWFs when the macroeconomics would have predicted otherwise and it provides a population of countries that had the macroeconomics that predicted the creation of a SWF, but the countries for some reason

did not create a SWF. It is important to reiterate that the predictions as to the likelihood

of a country creating a SWF are based on the variables that had statistically significant

regression coefficients in Chapter 2. As there may be unobserved factors explaining the

decision to create a SWF, there may be omitted variables that impair the validity of the

prediction of SWF creation.

Figure 5 offers a visual representation of the different predicted probabilities of

SWF-creating countries. It is particularly striking that all five countries from Group 5 of

the typology (Brazil, France, Italy, Mexico and New Zealand) were less than fifty percent

likely to have created a SWF when they did.[64] This is not surprising given that these

countries had relatively modest growth rates, were not dependent on fuel or mineral

extractive activities, and did not hold international reserves worth more than twelve

percent of their annual GDP.[65] While a more in-depth analysis is necessary, it is fair to

state that these SWFs were not created for the same, traditional economic reasoning as

other SWFs. With respect to the establishment of SWFs in France and Italy, these

creations were entwined with domestic political forces and the desire to support domestic

firms (Backer 2010a). The SWFs of Mexico and Brazil have been largely stagnant and

have only invested domestically (Tesouro Nacional do Brasil 2012; Critchley 2015).

While the Mexican SWF is meant to stabilize oil revenues, Mexico is not nearly as oil-

dependent as other SWF-having countries, making its establishment of a SWF puzzling.

The macroeconomic data for New Zealand make its foray into the world of SWFs

surprising; however, given New Zealand Treasury's (2003) prediction that the cost of

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[64] Only Brazil and Mexico were more than thirty-five percent likely to create a SWF.
[65] The average international reserves to GDP figure of countries having a predicted probability of SWF creation over 50% is 22.6%.

Figure 5: Averaged Posterior Probabilities of SWF-creating Countries

Predicted Probability of SWF-creation
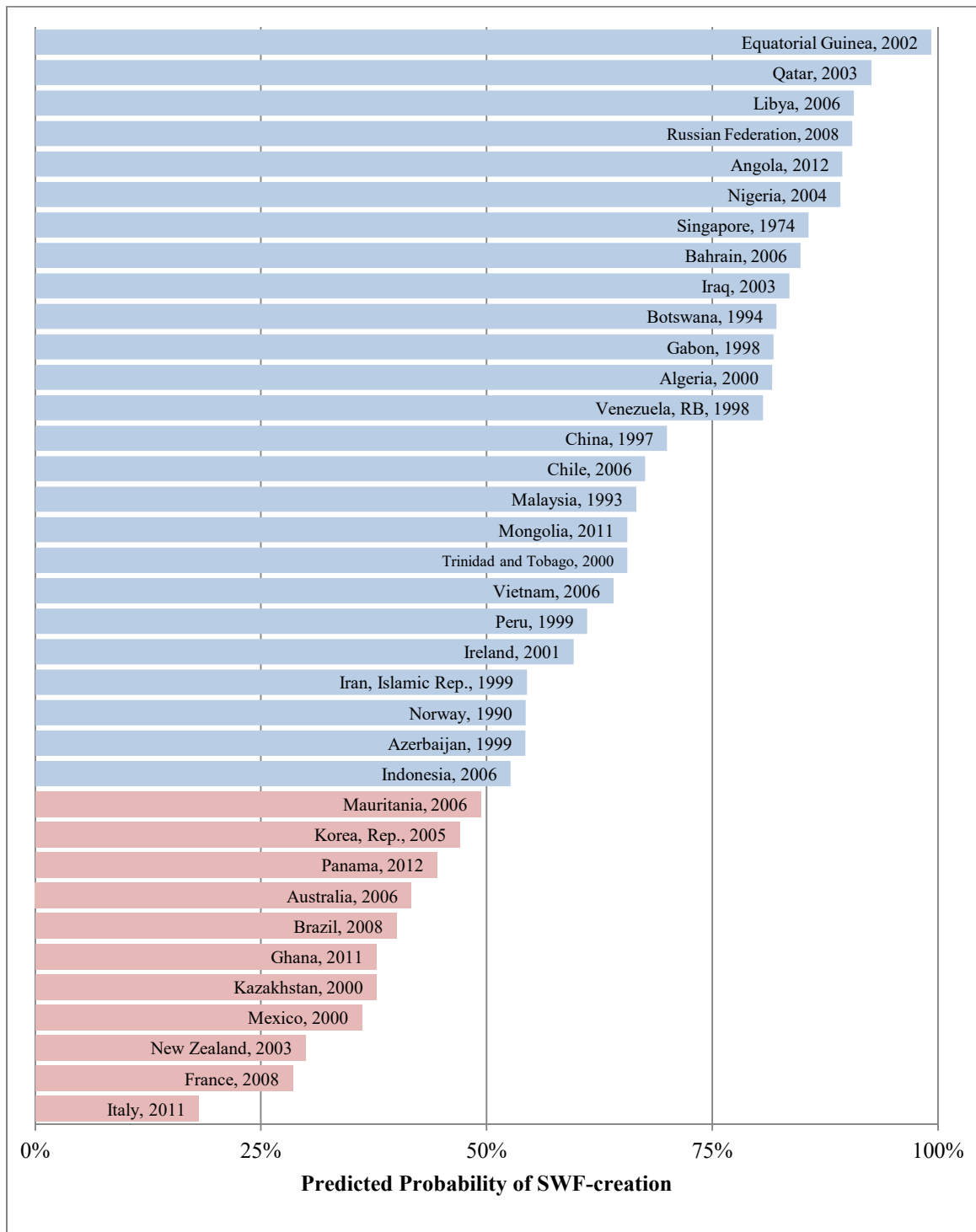
providing superannuation to its citizens to almost double by 2040, creating a SWF to supplement this fund may make sense.

For its part, Mauritania fell just short of the fifty percent threshold of the model predicting a SWF and it creating a SWF. This dissonance is caused by the three- and five-year averaged data predicting that Mauritania would create a SWF, while the seven- and ten-year data did not. Mauritania was more resource-dependent and had higher average annual GDP growth in the years immediately leading up to SWF creation than it had been over the longer periods; a direct result of discovered its offshore petroleum in 2001, five years prior to creating its SWF. Although, Mauritania's average current account deficits were higher and the level of international reserves to GDP ratios were lower in the years immediately leading up to SWF creation, because these two variables have shown to have a smaller influence on SWF creation, the three- and the five-year likelihood of SWF creation predictions remained over fifty percent.

Korea and Panama also hovered near the fifty percent threshold of having the model predict these countries as creating a SWF. In the case of both countries, one of the four averaged time periods predicted SWF creation and three of the averaged time periods did not. Differently, Ghana had predicted probabilities that ranged between 35% and 41%, depending on the time period the data was averaged. This is particularly interesting because Korea, Panama, and Ghana were clustered with high-growth countries (Group 6) and the findings in Chapter 2 signalled that GDP growth is a statistically significant determinant of SWF creation. With this noted, apart from Hong Kong, Korea and Ghana had the second- and fourth-lowest average annual GDP growth rates in the

five years leading up to SWF adoption.[66] In the case of Panama, large average current

account deficits across all averaged periods undermined the model's ability to predict

SWF creation. The classification analysis points to a threshold of GDP growth above

which a country should think about creating a SWF without any other influence of

extraction dependence, reserve management, or current account management supporting

the decision to create the SWF. These three countries (Korea, Panama, and Ghana) did

not meet this threshold prior to creating their SWF, but went ahead nevertheless.

Australia, like New Zealand, created their SWF in reaction to a predicted shortfall

in their public service pension plan scheme. Based upon the model constructed in

Chapter 2, the average predicted probability of Australia creating a SWF in 2004 was

only 41.7%. This prediction was a result of modest average annual GDP growth, low

levels of international reserves as a percentage of GDP and consistent current account

deficits. The only factor that aligns with the findings of Chapter 2 is that 36% of

Australia's total exports were tied to the oil, natural gas, ore, and mineral industries and a

SWF may have been seen as a mechanism to adequately manage government resource

royalties from these extractive sectors. However, for all the years on which I had data,

Australia's predicted probability of SWF creation never was greater than fifty percent.

Kazakhstan is the only other country with a lower than fifty percent probability of

creating a SWF that actually went ahead with a SWF. Although only four other countries

had a lower percentage, it is important to point out that the three-year averaged data for

Kazakhstan indicated a 65.8% likelihood of creation and that by 2002, two years after

SWF creation, the average predicted probability was almost 62%. This development is

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[66] Mongolia had the third-lowest annual GDP growth rate in the five years leading up to SWF creation, but also had 23% of its GDP tied to mineral rents.

directly attributable to Kazakhstan's increased dependence on fuel exports; fuel exports
increased progressively from 25% of total exports in 1995 through 2000, the year of SWF
creation, to 73% of total exports in 2010. Evidently, Kazakhstan recognized that it was
going to become more dependent on fuel exports and that the SWF could be
advantageous to managing their macroeconomy as this dependence grew.

The secondary purpose of the classification analysis was to compile a list of
countries that, according to the model in Chapter 2, were predicted to have created a
SWF, but for some reason did not. In order to ensure that the list was limited to those
countries demonstrating SWF-creating traits for extended periods of time, only countries
whose predicted probabilities of SWF creation were higher than sixty percent for four or
more consecutive years were included. These countries and the years during which their
probability exceeded sixty percent are outlined in Table 14.

Looking at the listing of countries, it is evident that there is not one consistent
reason for a country to not create a SWF. In some cases, such as Bolivia, Colombia,
Ecuador, and Sudan, these countries created stabilization funds that either continue today
or were closed and were never converted to SWFs. In other cases, civil unrest in
countries like Guinea, Republic of Congo, and Yemen, most likely undermined the
ability of the ruling constituencies to adequately consider creating a SWF. For countries
such as Egypt, Jordan, and Syria, the non-creation of a SWF is intriguing given their
geographical proximity and cultural similarity to so many SWF-having countries.
Nevertheless, just as the regression results from the previous chapters should be accepted
cautiously because macroeconomic imperatives and international policy diffusion may
not account for the entirety of reasons for a policy decision–in this case, creating a SWF–

Table 14: Countries Predicted to Create SWFs

Country	Year	Average Predicted Probability over Time Period
Armenia	2005-2009	72.4%
Bahamas	1981-1990	77.4%
Belarus	2006-2012	68.3%
Bhutan	2008-2012	74.1%
Bolivia	2009-2012	76.4%
Cambodia	2003-2009	63.9%
Cameroon	2002-2009	62.5%
Colombia	2008-2012	63.5%
Republic of Congo	1981-1988 & 2004-2012	79.1% & 78.3%
Ecuador	1980-1987 & 2009-2012	61.7% & 66.7%
Egypt	1979-2012	69.4%
Guinea	1999-2008	69.7%
India	2008-2012	63.2%
Jordan	1978-1988, 2004-2009	83.3% & 63.5%
Malta	1973-1985	80.3%
Mozambique	2006-2012	67.2%
Namibia	2008-2012	62.0%
Niger	1979-1982	68.0%
Papua New Guinea	1993-1997, 2008-2012	67.5% & 66.4%
Rwanda	2002-2012	68.8%
Sudan	2003-2012	77.2%
Syria	1979-2012	76.4%
Togo	1976-1979	68.2%
Tunisia	1978-1984	63.1%
Yemen	1997-2012	90.1%
Zambia	2006-2012	74.9%

these results of non-decision need further explanation as well. More so than positive

cases, a negative case can have any number of reasons for not creating a SWF and this

issue requires in-depth analysis. In the next chapter, I look at one of these cases.

4.4 Concluding Remarks

My work in this chapter accomplished two tasks: first, I created a robust typology of countries that have created SWFs; and, second, I assessed whether the macroeconomic data supported all decisions to create SWFs and identified cases in which it did not. For these two tasks, the results are clear and provide multiple points for further study in the following chapter.

The cluster analysis presented offers the first statistically-derived typology of SWF-creating countries. By dividing the forty-five SWF-creating countries into eight groups, comparisons between mandates, investment allocations, transparency initiatives, governance structures, and a host of other SWF-related topics can now be based on factual evidence. This clustering process confirmed that previous attempts to compare SWFs are less reliable because, in most cases, the comparisons do not acknowledge the conditions under which the SWFs were created. Comparing the Norwegian SWF to that of Azerbaijan simply does not make any sense because the Norwegian economy when the SWF was created in 1990 was fundamentally different from the Azerbaijan economy of 1999. Moreover, comparing their present SWF operations is unfair because Norway has had its SWF for nine more years than Azerbaijan. So while the SWFs of these two countries have similar mandates, without acknowledging these differences, robust comparisons are very difficult to come by. It is my assertion that the typology developed provides a solid foundation for more in-depth comparison; a foundation based on observed data and not preconceived notions or conventional wisdom.

Following the section categorizing SWF-creating countries, this chapter then turned to assessing the Chapter 2 model and its ability to predict if a country was going to

create a SWF in the year that it did. This classification analysis provided insight as to which SWF-creating countries had similar economic profiles and which did not; essentially illuminating countries that created SWFs without having a macroeconomic profile comparable to other SWF-creating countries. Similar to the cluster analysis, this work provides a statistical base from which to conduct further inquiry as to the reasons why these countries undertook an SWF despite the macroeconomic conditions not supporting such a policy move. Furthermore, the classification analysis also enabled the creation of a population of countries which had macroeconomic profiles similar to SWF-creating countries, but for some reason decided against pursuing a SWF.[67] This population poses another avenue of inquiry which requires much more in-depth research to study the "non-decision". However, with the classification analysis of this chapter complete, the further study of these countries is at least based on empirical evidence, rather than searching for "non-decisions" in an ad hoc manner.

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[67] It is also conceivable that these countries never thought about or discussed a SWF, as opposed to actively deciding against a SWF.

Appendix 10: Summary of Statistical Significant in SWF Probit Regressions

Explanatory Variable	3-Year Averages	5-Year Averages	7-Year Averages	10-Year Averages	Included in Cluster and Classification Analyses?
Current Account/GDP	No *0/11*	Yes *3/11*	Yes *8/11*	Yes *11/11*	**Yes** *5.5/11*
Resource Dependence	Yes *11/11*	Yes *11/11*	Yes *11/11*	Yes *11/11*	**Yes** *11/11*
Reserves/GDP	Yes *10/10*	Yes *6/10*	Yes *0/10*	Yes *0/10*	**Yes** *4/10*
GDP Growth	Yes *9/9*	Yes *9/9*	Yes *9/9*	Yes *6/9*	**Yes** *8.25/9*
REER Volatility	No *0/1*	No *0/1*	No *0/1*	No *0/1*	No *0/1*
REER Appreciation	No *0/8*	No *0/8*	No *0/8*	Yes *4/8*	**Yes** *2/8*
Number of Leadership Changes	Yes *7/7*	Yes *3/7*	No *0/7*	Yes *4/7*	**Yes** *2/7*
Autocracy	No *0/1*	Yes *1/1*	Yes *1/1*	Yes *1/1*	**No** *0.75/1*
Democracy	No *0/1*	No *0/1*	No *0/1*	No *0/1*	No *0/1*
Autocracy x Duration of Polity IV	No *0/1*	No *0/1*	No *0/1*	No *0/1*	No *0/1*
Democracy x Duration of Polity IV	Yes *1/1*	Yes *1/1*	No *0/1*	No *0/1*	**No** *0.5/1*
Pegged Exchange Rate	No *0/1*	No *0/1*	No *0/1*	No *0/1*	No *0/1*
Pegged or Crawling Peg Exchange Rate	No *0/1*	No *0/1*	No *0/1*	Yes *1/1*	**No** *0.25/1*
Pegged, Crawling Peg or Band Exchange Rate	No *0/1*	No *0/1*	No *0/1*	No *0/1*	No *0/1*

Note: Numbers below Yes/No are the number of times the coefficient estimate of the variable was significant in the number of equations it was included. These figures are averaged in the right-most column

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**Appendix 11: Norwegian Example of Posterior Probability Volatility**

Calculated Posterior Probability of Norwegian SWF
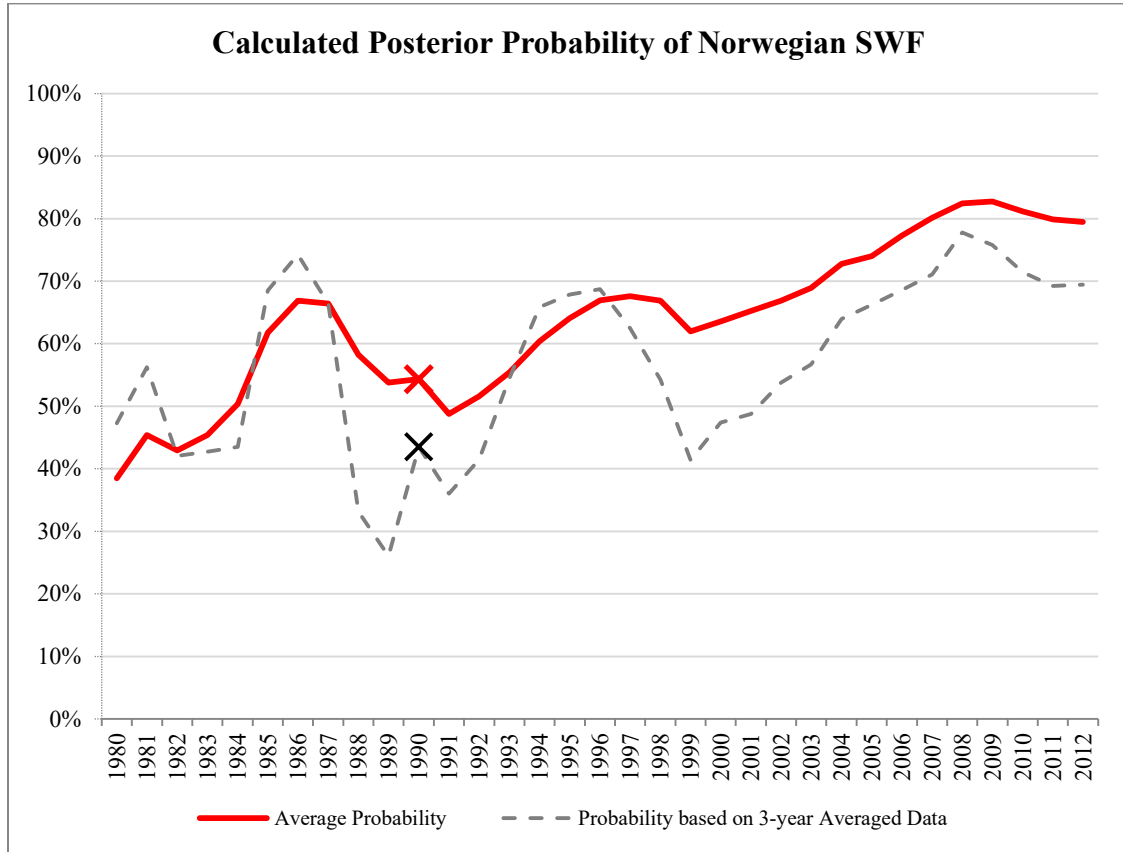
Appendix 12: Cluster Analysis Dendrograms Using Different Averaged Data
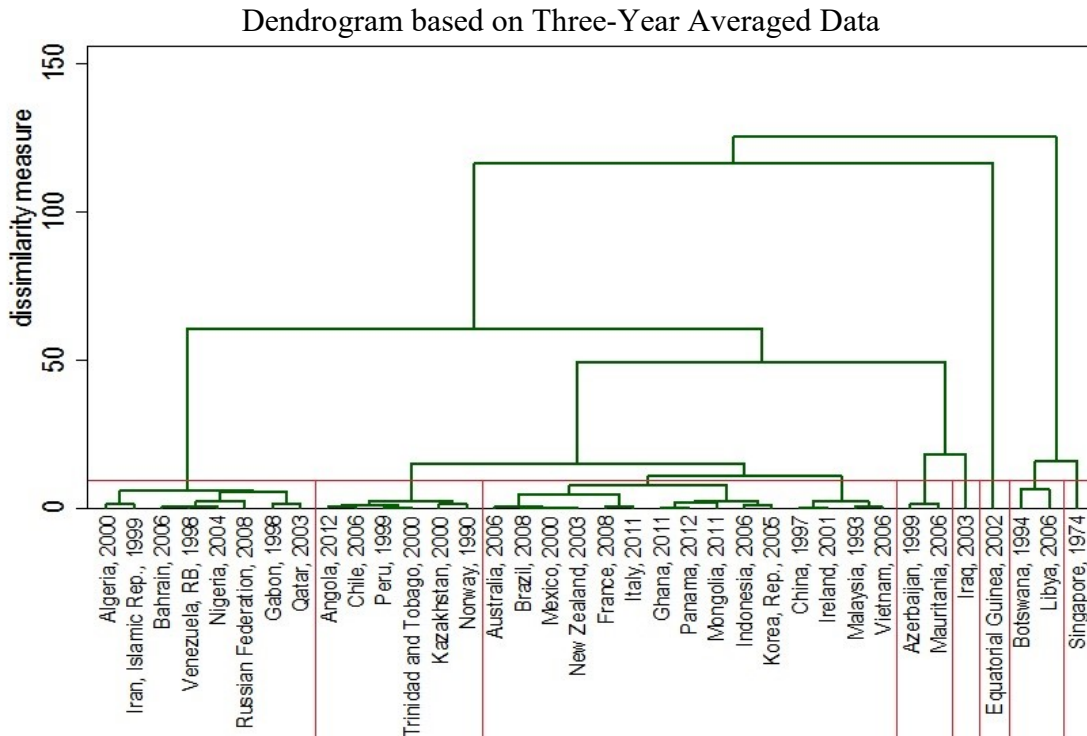
Dendrogram based on Three-Year Averaged Data

Calinski/Harabasz Index		Duda/Hart Index		
Number of Clusters	Calinski/ Harabasz pseudo-F	Number of Clusters	Je(2)/Je(1)	pseudo T^2
		1	0.73	12.45
2	12.45	2	0.64	17.74
3	17.67	3	0.70	12.66
4	19.48	4	0.60	14.47
5	23.48	5	0.08	11.66
6	22.63	6	0.30	2.38
7	22.65	7	0.73	6.97
8	23.79	**8**	**0.68**	**6.08**
9	24.59	9	0.62	5.63
10	24.79	10	0.00	.

From the Duda/Hart index, there are a number of choices with regard to the optimal number of clusters. Although seven, eight, or nine clusters would all be viable, the dendrogram indicates that eight offers the clearest cut point. Moving the horizontal line either up (for seven clusters) or down (for nine clusters) would impair the ability to distinguish groups.

Among the eight groups, there are two things to note. First, unlike the averaged dissimilarity dendrogram, there are more groupings of one or two countries. This difference is due to the three-year averaged data being much more prone to volatility and one extreme variable can easily cause a country to be clustered by itself. Second, the increase in smaller groupings creates fewer, larger groupings which are less likely to capture the nuance among SWF-creating countries.
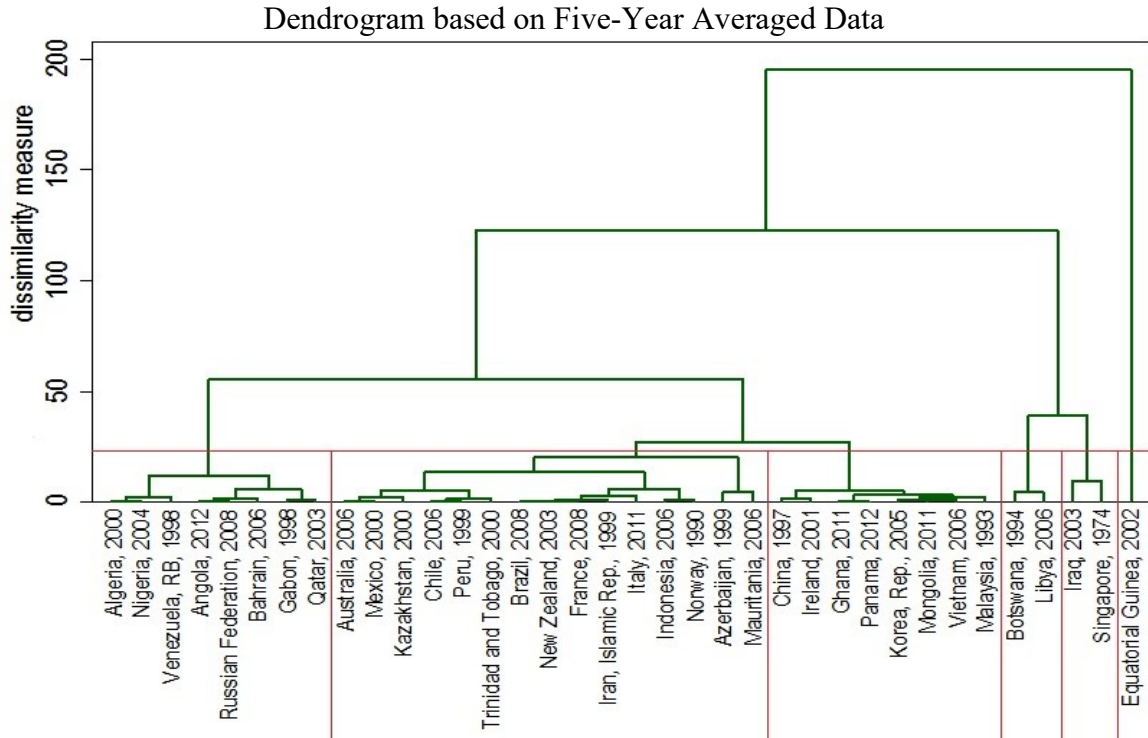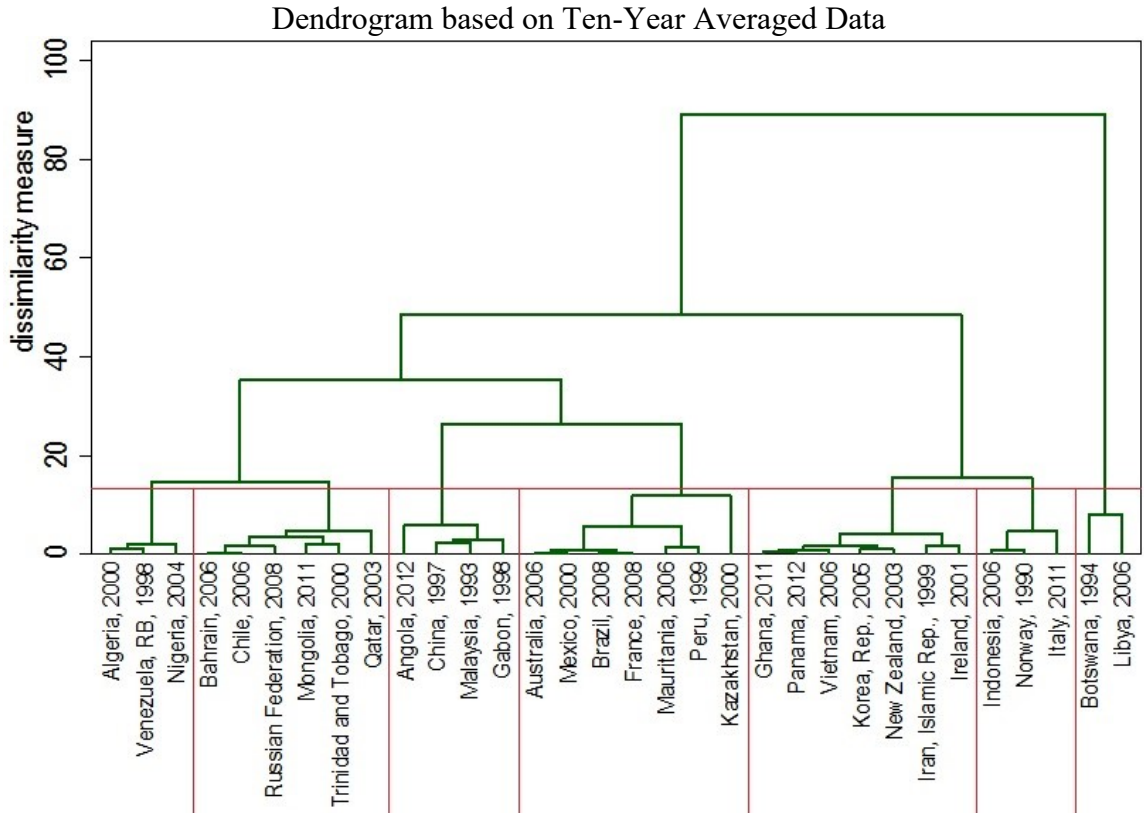
Dendrogram based on Five-Year Averaged Data

Calinski/Harabasz Index		Duda/Hart Index		
Number of Clusters	Calinski/ Harabasz pseudo-F	Number of Clusters	Je(2)/Je(1)	pseudo T^2
		1	0.65	18.66
2	18.66	2	0.66	17.34
3	22.48	3	0.69	12.82
4	22.34	4	0.27	5.53
5	22.98	5	0.73	7.69
6	23.59	**6**	**0.67**	**6.54**
7	24.24	7	0.62	6.84
8	24.22	8	0.47	6.72
9	24.87	9	0.00	.
10	25.44	10	0.49	5.17

The five-year averaged data yielded similar results as the three-year-averaged data when the countries were classified. While the Duda/Hart Index was inconclusive (the number of clusters chosen could have been six or seven), I decided that six clusters was the appropriate cut-off as it had the third-highest Je(2)/Je(1) figure and the third lowest pseudo T^2. However, like the three-year averaged data, the presence of many smaller groupings means that larger groupings are formed at the higher cut point. Unfortunately, this translates to quite of bit of dissimilarity within the groups making reliable comparisons more difficult.
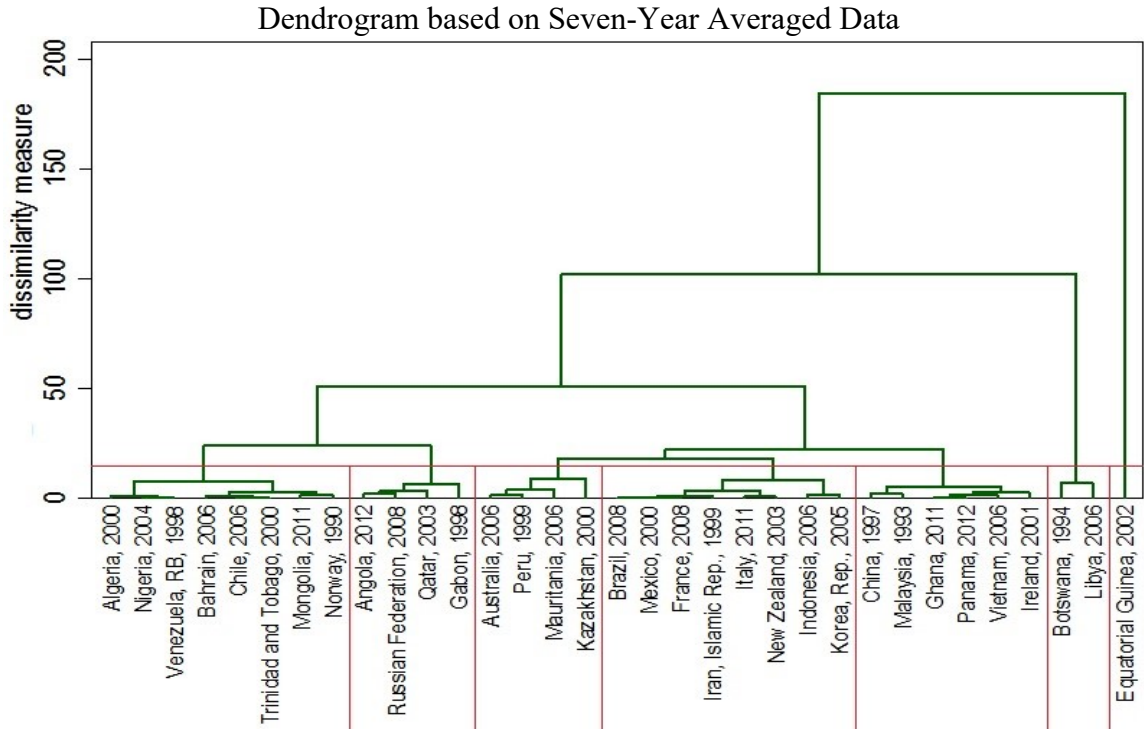
Dendrogram based on Seven-Year Averaged Data

Calinski/Harabasz Index		Duda/Hart Index		
Number of Clusters	Calinski/ Harabasz pseudo-F	Number of Clusters	Je(2)/Je(1)	pseudo T^2
		1	0.61	19.46
2	19.46	2	0.65	15.96
3	22.41	3	0.72	10.64
4	23.12	4	0.53	8.72
5	21.57	5	0.73	5.91
6	21.81	6	0.62	6.09
7	22.67	**7**	**0.39**	**3.12**
8	21.51	8	0.46	7.05
9	21.06	9	0.48	6.44
10	21.07	10	0.00	.

As the number of years averaged to generate the data increases, the number of SWF-creating countries with full data decreases. As a result, while the Duda/Hart Index suggests multiple configurations of clusters, the profile of these clusters has changed. Relying on the Calinski/Harabasz Index to supplement the Duda/Hart Index, I determined that seven clusters allowed for less one-country clusters and more medium-sized clusters. Furthermore, the dendrogram above is more similar to the averaged dissimilarity dendrogram presented in the body of this chapter than the previous two dendrograms in this appendix. From the dendrogram above, there are distinct, larger groups (resource exporters; developed, low-growth economies; and high-growth economies) which can be construed as the base of the typology presented in the body of this chapter.

Dendrogram based on Ten-Year Averaged Data

Calinski/Harabasz Index		Duda/Hart Index		
Number of Clusters	Calinski/ Harabasz pseudo-F	Number of Clusters	Je(2)/Je(1)	pseudo T^2
		1	0.70	12.77
2	12.77	2	0.76	8.89
3	12.41	3	0.71	7.32
4	12.88	4	0.54	7.58
5	13.59	5	0.49	8.35
6	13.38	6	0.51	6.78
7	13.85	**7**	**0.41**	**7.22**
8	14.45	8	0.00	.
9	14.53	9	0.48	2.14
10	14.34	10	0.31	8.76

Although the dendrogram of the ten-year averaged data may seem like a departure from the other dendrograms, it is important to look at the dissimilarity scale on verticle axis. The cut point (horizontal line) is at the lowest dissimilarity measure of any of the previous three dendrograms, creating a much flatter presentation. The Duda/Hart Index indicates that seven is a suitable number of clusters and the groupings are similar to that of the seven-year averaged data. Comparing this dendrogram with the one presented in the body of this chapter, it is apparent that these two are the most similar.

Appendix 13: Rationales for Manual Classification

Country	Group	Rationale
Brunei, 1983	1	Brunei, like the other countries in Group 1, was heavily dependent on oil exports, but had very little GDP growth in the years leading up to SWF creation. Only Azerbaijan had a lower average annual GDP growth rate among fuel dependent SWF-creating countries.
Saudi Arabia, unknown	2	Similar to Kuwait with respect to high current account surpluses throughout the 1970s (first years of data). Annual GDP growth was volatile through the early 1980s, but has been mostly positive since. High growth and current account surpluses account for Saudi Arabia's Group 2 membership.
Kuwait, 1953	2	From 1975-1990 (first years on which I have data), Kuwait enjoyed current account surpluses worth more than 20% of its GDP. These figures, coupled with impressive GDP growth during the 1960s and a heavy reliance on oil exports, led to the Group 2 classification.
United Arab Emirates, 1976	2	While there is no data with regard to UAE's current account, their five-year average growth figures and dependence on oil and natural gas exports make Group 2 a natural fit.
Oman, 1980	2	Very dependent on oil and fuel exports, while having a high level of GDP growth (9.3% average annual growth) and substantial current account surpluses (5.4% of GDP) in the five years leading up to SWF creation.
Azerbaijan, 1999	3	Based on the averaged dissimilarity data, the country that Azerbaijan is most similar to is Trinidad and Tobago. As well, given the fact that Kazakhstan, second most similar country to Azerbaijan, and Trinidad and Tobago are already clustered in Group 3, Group 3 is the best fit for Azerbaijan.
Hong Kong, 1993	6	Hong Kong is placed in Group 6 as it fits the non-extractive, high-growth classification of countries. However, with a higher than group average international reserves to GDP ratio and strong current account surpluses, Hong Kong's membership in this group does increase the within-group variance.
Singapore, 1974	7	Singapore has the third-highest international reserves to GDP ratio among SWF-creating countries. It is also different than Botswana given its average current account deficit prior to SWF creation, making their grouping looser than others.

Iraq, 2003	7	Like Libya, another country in Group 7, Iraq is among the most dependent countries on oil and natural gas exports. However, both countries were relatively flush with international reserves as a proportion of GDP, when compared with other SWF-creating oil-producing countries. Iraq and Libya diverge with respect to current account to GDP ratios (Libya having an impressive surplus and Iraq with a large deficit) making this classification tenuous; however, Iraq's deficit matches that of Singapore.
Equatorial Guinea, 2002	8	With the highest average annual GDP growth and largest current account deficits to GDP prior to SWF creation, Equatorial Guinea (as seen in the five- and seven-year averaged data dendrograms in Appendix 12) is dissimilar from most SWF-creating countries.

Chapter 5: How does a country's domestic politics influence the decisions to create a SWF and how do these politics inform the ways in which the SWF operates?

The preceding chapters have not only provided new insights as to why countries create SWFs, but also reaffirmed another truth about SWFs: the countries which create them are not homogenous. Looking at the typology in Chapter 4, it is evident that there are countries within groupings which, while quantitatively similar, differ qualitatively. For example, Group 5 of Indonesia, Norway, and Iran were amongst the most tightly clustered groups based on their pre-SWF macroeconomics. Although a discussion of these macroeconomics is essential to any comparison of these three SWF-creating countries, a deeper analysis of the other issues facing these countries would better inform a comparative analysis. This need for deeper analysis does not mean that the typology created in the previous chapter is flawed, but rather it provides greater incentive to study the domestic politics within SWF-creating countries; a dimension of SWF analysis obfuscated in quantitative works.

One particular domestic factor, although economic, provides an interesting standpoint from which to study SWF creation: GDP per capita. That the preponderance of SWFs were created by the poorest countries in the world is curious and provides an intriguing lens through which to study the SWF creation process. As SWFs temporarily allocate government wealth from current citizens to future citizens, either through budget stabilization or intergenerational savings, one is left wondering how these decisions can be politically viable in poorer countries. More than half of SWF-creating countries had a

GDP per capita of less than $10,000 in the year of SWF creation. In light of this, how were governments able to convince citizens to forego wealth or services in favour of savings? Furthermore, does the wealth of a country's citizens affect the type of SWF pursued or the types of investments the SWF can make or the time horizons of these investments? While these questions are applicable to all SWF-creating countries, these answers are particularly interesting in poorer countries where a government's decision to save or spend has a greater impact on the lives of their citizens.

In this chapter I provide a detailed study of two countries which decided to create SWFs in cases where their pre-SWF economics either provided weak support or overwhelming support for the creation of a SWF and a third country where the economics supported SWF creation, but where the country never created one. In the case of Nigeria and Egypt, the model from Chapter 2 indicates that both countries were likely to create a SWF: Nigeria created one, Egypt never did. On the other hand, the model suggests that it was less than fifty percent likely that Ghana would create a SWF, but they did. By studying the politics informing the fiscal and monetary policies of these countries, this chapter outlines the ways in which Nigeria and Ghana came to their decisions to create SWFs and the influences on the types of SWFs these countries created. As well, I examine the decisions made in Egypt which serve as an example of the opportunity cost of creating a SWF and the ways in which the Egyptian government allocated its wealth instead of pursuing a SWF. Given the macroeconomic instability and poverty of these countries, this chapter puts particular focus on the countries' relationships with the international financial institutions (IFIs) and the role of bilateral donors. I argue that the IFIs and bilateral donors encouraged the creation of SWFs in Nigeria and Ghana, while

the IFIs did not have a strong enough presence in Egypt to influence policymakers to adopt better financial management practices. Egypt's ability to retain greater control over its domestic fiscal and monetary policies was due in large part to its strategic location and the desire of the United States, and most other Western countries, for Egypt to act as a force for peace in the Middle East.

While there have been case studies of SWFs completed in the past, in-depth studies of how SWFs were developed are nonexistent. Furthermore, scholars have not attempted to identify non-SWF-creating countries which, based on their macroeconomic profile, were likely to create a SWF, but did not. This analysis of a 'non-decision' is particularly interesting because it provides insight into the type of domestic influences which are strong enough to either force a SWF's establishment or inhibit the discussion of a SWF. As well, by using statistics to find the specific timeframe of when the non-existing SWF was predicted to be created, I am able to look at the decisions made over that time period and discuss how these decisions influenced the non-SWF-creating country's (Egypt) likelihood of considering a SWF.

This chapter is organized as follows: Section 5.1 provides a brief discussion of how the cases were selected and the implications of these methodological choices. Section 5.2 presents a brief history of politics and economics of Nigeria, while discussing the process of creating the Nigeria Excess Crude Account and, more recently, the Nigeria Sovereign Investment Authority. Section 5.3 discusses the political and economic forces that led the Ghanaian government to create its SWF and the ways in which policymakers overcame economics which were less supportive than other SWF-creating countries. In Section 5.4, I trace the political and economic policies of Mubarak's Egypt and

investigate why Egypt never pursued a SWF despite its economics indicating that it would have. Section 5.5 speaks to the similarities and differences among the three countries and provides insights into the ways in which governments in poorer countries think differently about their wealth and how this wealth can be employed to confront political and economic challenges of today and tomorrow.

5.1   Case Selection Technique and Data Collection

When undertaking an in-depth analysis, the logic underpinning case selection must be clear. As this chapter aims to explain the process of SWF creation or non-creation in poorer countries, it was necessary to determine at which level of GDP per capita potential cases should be excluded. For this process I used the midpoint GDP per capita of all SWF-creating countries; in this case, the midpoint was Oman in the year of 1980 with a GDP per capita of $5,182.

Of the countries below the midpoint (Timor-Leste to Equatorial Guinea), the classification analysis from the previous chapter found that most of these countries had had a greater than fifty percent probability of creating a SWF; only Kazakhstan, Ghana, and Mauritania had averaged predicted probabilities less than the fifty percent threshold. Amongst these three countries, Mauritania's averaged predicted likelihood of creating a SWF was 49.4%; whereas, Ghana and Kazakhstan both were 37.8% likely to create a SWF. However, as mentioned in the last chapter, the three-year averaged data for Kazakhstan indicated a 65.8% likelihood of creation and, by 2002–two years after the Kazakh's created their SWF–the average predicted probability for SWF creation was almost 62%. Therefore, Kazakhstan would not have been a representative case of a

poorer country creating a SWF despite contrary economic imperatives. The elimination of Mauritania and Kazakhstan leaves Ghana as the most suitable country for a study of a poorer country having created a SWF despite economic indicators suggesting it would not have.

Figure 6: GDP per Capita of SWF-Creating Countries

GDP per Capita of SWF-Creating Countries
(in year SWF was created)
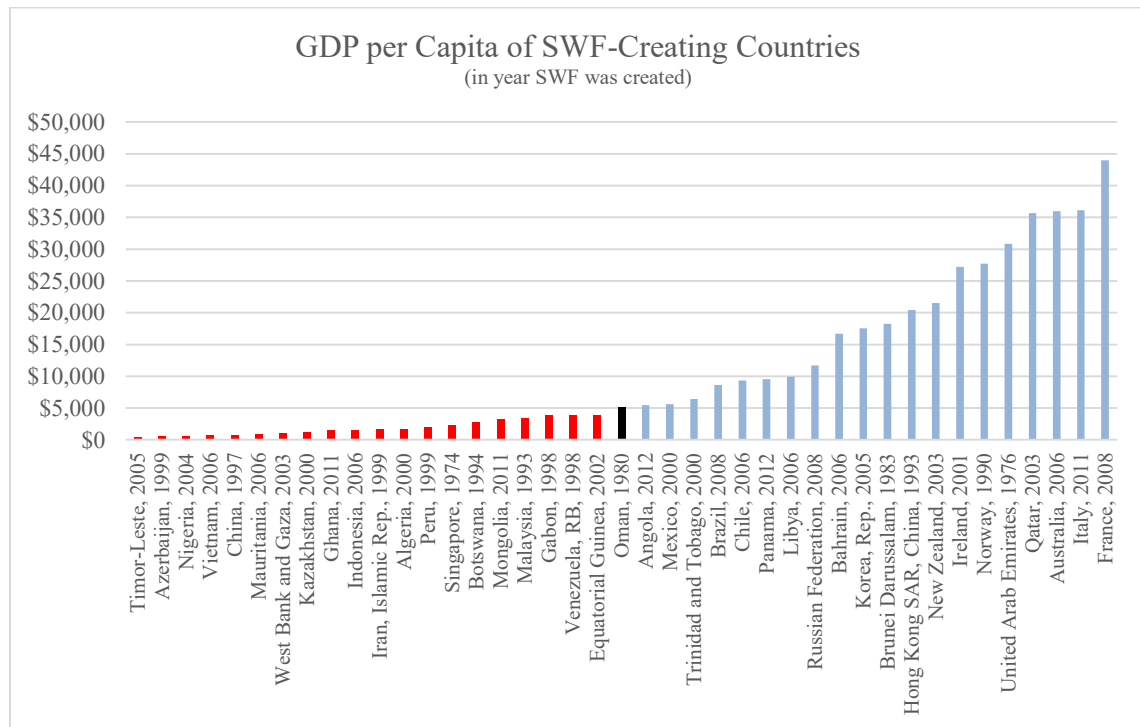
From the countries most likely to create a SWF which then followed through on this prediction, Equatorial Guinea and Nigeria are among the most attractive to study due to their calculated likelihood and proximity to Ghana. Of these two countries, the cluster analysis indicated that Equatorial Guinea is an outlier and that its economy prior to its SWF was so different from the other countries in the SWF population that it should be classified by itself. While studying a SWF-creating outlier would make for interesting

research at some point, it makes drawing useful comparisons between countries difficult.

Furthermore, Ghana and Nigeria share a similar history with respect to their SWFs being

in part a response to previous mistakes or mismanagement. Nigeria's newest SWF, the

Nigeria Sovereign Investment Authority, was created in response to problems associated

with its first SWF, the Excess Crude Account, which was created in 2004. For Ghana, its

SWF was created, at least in part, in reaction to previous governments' inability to

harness mineral wealth ("Dr. Joe Amoako-Tuffour, Advisor - Ministry of Finance"

2010). More importantly, both Nigeria and Ghana have set up SWFs with both a

stabilization component and a future savings component. Why and how they set these up

will be an important point of investigation as I discuss the two countries and their SWFs.

Figure 7: Averaged Posterior Probabilities of SWF-creating Countries
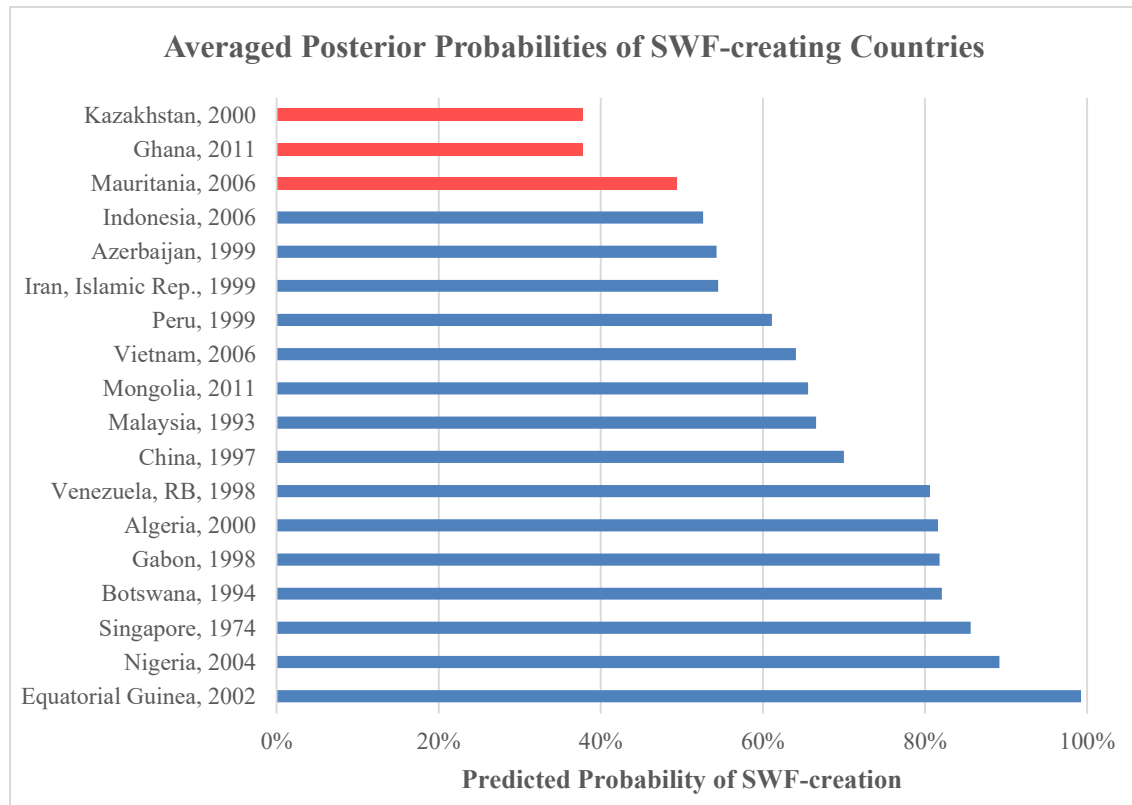
The classification analysis at the end of the previous chapter shows a multitude of cases where my model would have predicted that a country would create a SWF, but the country did not. Although the reasons for these 'non-choices' likely vary among the countries listed, it is most feasible that political considerations outside of the economic model influence the non-decision. Consequently, a qualitative, in-depth analysis of one of these countries is important to garner insight into the political climate that leads to not undertaking a SWF. Of the countries predicted by the model to be candidates for a SWF, two stand out: Egypt and Syria. In both cases, the model predicted that the country would have been likely to create a SWF in every year from 1979 until 2012; a period of 33 years. Although my model calculated other countries as having a higher likelihood of creating a SWF, no other countries had a predicted SWF over sixty percent for as lengthy a duration as these two countries. Given that Syria has been in a state of violent turmoil and conflict since 2011, the inability to access policymakers or academics to discuss why Syria never created a SWF was an endeavour too daunting to pursue. Egypt is comparatively stable despite having undergone revolutions in 2011 and 2013.

Much of the information sourced for this chapter came from official documents released by the IMF, the World Bank, and the respective governments. Other reports from non-governmental organizations, magazines, and newspapers were used to provide more context to the time periods studied and insight into how organizations and citizens outside of governmental institutions viewed the SWF creation process. As has been common throughout this thesis, I relied upon academic works to guide me to areas which

needed further investigation while also offering robust previous findings from which to conduct my analysis.

These secondary sources were complemented by a series of interviews I conducted with persons directly connected to SWF development or monitors of the SWF development processes in Ghana and Nigeria. My efforts to conduct interviews with persons in Egypt were hampered by the country's current conditions. Many of the politicians who served during the time period being studied are either on trial, in jail, in exile, or deceased. Moreover, commentators and analysts who study Egypt are guarded regarding the topics on which they will speak. Recent arrests of researchers, journalists, and students have created a chill through the academic community in Egypt and undermined my efforts to connect and speak openly with more interviewees. Nevertheless, as was the case among all three countries I studied, the following captures the key and most often shared points of the interviews conducted.

5.2   Nigeria: A Means to an End

The story of Nigeria's inability to harness its vast oil resources is a narrative synonymous with corruption. While there has been political corruption throughout Nigeria dating back to independence from Great Britain in 1960, corruption in the management of natural resources has made Nigeria the example of the consequences of resource mismanagement (Ogbeidi 2012; Sayne, Gillies, and Katsouris 2015). In 2012, despite international think tanks having explicitly outlined rampant oil revenue mismanagement and reported that top Nigerian government officials had helped run a parallel illegal export market, then Nigeria Minister of Petroleum Resources Diezani

Alison-Madueke was quoted as saying there were no plans to reform the oil sales process.[68] This comment followed a report by Nuhu Ribadu, a Nigerian anti-corruption official, estimating that Nigeria had foregone $5 billion in potential revenue from 2002-2011 due to the Nigerian National Petroleum Company (NNPC) selling oil at below-market prices (Ribadu and Shasore 2012). In light of this rampant corruption, it begs the question: why did the Nigerian government create a SWF? If the general purpose of a SWF is macroeconomic stabilization, the intergenerational transfer of national wealth and/or funding domestic development, why would a corrupt government create a SWF and limit its ability to access funds for its own corrupt practices? In what follows, I contend that the influence of the IMF and Paris Club donors spurred the ill-fated Excess Crude Account (ECA) and that its failure was due to tensions between the Nigerian federal government and the Nigerian states with higher oil prices undermining the importance of meaningful fiscal reform.

Nigeria's resource management in the lead-up to the ECA's establishment in 2003 was inextricably linked to Nigeria's military leadership. From 1960 to 1999, Nigeria had only nine years of non-military rule with a number of coups and counter-coups. It was only in 1999 under the leadership of Olusegun Obasanjo, a leader of one of the former military juntas, that Nigeria permanently embraced democracy (Ogbeidi 2012). However, Nigeria's embrace of democracy coincided with terrible macroeconomic situations; meaning a greatly changed governing situation for Obasanjo who had last presided over the country in the 1970s during an oil boom. Over the period of

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[68] Alison-Madueke assumed office as President of OPEC in January 2015, but lost this position in June 2015 when a new Nigerian government was elected (*The Abuja Times* 2015). She was also arrested in October 2015 in London by the International Corruption Unit of Great Britain's National Crime Agency on suspicion of bribery and corruption offences (Payne and Onuah 2015).

Obasanjo's absence, Nigeria's external debt had risen from 13% of annual GDP to 81% of annual GDP, while GDP had only grown by 0.6% annually. This debt run-up was due to slumping oil prices throughout the 1980s and the Nigerian government availing itself to petrodollars from international commercial banks (Debt Management Office, Nigeria 2009). While the Debt Management Office of Nigeria characterized this process as commercial lenders "selling loans to unsuspecting developing countries in the guise of assisting their economic development", others noted that these loans funded national development plans with inaccurate budgets that were left incomplete or failed to deliver on what was promised (Ejumudo 2013).

Figure 8: Nigeria Total External Debt Stocks
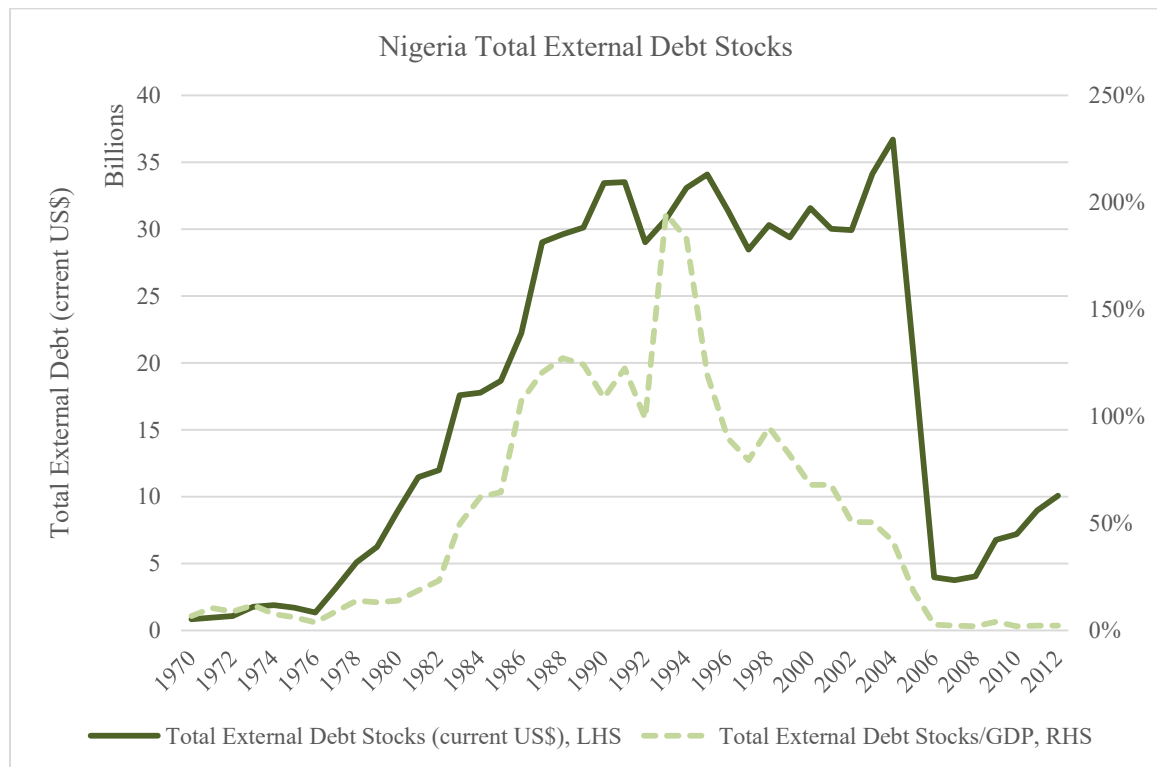
The escalation of debt forced the Nigerian government to go to the Paris Club in 1986, 1989 and 1991, as well as the London Club in 1987 and 1989.[69] Much of the increase in debt was not due to Nigeria tapping new financing, but was the accumulation of interest and the debt falling into arrears as the government could not pay. While meetings with the Paris Club and London Club took place, the Paris Club had conditioned debt relief on implementing formal economic programs which met IMF standards. When Nigeria could not meet these conditions, negotiations with Paris Club creditors broke down, whereas London Club creditors reached an agreement. However, in the years that followed, Nigeria's debt to Paris Club members increased from 53 percent of total debt to 72 percent of total debt as Nigeria prioritized repayment of other creditors (Rieffel 2005).

As Obasanjo retook power in 1999, his government's economic priorities were to improve the worsening situation with Paris Club creditors and to change the perception of Nigeria as a corrupt, military state. To this end, the World Bank's International Development Association (IDA) loaned the Federal Government of Nigeria $20 million to enhance the government's capacity to implement macroeconomic economic policies and foster greater accountability and transparency in fiscal operations (World Bank 2008). This project was buttressed by the government's doubling of Paris Club repayments during Obasanjo's first year in office (Rieffel 2005). These steps, in addition to higher oil prices, led to a re-engagement with the IMF and the establishment of Standby Credit for Nigeria in the amount of $1.031 billion in support of the Nigerian government's 2000-2001 economic program (International Monetary Fund 2000).

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[69] Brown and Bulman (2006) explain that, "The Clubs—Paris for credit between governments, London for lending by banks to governments—are fora where a country's sovereign debt may be renegotiated to avoid the greater peril of default"

However, the IMF Article IV consultation staff report from 2001 indicated that the IMF staff were disappointed with the progress of economic reforms and that any extension asked for by the Nigerian government should be considered carefully. Furthermore, the staff report explicitly outlined that the IMF supported the idea of Nigeria establishing a fiscal rule to save the terms of trades gains derived from the higher-than-budgeted-for oil prices (International Monetary Fund 2001a). The IMF stated that such a fiscal rule could decouple government spending from oil prices–thereby stabilizing government budgets– and minimize the likelihood of unduly large spending from oil revenues that could lead to real exchange rate appreciation and undermine prospects of the non-oil sector of Nigeria. The IMF was recommending a sovereign wealth fund.

Now, a $1 billion Standby Credit, which was not even tapped by Nigeria, would have exerted minimal influence on the Government of Nigeria if the only issue was the access to IMF credit. However, the credit was the gateway to debt restructuring with the Paris Club creditors. Unfortunately, when the credit lapsed in October 2001 due to Nigeria's inability or unwillingness to undertake IMF-prescribed reforms, debt negotiations with Paris Club creditors broke down as well. Nevertheless, the IMF's 2002 Article IV consultation report still exhorted the need for a fiscal rule while pointing out that Nigeria's expansionary fiscal policy could become problematic if oil prices were to decline (International Monetary Fund 2002). The 2002 consultation also showed little confidence that any meaningful fiscal policy reforms would be implemented ahead of the upcoming election in 2003.

Following his re-election in April 2003, President Obasanjo appointed Ngozi Okonjo-Iweala, a former World Bank vice-president, as Finance Minister. Amongst

Okonjo-Iweala's main priorities as head of Obasanjo's economic team was to implement

Nigeria's "homegrown" reform program: the National Economic Empowerment and

Development Strategy (NEEDS). While the IMF termed the NEEDS as homegrown, it

also stated that the NEEDS was consistent with the recommendations of the IMF's 2002

Article IV consultations (International Monetary Fund 2004). Embedded in the NEEDS

was the promise of a fiscal responsibility bill to encourage budget stabilization and

"saving for a rainy day" as well as generate revenue internally (Nigerian National

Planning Commission 2004). By October 2004, in front of the Nigerian National

Assembly, Obasanjo (2004) was already announcing the federal government's projection

of $4.6 billion to be saved at the Central Bank of Nigeria by the end of 2004. This

announcement coupled with the commitment to a fiscal responsibility bill, in essence,

created the Excess Crude Account.

In 2005, armed with the NEEDS document, Okonjo-Iweala worked with IMF

officials in Abuja to create the Policy Support Instrument (PSI) (Bartsch 2016).[70]

Although there was no financing attached to the PSI, its existence provided Obasanjo and

Okonjo-Iweala with the most valuable piece of the Paris Club debt puzzle; an IMF

program. Within the three days of the IMF's approval of the PSI, Okonjo-Iweala led a

delegation to Paris and negotiated a 60% debt cancellation worth $18 billion with the

Paris Club creditors. Although there were other political forces at work enabling the debt

cancellation, including aid to Africa being the focus of the G-8 Summit at Gleneagles and

the fact that the Obasanjo government had been a strong supporter of the war on terror

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[70] According to the IMF, the purpose of the PSI is to promote a close policy dialogue between the IMF and a member country, normally through semi-annual Fund assessments of the member's economic and financial policies. This support also delivers clear signals to donors, creditors, and the general public about the strength of the country's economic policies (International Monetary Fund 2015d).

(Rieffel 2005), the NEEDS and the IMF's PSI gave all parties the political cover to reduce the outstanding debt. Moreover, a former IMF official stated that the Excess Crude Account provided a signal to the IMF that the Nigerian government was taking steps to improve its macroeconomic management and it could move forward without increasing its debt levels (Bartsch 2016).

While the above has explained the impetus for the federal government to create the ECA, Nigeria's federal system forced the ECA to be created without the legislative backing hoped for by the IMF. With the preponderance of oil resources located in the Niger Delta states, the allocation of oil revenues among the federal, state, and local governments had historically been a source of tension (E. A. Williams and Orokpo 2014). When the new Obasanjo government came to power in 1999, many states charged that the new government was not honouring Nigeria's 1999 Constitution and had unfairly retained offshore oil revenue by not allocating it to bordering states as ascribed in the derivation rule in the Constitution (Ekpo 2004). After numerous cases were brought to the Supreme Court by the states against the federal government and vice versa, legislation in 2004 seemed to appease the federal government and littoral states, leaving the twenty-two non-oil producing states unhappy (Agbor and Udo-Udoma 2004). Regardless of the outcome, one thing was clear during this time period: the states had little incentive to support the creation of the ECA. As their state budgets were tied to federal government revenue, any saving of that revenue meant less revenue for individual states. However, as these states did not have ways to buffer their individual budgets, there was an argument for a federal savings account that could trickle down to states when oil revenue was less than what had been projected (Ahmad and Singh 2003).

As the Obasanjo government began saving money in the ECA, the process of accumulation was significantly enhanced by rising oil prices. From 2004 until the end of Obasanjo's presidency in 2007, the average price of Nigerian oil almost doubled from $38 dollars a barrel to $74 dollars a barrel (Central Bank of Nigeria 2015). Over this time period, the IMF reported that the ECA grew from $5.1 billion in 2004 to $14.2 billion in 2007, while the federal government continued to reduce its external debt (International Monetary Fund 2008a; International Monetary Fund 2009b). Despite the continued accumulation of assets and the reduction of debt being important accomplishments, it should be mentioned that the value of Nigerian oil exported over that period grew from $30.65 billion in 2003 to $57.64 billion in 2007.[71] As well, the promised fiscal responsibility bill remained under revision by the National Assembly over most of this period causing Vice-President Alhaji Atiku Abubakar to opine that the bill had been diluted from its original intent and that the consequences of not reforming were frightening (Gabriel and Ujah 2005). Therefore, while the Obasanjo government was establishing some form of fiscal responsibility, the lack of rules, regulations, and transparency related to the ECA undermined its credibility as a policy tool acceptable to those outside the federal government. Even the IMF in its second PSI review underlined that the timely passage of important legislation was crucial to sustaining reforms (Gabriel 2006).

It was only in 2007, after Obasanjo had relinquished control of the presidency[72], that the National Assembly passed the Fiscal Responsibility Act. While the act itself was

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[71] Author's calculations based on data from Central Bank of Nigeria (2015) and the U.S. Energy Information Administration (2015e).

[72] According to the Nigeria constitution, presidents can only sit for two four-year terms. While Obasanjo said he had not decided on a third term, assistants close to him said that he would never violate the

a large step forward in the management of Nigeria's public finances, the section of the act relating to the ECA remained vague. Specifically, it stated that the excess proceeds over the reference price of oil used to draft the budget should be saved and no government in the federation should have access to the funds unless the commodity price falls below a predetermined level for more than three months (*Fiscal Responsibility Act, 2007* 2007). Unfortunately, the act failed to explain how the reference price was set with the IMF reporting that the reference price had been subject to political negotiation many times in the past (International Monetary Fund 2013). Moreover, the act allowed for federal and state governments to negotiate the ECA funding capital expenditures and programs. Therefore, while there was an intention to create the ECA to act as a stabilizing force, the final clause allowing governments to spend, so long as it was negotiated, left the door open to savings depletion.

As Umaru Yar'Adua, a former state governor, entered into the presidency, it became obvious that the states were intent on accessing what they felt was their share of the ECA. In his first meeting with the thirty-six governors as president, Yar'Adua was pressed to change the revenue sharing formula and release some funds so that the governors could institute programs in their various states. This call came on the heels of reports that governors had deployed state budgets to ensure re-election or the election of their preferred successors in the months leading up to the May 2007 election (Lohor, Okocha, and Aderinokun 2007). Furthermore, domestic attacks on the oil industry had caused a decrease in oil production to such a degree that even though oil prices were above what the government had budgeted, total revenue was less. Between covering the

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constitution, thus, implying a constitutional change. However, political opponents maneuvered to gather enough commitments from other lawmakers so that any attempt at a constitutional change would have been blocked (Timberg 2006).

budget shortfalls and the eventual capitulation to the state governors, the amount in the

ECA declined by $4.3 billion in the first eight months of 2007 (Shirbon 2007).

By December 2007, it was announced Yar'Adua had decided to retain a base

deposit of $8.5 billion in the ECA and any funds supplementary to this figure would be

disbursed among the federal, state, and local governments. The Governor of the Nigerian

Central Bank, Chukwuma Soludo, estimated that this disbursement would be worth $4

billion to the three tiers of government (Shirbon and Onuah 2007). In 2008, as oil prices

surged, it became clear the federal government had very little interest in re-financing the

ECA as commentators and analysts publicly questioned the constitutionality of the

ECA's creation and asserted that the ECA was effectively dead. The IMF, in its 2009

Article IV consultation, essentially admitted defeat by stating that extraordinary

distributions from the ECA in response to political pressures undermined the counter-

cyclical purpose of the ECA and that fiscal policy had remained pro-cyclical during the

booming oil cycle (International Monetary Fund 2009b).

While Yar'Adua's appeasement of the state governors could be defended by those

arguing that Obasanjo's creation of the ECA was unconstitutional, the disbursement

could not have come at a worse time. The disbursements of ECA funds to the state and

local governments took place during the first half of 2008, with oil prices plunging in the

second half of the year. Given that the benchmark oil price on which the 2008 budget

had been set was $59 dollars per barrel, the slide did not have major repercussions in

2008. However, the new, lower oil price caused the government to cut the 2009

benchmark price to $45 per barrel, down from $62.50 per barrel. This adjustment

Figure 9: Crude Oil Prices, 1997-2014
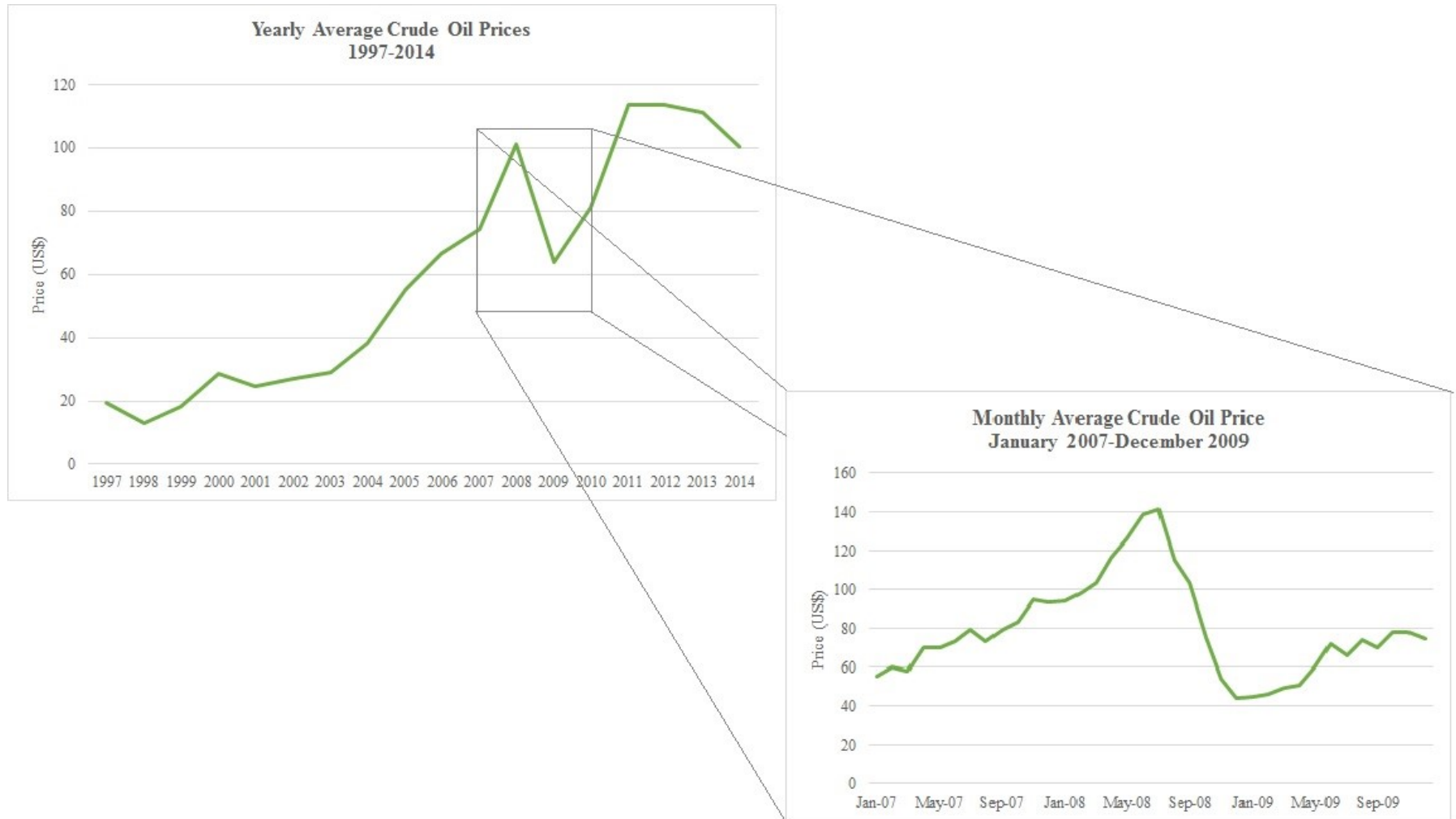
translated to the first year-over-year decrease in government consumption since 2004.

However, with a lower GDP, the government consumption as a percentage of GDP in

2009 reached its highest levels since Nigeria democratized in 1999 (Tattersall 2008).

With the ECA having been raided, the federal government was unable to smooth

expenditures and the central bank was forced to fund the precipitous drop in the value of

oil exports by accessing its cache of international foreign reserves (International

Monetary Fund 2012b). The tools available to the Nigerian government to insulate itself

from oil price fluctuations were diminishing.

Fortunately for the Nigerian government, the era of sub-$70 prices for a barrel of

oil was short. By August 2009, the average monthly price of crude oil was back over $70

per barrel and didn't fall below until December 2014. In his role as Acting President,

Goodluck Jonathan[73], convened the National Economic Council[74] in April 2010 to

discuss replacing the ECA with a new SWF that would be entrenched in law. Following

the meeting, the Finance Minister Olusegun Aganga said the ECA was an administrative

arrangement with no legal basis and the new SWF would be created with an eye to

international best practices (Onuah 2010). Aganga also highlighted that Nigeria was the

only country in OPEC without a SWF (Akogun 2010). The need for the new SWF to

have a legislative basis was echoed by think tanks Revenue Watch International (now the

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[73] It was reported that President Yar'Adua had been in hospital in Saudi Arabia since November 23, 2009
before transferring power to Goodluck Jonathan in February 2010 due to a heart condition (Awoniyi 2010).
Yar' Adua returned to Abuja at the end of February 2010, but was rumoured to be in grave condition. He
died on May 5, 2010 (Clayton 2010).
[74] The National Economic Council was a statutory body composed of the 36 state governors and some
ministers overseeing economic portfolios such as Finance, National Planning. It was presided over by the
Acting President, Goodluck Jonathan. The Attorney-General of the Federation and Minister of Justice, the
Inspector-General of Police and Governor of the Central Bank of Nigeria were also statutory members of
the Council (Akogun 2010).

Natural Resource Governance Institute) and the Centre for the Study of Economies of Africa as they specifically recommended that the new SWF have a solid legal standing, binding rules regarding inflows and outflows, and increased transparency (Gillies 2010). While some members of the National Economic Council were seeking ways to implement this advice and working on the modalities of how the new SWF would operate, the state governors began to voice their displeasure at the prospect of what was left of the ECA being the seed deposit for a new SWF (Chesa 2010). By December 2010, Aganga announced the new SWF would be created using $1 billion from the ECA and if the new SWF were fully established, the SWF would reduce Nigeria's vulnerability to oil prices, ensure intergenerational equity, and support domestic efforts to improve critical infrastructure. Aganga also pointed out the SWF would be a catalyst for attracting foreign investment and provide a powerful signalling effect to external investors in terms of enhanced macroeconomic framework, and follow-on effects of positive impacts on Nigeria's sovereign credit rating and cost of investment capital (Idonor 2010). It seems that in order to garner the support of state governors for the new SWF, President Jonathan shared one last $1 billion from the ECA in January 2011, leaving the ECA at $3 million after the other $1 billion had been earmarked for the new SWF (Agba 2011).

No sooner did President Jonathan's newly re-elected government pass the Nigerian Sovereign Investment Authority Act then a cadre of state governors called its constitutionality into question and took the federal government to court over the $1 billion transferred from the ECA to the new SWF. It was not until November 2014 that federal courts dismissed one of the cases while other cases remained in limbo after two calls by the Supreme Court for the federal government and state governors to settle the

case out of court (Soniyi 2014). This peripheral noise obfuscated the fact that the NSIA

Act is far more rigorous than the ECA arrangement and very clear with respect to fund

inflows and outflows. Furthermore, the allocation amongst the three funds (stabilization

fund, future generations fund and infrastructure fund[75]) directly spoke to the mandate that

Jonathan and Aganga had put forth. Thus far, the growth rates of the three funds has

been modest as the government has only increased the fund by $500 million to $1.5

billion, however, the 2014 Annual Report indicated that the NSIA is dedicated to

transparency and its mandate as set forth in the NSIA Act (Nigeria Sovereign Investment

Authority 2015a). Although investments have been modestly profitable, Managing

Director and Chief Executive Officer Uche Orji noted that the probability of more

funding from the Government of Nigeria in the near term is low given lower-than-

expected oil prices in 2015 (Soniyi 2015).

As one of the most resource-dependent countries in the world, there is little doubt

that Nigeria had an economic profile similar to countries already having a SWF.

Furthermore, in its desire to ameliorate its debt situation, the Nigerian government

acknowledged that it needed to satisfy the requests of the IMF by introducing fiscal

reform. While there were economic reasons and powerful external influences that led to

the creation of the ECA, it is evident from the Nigerian case that the decision to create a

SWF and the commitment to building a SWF are two different issues. Without the

[75] The *NSIA Act* (*Nigeria Sovereign Investment Authority (Establishment Etc.) Act, 2011* 2011), provides that the initial and subsequent allocations be divided in such a way that each of the three funds (The Future Generations Fund, The Nigeria Infrastructure Fund and The Stabilisation Fund) receives at least 20 percent of the allocation. The Board of Directors of the NSIA resolved to apportion 40% of the assets transferred to NSIA equally to each of the Future Generations Fund and the Nigeria Infrastructure Fund. The minimum amount, 20% was allocated to the Stabilization Fund (Nigeria Sovereign Investment Authority 2015b).

support of state governors and a legislative basis, the ECA was doomed from the day the

federal government started to save. As well, it is important not to overlook the distinct

possibility that the federal government never had the intention of using the ECA as an

extra-budgetary item and that the ECA was created as a means to an end; that end being

debt relief. Fortunately for Nigerians, the NSIA is built on a stronger foundation and

offers some hope to those expecting Nigeria's vast oil wealth to improve their lives.

However, this improvement will be dependent on future government's retaining lessons

from the past and avoiding a repeat of missteps.

5.3   Ghana: Learning from Mistakes

The economic story of Ghana's SWF creation greatly differs from that of Nigeria

because of Ghana's diversified economy in the lead-up to its SWF. Although Ghana had

suffered some of the same effects of military leadership and reliance on external debt to

stimulate the economy, Ghana's discovery of oil in the late 2000s allowed the SWF

discussion to come at a time when most of the external debt had already been cancelled

and export income was being derived from cocoa, gold, and a diversified manufacturing

industry. This economic reality meant the discovery of the Jubilee Oil Field in 2007 had

not been factored in as part of Ghana's economic development path. Nigeria, on the

other hand, had been totally reliant on oil revenue since decolonization and its creation of

a SWF was seen as a way to avoid squandering its main resource.

Figure 10: Ghana Exports, 1996-2013
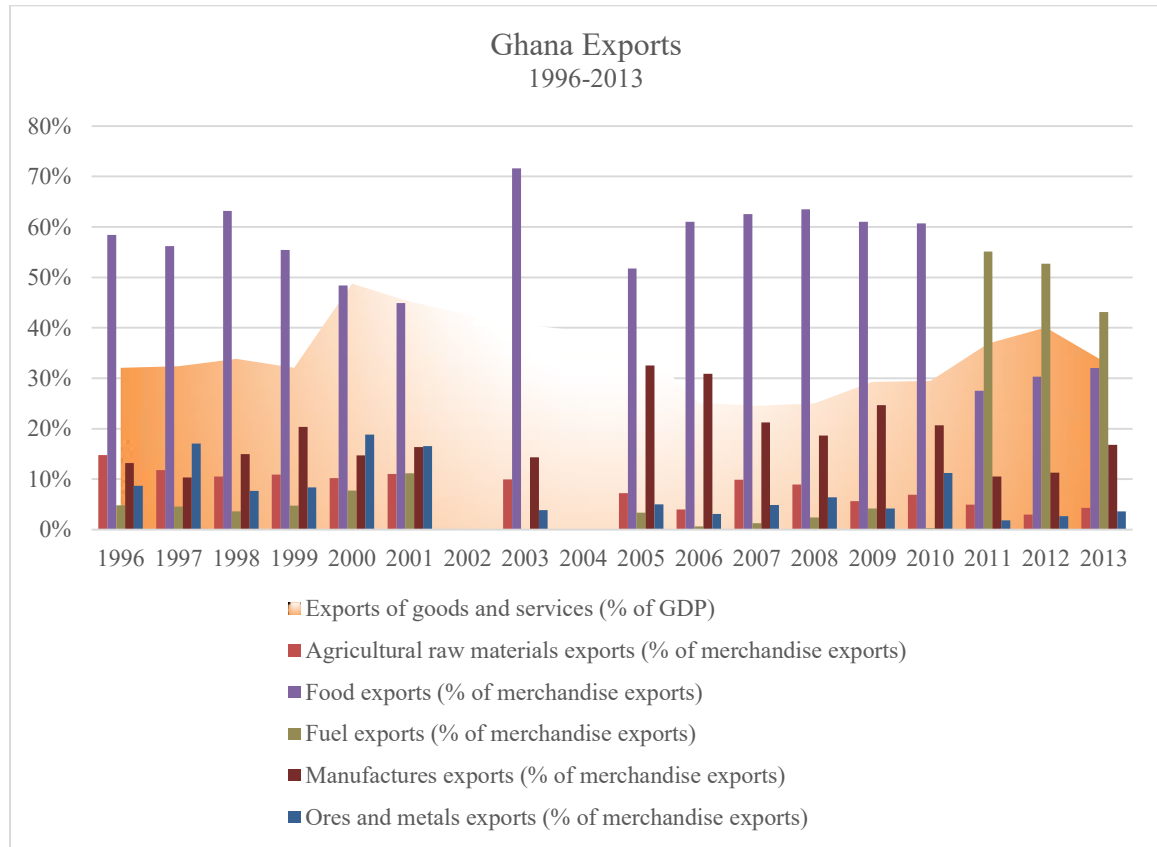
Despite being endowed with a multitude of mineral resources, the impact of mineral exports on the well-being of Ghanaians was modest. Having been named the Gold Coast because of gold deposits found by colonial powers, Ghana's slow economic growth following decolonization was disappointing (Adam 2016; Yeboah 2016; Amaoko-Tuffour 2016). For many, this modest growth was directly attributable to executive dominance, despite Ghanaians voting in quadrennial elections since 1992. This hegemonic power is seen as a function of the 1992 Constitution and its granting the president wide powers; including the ability to use political patronage and

neopatrimonialism to maintain power. Although the Government of Ghana followed development programs authored in collaboration with the IFIs aimed at decentralizing the government, local government leaders were still appointed by the president and were expected to remain loyal (Ayee et al. 2011). This loyalty was required as there were only two main political parties in Ghana, leaving the political landscape polarized (Kopiński, Polus, and Tycholiz 2013).

Ghana's mineral resource management is a good example of why a country avoids a SWF. According to Humphreys and Sandbu (2007), if the probability of government change is negatively correlated with the amount that the incumbent government spends, the distortive effects on the choice to save increases. This distortive effect may be undermined when political rivals commit to not taking full advantage of their position of power when they are in government. In Ghana, Banful (2011) highlighted that grants from the federal government to local governments were targeted to districts having lower margins of victory in the previous presidential election. Not only were these districts targeted, but the ways that the allocations were calculated were amended to produce politically desirable results. Given that the electoral contests in Ghana were becoming closer with each passing election, it is not surprising that elected officials avoided implementing staunch fiscal policy regulations and saving mineral revenue.

What is surprising is that the Government of Ghana avoided undertaking these fiscal reforms despite its long relationship with the IMF, the World Bank, and OECD aid donors. Following a military coup in 1981, Ghana's history of political instability was exacerbated by drought and the famine that followed (Ofori-Sarpong 1986; Kraev 2004).

In 1982, the famine forced the government to turn to the World Bank and the IMF for help which was provided via the Economic Recovery Program (ERP). The IMF (1998) contended that Ghana's market-oriented approach, woven into the ERP, had made considerable progress in reducing macroeconomic imbalances and strengthening the external sector; others disagreed. Many cited that the adjustments made under the program unfairly favoured the urban population in Ghana and did very little for the large agriculture sector (Rimmer 1992; Brydon and Legge 1996; Konadu-Agyemang 2000). Furthermore, Hutchful (1995) noted that adherence to the program varied throughout its application and that the idea of Ghana being the "star" pupil papered over uneven performance and results.

Despite the mixed results from the ERP, the Rawlings government–now having been democratically elected[76]–and the IMF were back negotiating Enhanced Structural Adjustment Facilities (ESAFs) in 1995 and 1999. Under the ESAFs, the Government of Ghana was to focus on the deregulation of the cocoa and petroleum sectors, as well as the privatization of unprofitable state-owned enterprises. The ESAFs also called for a restructuring and reduction in the size of the Ghanaian public service. The two ESAFS accounted for $467 million worth of commitments of financing from 1995 to 2001, but produced mixed results. While the government was able to make progress on inflation and reserve accumulation, little progress was made implementing structural reforms touching upon fiscal reform, revenue management, and accurate budgeting practices (International Monetary Fund 2003b). As well, the IMF explicitly noted that the

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[76] Jerry John Rawlings Rawlings became Head of State in Ghana as a flight lieutenant of the Ghana Air Force following a coup d'état in 1982. He served as Head of State until forming the National Democratic Congress (a political party) and being elected President in 1992 (Ghana Web 2015).

Rawlings government had provided incorrect information to the IMF during reviews of the second ESAF program (International Monetary Fund 2001b).

Loans from the IMF were buttressed by development aid from multilateral and OECD donors; mostly in the form of budget support for John Kufuor's government.[77] Although supporting the budget, donors were cognizant of the weak institutions controlling the financial management of the Ghanaian government. From 2000 to 2010, donors disbursed $39 million to public financial management reform initiatives aimed at improving government reporting, budget preparation, revenue administration, and auditing capabilities. Evaluators of these initiatives indicated that the results from these reforms were disappointing (Lawson 2012). Citing the contentious political atmosphere as the main impediment to progress, evaluators noted that the budgeting system which was part of the reform process was actually too specific and did not allow for greater strategy at the upper levels of the government.

In the early 2000s, much like Nigeria, Ghana was able to exit a significant portion of the debt that had plagued its fiscal balance sheet. From 2000 to 2006, Ghana's external debt as a proportion of its gross national income decreased from 129% to 18%. This decline was the result of the Paris Club's cancellation of Ghana's debt because Ghana was under IMF programs during this period (International Monetary Fund 2003b). As well, under the Initiative for Heavily Indebted Poor Countries (HIPC Initiative), Ghana was able to receive 100% debt relief from multilateral institutions under the Multilateral Debt Relief Initiative (International Monetary Fund 2005). According to the

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[77] Kufuor defeated John Atta Mills in the 2000 presidential election, even though Atta Mills had been picked to be Rawlings' successor in the National Democratic Congress Party.

IMF (2007), Ghana was well-positioned to improve its economic prospects despite stagnating levels of development assistance and government deficits. It was the IMF's contention that with more fiscal reforms, including a fiscal responsibility law, Ghana would maintain its positive economic trajectory.

The entire framework of how the Ghanaian economy was viewed changed in July 2007, when Dallas-based Kosmos Energy discovered oil off the shores of Ghana in the Gulf of Guinea. In the latter-half of 2007, despite the oil field having yet to be deemed commercially viable, former UN Secretary-General and Ghanaian diplomat, Kofi Annan, contacted Erik Solheim, Norway's Minister of the Environment and International Development, to discuss Norway's Oil for Development Programme and how Norway could help Ghana responsibly manage its newly found resource (Solheim 2009; Holmås and Oteng-Adjei 2012). This initial contact led to a 2008 memorandum of understanding between the Norwegian and Ghanaian governments whereby the ministries associated with Norway's offshore petroleum industry worked with IFIs and NGOs to provide advice and technical assistance to Ghana's burgeoning petroleum industry (Norad 2011). Further to this agreement, in February 2008, the Government of Ghana held the National Forum on Oil and Gas Development where international experts from Norway, the Commonwealth Secretariat, the World Bank, the IMF, Oxfam, and the EITI congregated in Accra to discuss, among other things, turning oil and gas wealth into sustainable and equitable development. Despite being funded by international donors, the forum marked the Kufuor government's openness to gather information and discuss best practices with the international community to ensure Ghana's resource management policy would be well-informed (Gary 2009). Although Kufuor's government drafted a petroleum policy

in June 2008 based on the forum's recommendations, the policy was never debated publicly nor put to the Ghanaian legislature; the momentum toward fiscal responsibility and prudential resource management waned in the second half of 2008 as Ghanaian politicians readied for elections.

President Kufuor was unable to run again due to the term limit provision in the Ghanaian constitution; however, his New Patriotic Party (NPP) had remained popular in the run-up to the election campaign despite whispers of corruption (Zoumenou 2009). Unsurprisingly, given Ghana's political history, the incumbent government's consumption increased 12% from 2007 to 2008 and the government's deficit as a percentage of the GDP increased to 14.5% from 8% (International Monetary Fund 2009a; World Bank 2015b). Therefore, while the Kufuor government and the NPP's successor candidate, Nana Akufo-Addo (2008), were emphasizing their record of transparency and accountable management of the public purse in the context of projected oil revenue, their own behaviour undermined this notion.[78] This environment led to a very close election where John Atta Mills and his National Democratic Congress (NDC) party overcame the NPP's previous popularity and gained power by winning the second round of elections by less than half a percent. Truly remarkable, and hailed internationally, was the fact that despite the razor-thin margin, there was almost no electoral violence. This is largely attributed to Akufo-Addo's decision to accept defeat within two days of the polls closing. This outcome was particularly important for Ghana's reputation as electoral violence in

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[78] In the days leading up to the election, the opposition party created controversy for the incumbent government by highlighting that the President John Kufuor (and his party) chose to build and hurriedly move into a new presidential complex that cost at least $50 million. The money came from development grants from the India government and were supposed to be for economic recovery (Zoumenou 2009).

Kenya and Zimbabwe the previous year was seen to have harmed the reputation of all African countries on the path to strengthening their democracies (*BBC* 2009).

According to the IMF (2009a), the economic situation inherited by Atta Mills was so dire that the new government requested the help of IMF staff to support preparatory work on the 2009 budget. As well, the Ghanaian government requested a Poverty Reduction and Growth Facility (PRGF) of $600 million over three years to stabilize public debt and strengthen revenue and expenditure management institutions before oil production began in 2011. The IMF's PRGF was supplemented by $300 million from the World Bank to extend Ghana's Second Growth and Poverty Reduction Strategy with particular attention on restoring budgetary discipline (World Bank 2009). With $900 million in IFI funding, new oil, and recognized pubic financial management difficulties, it is not surprising that in early 2010 it was reported that the Ghana Ministry of Finance was drafting a petroleum revenue management bill (John and Kpodo 2010).

As Ghanaians waited for their bill, civil society organizations became impatient and frustrated with their lack of inclusion in the drafting process (Publish What You Pay Ghana, ISODEC et al. 2010). In March 2010, the Civil Society Platform on Oil and Gas (CSPOG) was created and began organizing a citizen summit for June 2010 to consolidate views. In the interim, the Ministry of Finance and Economic Planning released the Ghana Petroleum Revenue Management proposal. In summarizing how the bill was created, Dr. Amoako-Tuffour (2011), the resident advisor designing the petroleum revenue management law, stated that the process began with looking at the management practices of Alaska, Alberta, Azerbaijan, Botswana, Chile, East Timor,

Nigeria, Norway, Sao Tome and Principe, and Trinidad and Tobago.[79] He also indicated

that following this review, a technical advisory team engaged in public consultations

between February and April 2010. Following the release of the proposal, the technical

advisory team met with CSPOG, the Christian Council of Churches, and the Institute of

Economic Affairs.

Dr. Amoako-Tuffuor (2016) and Dr. Mohammed Amin Adam (2016) both

indicated that during the public consultations it was evident that Ghanaians were mindful

of Nigeria's troubled history with oil and Ghana's own issues with capturing the wealth

of its mineral extraction activities. Moreover, Dr. Amoako-Tuffour highlighted that

much of the feedback he received with respect to how much of the oil revenue to save

was embedded in Ghanaian culture and the responsibility felt by Ghanaians toward future

generations. He stated that there was no support for spending all of the potential windfall

and that the main source of tension was how to disburse the revenue among the citizens

living closer to offshore production and to those living in the interior. This issue aside,

he maintained that there was strong civic support for a savings initiative.

The consultations and the draft bill eventually garnered support from Ghanaian

civil society groups as well as international observers. In a draft report commenting on

the proposed bill, which included a stabilization fund and a savings fund for future

generations, representatives from the Revenue Watch Institute (RWI) said the bill

reflected the richness of the consultations and was a sensible arrangement that followed

good international practice (Bell, Heller, and Heuty 2010). While supportive of the plan,

they also mentioned the need to remember the importance of domestic investment and

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[79] All of these countries have SWFs.

how it must remain embedded in Ghana's development strategy with a particular focus on infrastructure and human capital. Another issue raised by the RWI authors was the lack of specificity regarding conditions under which the future generations fund could or would be tapped. This issue was echoed by Atta Mills' political rival, and 2008 presidential candidate, Akufo-Addo (2010) when he charged that the lack of explanation and parsimony undermined accountability and transparency. Nevertheless, the government put the revised bill to parliament in July 2010.

Although the government wanted quick passage of the bill, the Joint Committee of Energy and Finance could not reach a consensus on an amendment to the bill regarding the use of fund assets as loan collateral. The original bill allowed the Government of Ghana to use up to seventy percent of the savings fund as collateral (Beukes 2010). The fear expressed by many observers was that Ghana had just passed through an era lacking in fiscal discipline, and the government being able to access funds for pre-election spending via fund collateralized loans undermined the entire idea behind creating the stabilization and savings funds (*The Economist Intelligence Unit* 2010). Despite these fears, the Ghanaian parliament passed the Petroleum Revenue Management Act, 2011 in early March 2011 and, later that month, deposited the first revenue from the Jubilee Oil Field as drilling having already commenced in December 2010 (Kpodo 2011). In January 2011, two months before the formal passage of the act, the World Bank approved $215 million in budget support credit citing the "submission of a Petroleum Revenue Management Bill to the Cabinet based on broad consultations with stakeholders" as a significant accomplishment under the previous World Bank funding commitment (World Bank 2011).

The Petroleum Revenue Management Act, 2011, while strong in its transparency and accountability mechanisms, has made it unlikely that the two funds created by the legislation, the Ghana Stabilization Fund (GSF) and Ghana Heritage Fund (GHF), will ever grow to be large. Although some of this is due to the rather limited size of discovered oil deposits and uncertainty as to the likelihood of further discoveries, the funding model was not created in such a way so as to encourage lucrative wealth accumulation. According to the act, seventy percent of petroleum revenues are to be split among the Ghana National Petroleum Company (GNPC) and the Annual Budget Funding Amount (ABFA) with the ABFA amount to be used for development-related expenditures. Of the remaining revenue, a minimum of thirty percent is to be deposited in the GHF with the GSF receiving the remainder. It is important to note that the stabilization fund, not the GHF, is to be tapped in cases where quarterly collected oil revenue falls below the ABFA quarterly expected amount.[80]

While the Government of Ghana has, for the most part, held to the commitments under the act, the government's behaviour has been subject to criticism. Although critical of many aspects of Ghana's petroleum revenue management, Adam (2014) took particular issue with the fact that there are no stated benchmarks to measure the performance of neither GSF nor GHF investments, as outlined in the act. While it is commendable that the Public Interest and Accountability Committee (PIAC), created under the act, publishes annual accounts of oil production and revenue management,

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[80] ABFA expected amount is based on benchmark revenue and cannot exceed 70% of petroleum revenue. Benchmark revenue calculation is the sum of expected receipts from oil and gas, expected royalties and expected dividends from the GNPC; however, it is interesting to note that the expected receipts from oil and gas are based on pumping projections and a rolling average of prices from the previous seven years. The 2015 budget benchmark oil price was $99.38 (Dzawu 2015). As of December 2015, the price of Brent crude oil had not exceeded $65.50 in 2015.

there remains no reference from which the investments should be judged. Furthermore, Adam noted that in 2012, the Minister of Finance misapplied the law and allocated more than seventy percent of benchmark revenue to the ABFA and government spending. It is perhaps unsurprising that 2012 was an election year in which Acting President John Dramani Mahama was trying to retain power.[81] He won the December 2012 election by three percentage points.

At first glance, the most fiscally imprudent step taken by the Ghanaian government with regard to the longevity of the SWFs has been the decision to cap the stabilization fund. Invoking a clause in the act, the Minister of Finance decided that the stabilization fund should not exceed $300 million, and that funds in excess should be used for debt repayment and deposited in a contingency fund. Although the desire to repay debt should be applauded, the vague nature of the contingency fund described is troubling. Furthermore, the Minister of Finance's comments came during his 2014 budget speech, a budget that outlined that the 2013 government deficit was 8.4% of GDP, not the 7.2% that had been targeted (Terkper 2013).

Analysts and leaders in civil society in Accra speculate that this cap was enacted to allow the Government of Ghana more freedom to tackle other pressing economic issues (Bekoe and Evans 2016; Adam 2016). By September 2014, deteriorating government finances meant that Ghana was back discussing a possible program with the IMF (International Monetary Fund 2014c). This meeting led to the announcement of a $918 million Extended Credit Facility being offered to the Ghanaian government (International Monetary Fund 2015c). The announcement mentioned that one purpose of

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[81] John Atta Mills had died in office in July 2012.

the program is to strengthen public financial management and enhance transparency in budget preparation. Moreover, the program is meant to aid the Government of Ghana in cutting expenditures to unencumber money for infrastructure investment, specifically in the energy industry. In July 2015, the Ghanaian parliament amended the Petroleum Revenue Management Act, 2011 to ensure that the thirty percent of revenue earmarked for the GSF and GHF would continue to flow to the funds regardless of the ABFA and, out of the ABFA, created the Ghana Infrastructure Investment Fund for the purpose of infrastructure investment (*Petroleum Revenue Management (Amendment) Act, 2015* 2015).

Although the manner in which the Government of Ghana came to creating their SWF does differ from Nigeria, there are a few striking similarities to keep in mind. Just as Nigeria created the NSIA as a response to the failure of the ECA and its overall management of its oil wealth, Ghanaian citizens and policymakers recognized that prior governments had mismanaged gold resources and wanted to make sure that such a mistake was not repeated with their oil find. Furthermore, like Nigeria, Ghana's government was enmeshed with the IFIs and donor community as these foreign entities were relied upon, not only for funding, but also technical assistance. Analyzing the creation of Ghana's SWF with the benefit of hindsight, the mere fact that Kofi Annan contacted Erik Solheim on the eve of oil production made the involvement of the Norwegian government and the recommendation that Ghana create a SWF all the more likely. Moreover, with the IMF and the World Bank preaching fiscal responsibility while providing much-needed financial assistance, it seems unlikely that Ghana could have

avoided a SWF. However, I now turn to a country that did avoid taking such a decision, despite the economics in support of it.

5.4   Egypt: Leveraged Myopia

Based on the model in Chapter 2, the case of Egypt is among the most difficult to explain. Through the entire Mubarak-led era[82] of Egypt, the statistical model indicates Egypt's macroeconomic profile was consistent with that of countries which create SWFs. Specifically, with the data showing consistent GDP growth and reliance on oil and natural gas for exports, it is surprising that there is no record of discussion of SWF creation among policymakers or journalists prior to 2013. This fact is even more surprising when it is coupled with Egypt's geographic proximity and cultural similarity to a number of countries which have created SWFs. Although the statistical testing in Chapter 3 revealed that the coefficient of this proximity variable was not statistically significant, it does seem intuitive that the Egyptian government would see SWFs prospering in the UAE, Kuwait, Saudi Arabia, Oman, Qatar, Bahrain, and Iraq–most of whom are close allies–and reflect on its own long-term fiscal interests. Furthermore, the possibility that Egyptian authorities were unaware of SWFs or the benefits of having a SWF can be dismissed as Gulf countries with SWFs accounted for 17% of Egypt's FDI inflows from 2003 to 2010; a fact acknowledged by then-Egyptian Minister of Investment Mahmoud Mohieldin in 2008 (United Nations Conference on Trade and Development 2014; Mohieldin 2008). Moreover, as Egypt engaged with the IFIs numerous times over the time period analyzed in this chapter, the fact that Egypt was, for

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[82] Hosni Mubarak served as President of Egypt from 1981 to 2011.

the most part, fiscally irresponsible during the latter stages of the Mubarak regime is puzzling. To answer these questions along with why Egypt did not create a SWF despite having the macroeconomic conditions consistent with SWF creation, it is best to look at Mubarak's ascension to power and how Egypt evolved over his tenure.

Figure 11: Calculated Posterior Probability of Egyptian SWF, 1980-2012
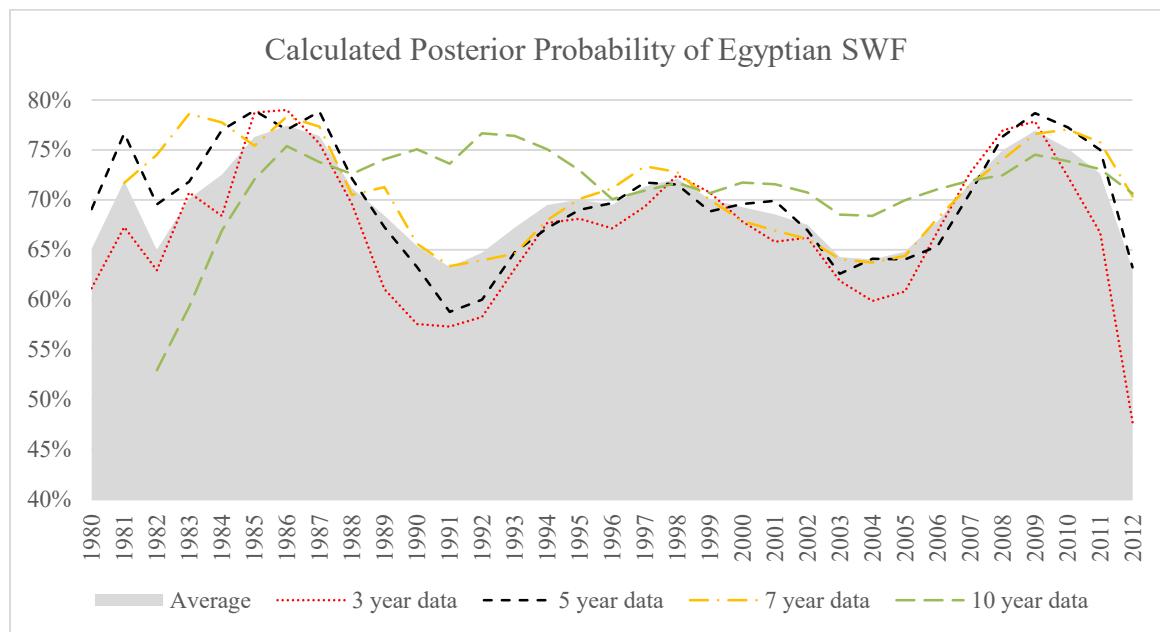
Much of Mubarak's governing style was informed by the president for whom he served as vice-president, Anwar Sadat. Under Sadat, the Egyptian economy moved away from the socialist policies of Gamal Abd al-Nasser and pursued *Infitah*, the Open Door. Sadat's regime pursued the notion that the government needed to create conditions to attract foreign investment capital and liberalize the economy. Furthermore, the October

War[83] of 1973 against Israel–an attempt by Egypt to retake the Sinai Peninsula and Golan Heights–endeared the Egyptian government to Arab bilateral donors in the immediate years following the war. Jabber (1986) reported that from 1973 to 1976, Egypt received $5.5 billion in bilateral aid from Saudi Arabia, Kuwait, the UAE, Qatar, and multilateral Arab funds. However, as Sadat pivoted toward negotiating a deeper peace with Israel, Egypt's position among fellow Arab countries greatly diminished and political and economic ties weakened. Fortunately for Egypt, the subsequent loss of bilateral aid from Arab countries was immediately offset by bilateral aid from the United States; a strong, vocal proponent of peace between Egypt and Israel (Jabber 1986).

In September 1978, Sadat and Israeli Prime Minister Menachem Begin signed the Camp David Accords, the precursor to the 1979 Egypt-Israel Peace Treaty. Under the treaty, Israel withdrew from the Sinai (which it had captured in the Six-Day War of 1967), Egypt agreed to leave the Sinai demilitarized, Israeli ships were granted free passage through the Suez Canal, and Egypt became the first Arab country to recognize Israel (*Treaty of Peace between the Arab Republic of Egypt and the State of Israel* 1979). The agreement, unpopular in other Arab countries, added further pressure on Sadat's already tenuous domestic standing as his regime was already unpopular due the unequal distribution of the proceeds from the *Infitah* program and controversial measures to reduce subsidies. On October 6, 1981, Sadat was assassinated, for what many say was his signing of the Egypt-Israel Peace Treaty ("The Assassination of Egypt's President Sadat" 2015). Although the assassins were part of an Islamic militant group of Egyptian

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[83] Also known as the Arab-Israeli War, Ramadan War or Yom Kippur War

origin, it was reported that Sadat's assassination was also celebrated in the streets of Beirut and Damascus (MacManus 2010).

Although wounded in the assassination, Vice-President Hosni Mubarak took power following Sadat's death. Mubarak became the leader of a people disenchanted with the *Infitah* and skeptical of their new geopolitical allies notably, the United States. In his first few years in office, Mubarak was conscientious in following the Egypt-Israel Peace Treaty in name only, while reorienting foreign policy toward Arab allies. To appease the domestic population, it was reported that the press was given more freedom, political controls were relaxed, and efforts to curb corruption were made. While ties with the United States loosened over these first few years, the United States remained Egypt's largest benefactor over this period (Jabber 1986). Even though domestic political pressures eased, Mubarak faced growing government debt and an economy with serious structural issues. By 1985, Egypt's external debt was 115% of the country's gross national income despite having annual GDP growth that averaged 7.4% over the five previous years. This crisis situation was largely due to the government's imposition of price controls, inefficient subsidies, quotas placed on farmers, and other forms of fiscal mismanagement (Sullivan 1990). Although it had received over $1 billion annually from the United States to uphold the Egypt-Israel Treaty, in 1986 and 1987, Egypt was left negotiating with the IMF.

It is important to note that this mid-1980s negotiation between the IMF and Egypt was not Egypt's first IMF program. Under Sadat, Egypt received its first loan in 1976 to combat increased inflation and current account deficits (Harrigan, Wang, and El-Said 2005). As a condition of the loan, Egypt removed subsidies on basic foodstuffs (flour,

rice and cooking oil) spurring riots which led to the death of seventy-nine Egyptians and caused the government to be wary of future engagements with the IFIs and the conditions which would result (Eilts 1988; Werr 2016). Nevertheless, as oil prices declined in the mid-1980s, foreign exchange reserves decreased and with the possibility of a debt restructuring agreement with the Paris Club, it was apparent that an IMF loan would be beneficial. As such, in 1987, the IMF and Egypt concluded a Standby Agreement (SBA) worth $327 million over two years, conditional upon a number of reforms. Among these reforms were increased domestic energy prices, the removal of quotas, and a devaluation of the Egyptian Pound. As a result of the IMF program, almost $7.1 billion of debt held by Paris Club members was rescheduled. The IMF soon announced that the SBA would be discontinued due to Egypt's lack of commitment to implementing the reforms set out by the conditions. As a result, Egypt received just over half the amount originally stipulated in the SBA (Abdel-Khalek 2001).

In his assessment of the 1980s reforms in Egypt, Richards (1991) blamed domestic blockages and the desire of interest groups to derive "strategic rents" as impediments to reform. Richards stated that public sector actors had little interest in ceding control over policy creation and implementation and elites in the private sector profited from the large government bureaucracy. Moreover, with policymakers remembering the bread riots of 1977 and fearing the possible increasing influence of a Muslim opposition in the form of the Muslim Brotherhood; imposing stringent, unpopular reforms was not an attractive option to Mubarak's government. The second pillar of Richards' argument is based on the Egyptian government benefiting from its location in the region to leverage its influence on the United States and, subsequently, the

IMF. Upon the cancellation of the 1987 SBA, Egypt entered into new negotiations with the IMF and the World Bank. Richards reported that Egyptian government officials were particularly adept at presenting false numbers which would require verification, hosting meetings in which government ministers would dissent amongst themselves, and creating ministerial committees which had overlapping mandates to confuse outsiders. It was Richards' contention that these distractions allowed Mubarak enough time to persuade the Bush administration to convince the IMF to engage with Egypt on terms more favourable to the Egyptians.

As the economy of Egypt struggled through 1989 and into the early part of 1990 amid ongoing IMF negotiations, the Mubarak regime found itself accumulating more leverage due to its relationship with the United States and the simmering tension between Iraq and the United States. By July 1990, Saddam Hussein, President of Iraq, was trying to intimidate Kuwait and the UAE by explicitly stating that the oil production policies of the two, smaller, less-militarized countries were influenced by the United States (Ibrahim 1990). After Iraq and Kuwait failed to reach an agreement over oil proceeds from the Rumaila oil field near the Iraq-Kuwait border, Hussein ordered the invasion of Kuwait in August 1990 (Finlan 2003). The United States, looking for allies in the region and also wanting to maintain regional stability to the greatest degree possible, began to lobby the IMF and the World Bank on behalf of the Egyptian cause. The result of this lobbying was a 1991 IMF agreement, judged to have taken a far more lenient tone than that of previous IMF Article IV consultations (Momani 2004). With this agreement in hand, the Mubarak regime successfully negotiated a $19.6 billion debt forgiveness package with

the Paris Club and a restructuring of outstanding debt (Williamson and Khan 2011).[84]

For its part, the Government of Egypt sent troops to Kuwait, providing an Arab ally to the American intervention in the Middle East (Momani 2004).

It was unsurprising, given the ways in which the negotiations had went, that the Government of Egypt only implemented some of the reforms laid out in the 1991 agreement. Nevertheless, through the 1990s, the IMF and Egypt came to two more agreements; one in 1993 and another in 1996. According to Momani (2004), who compared the 1993 and 1996 agreements to the 1987 and 1991 agreements, the IMF was much stricter in the conditions that they set forth in the later agreements and the Government of Egypt's adherence to these conditions improved. For its part, the IMF seemed pleased with many of the reforms implemented, while still calling for further trade liberalization, more privatization, and deeper fiscal reforms (Handy and Blsat 1997). By 1999, Egypt was deemed the IMF's "model pupil" as it continued reforms while not accessing the funds under the 1996 agreement and was seen as no longer in need of IMF loans (*The Economist* 1999).

Despite the positive assessments by the IMF and others, some noted that the IMF programs did little except respond to potential crises. In his work reviewing the IMF programs of the 1990s, Zaki (2001) outlined that although the programs were successful in achieving their objectives, the objectives did little to incentivize private-sector growth; seen by Zaki as the catalyst for development. Specifically, Zaki cited bureaucratic and institutional impediments, including the centralization of power and an arbitrary

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[84] This action is on top of the United States government cancelling 100 percent of bilateral military debt of $7.1 billion which was costing the Egyptian government $700 million to service (Williamson and Khan 2011).

judiciary, as key impediments to private sector growth or FDI inflows following the IMF

reforms. Furthermore, he noted that it was the Egyptian Pound's devaluation and

increased domestic consumption that led to the observed economic growth and that

sustained long-term growth would be much harder to attain. Nagarajan (2013) noted that

while economic growth increased, so did poverty and unemployment. This remark

dovetailed with the work of Mitchell (1999) who reported many of the state-owned

enterprises that were privatized ended up in the hands of a few wealthy Egyptian families

and that real household consumption per capita declined in the first seven years of the

1990s.

These troubling economic trends continued into the 2000s. Morsy, Levy, and

Sanchez (2014) found that despite economic growth in the 2000s, high unemployment

rates remained stagnant, the government was unable to alleviate poverty, and productivity

remained low. They stated that although the potential for productivity gains existed,

limited openness to trade, an inability or lack of desire to diversify exports, and deficient

access to finance hindered broad economic growth. Among other reforms, the authors

pointed to the need to remove energy subsidies to incentivize labour-intensive

manufacturing activities and investment outside the metropolises of Cairo and Alexandria

as crucial to broader growth. In 2005, rural areas had a poverty rate of almost 52 percent,

double the rate of urban areas. It was evident by the mid-2000s that any economic gains

made by Egypt were being centralized in the cities and among the elite in those cities

(Alissa 2007). Analysts of the Egyptian economy indicated that many of the issues

associated with these reforms were due to the ineptness of the Egyptian bureaucracy over

this time period. Even as a new wave of liberal policymakers took the reins in the mid-

2000s, vested interests in the bureaucracy and the military had little interest in changing the status quo (Blair 2016; Werr 2016).

Another reason cited for Egypt's inability to modernize into a more responsive, international economy has been the Egyptian government's inability or unwillingness to value international standing. Sherif El Diwany (2016), an economic analyst and consultant to Egyptian firms, stated that the Government of Egypt had been and remains far more interested in investing in national projects in which Egyptians can take pride than creating a SWF of foreign holdings. It is his contention that projects such as the Suez Canal expansion, the 2015 opening of which was declared a national public holiday, are used to appease Egyptian citizens by appealing to their nationalistic tendencies. Investments overseas or efforts to diversify the national economy do not resonate the same way and remain undiscussed.

With the IMF on the sidelines of the Egyptian economy for most of the 2000s, much of Egypt's financing gap was filled by bilateral donors. The average annual aid commitment to Egypt from 2000 to 2009 was $1.375 billion; on top of the $1.3 billion Egypt received from the United States as military aid annually (Organisation for Economic Co-Operation and Development 2015; Security Assistance Monitor 2015). While some donors tried to tie a portion of their official development assistance to sectoral budget support to ensure that the government had a role in pro-poor development programs, USAID and the World Bank were far more apt to fund individual projects. As well, evaluators of ODA programs to Egypt remarked that public finance management programs were only coming online in the latter half of the 2000s, despite the fact that they were desperately needed (Aide à la Décision Economique Belgium 2010).

Figure 12: Aid Commitments to Egypt, 1995-2012
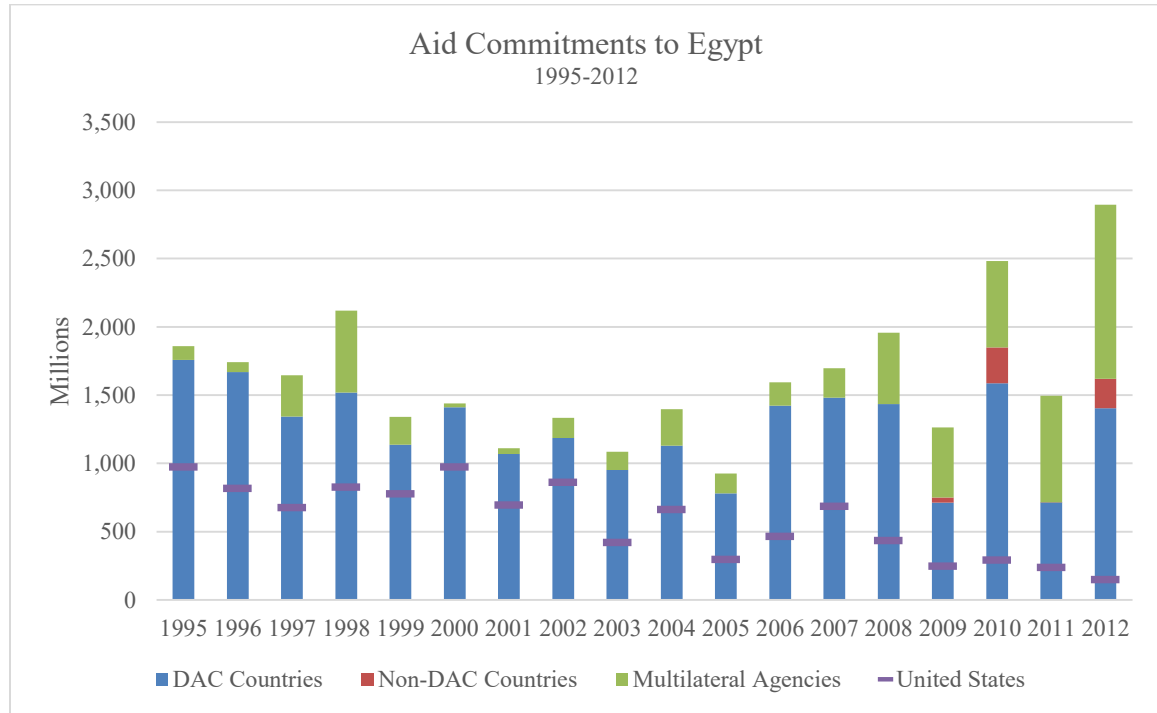
Hosni Mubarak presided over the stunted economic transformation and successfully leveraged Egypt's geographic and historical position in the Arab World for Egypt's benefit. However, as the 2000s wore on, it became increasingly noticeable that economic benefits from the transformation were not equally distributed amongst all Egyptians and fissures began to appear. Protests and demonstrations increased as workers felt that many of their labour rights were being stripped away, while rural land continued to be privatized, leaving many landless and without a livelihood. As the frequency and size of protests increased, different interest groups began to network and unite in their desire to see meaningful political and economic reform in Egypt. While some interest groups focused on corruption under Mubarak and the regime's use of police

brutality to maintain order, other groups were more interested in the ways that the economic policies had not trickled down to them. No matter their individual cause, these diverse groups congregated on Tahrir Square demanding a change in the country's leadership. On February 11, 2011, after 18 days of protest in Tahrir Square, Hosni Mubarak resigned; he had been in power for 10,712 days (Joya 2011).

The overthrow of Mubarak, the interim military-led government, the election of Mohammad Morsi in 2012, his subsequent removal in 2013, and the election of Abdel Fattah El-Sisi in 2014 left the Egyptian economy in tatters. The period from 2011 to El-Sisi's election in 2014 was characterized by high government deficits due to lower government revenues as foreign tourists avoided the country. Wanting to maintain any semblance of peace, successive governments were hesitant to discuss any form of lowering subsidies on a number of goods, including bread. In 2012, the government's deficit was largely funded by aid packages from Qatar, Turkey, and Saudi Arabia, supporters of the Morsi government, but international reserves continued to plummet over this time period. Although the IMF offered a substantial SBA to provide the Egyptian government some relief, the IMF offer was retracted when Morsi's government was unable to present a coherent vision for the Egyptian economy (*The Economist* 2013).

When Egyptians went to the polls to elect a president in May 2014, it was obvious that the electorate sought a return to political stability. Although having little in the way of campaign promises or an electoral platform, Egyptians elected El-Sisi with over 96% of the vote.[85] Riding this popularity, El-Sisi had the political coverage to decrease the

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[85] El-Sisi had served as Minister of Defense under Mohamad Morsi, but was instrumental in responding to the demand of the Egyptian people and removing Morsi from office (Saleh and Graff 2013).

government subsidy on fuel as a way to save on government expenditures (Adly 2014).[86]

Praised by Managing Director of the IMF Christine Lagarde (2015), it is thought that this

measure and other reforms could be precursors to an IMF program in 2016 (Rollins

2014). Given Egypt's predicament in 2015, with dwindling international reserves and

limited access to Gulf financial aid due to the domestic financial troubles of Gulf

countries[87], it seems likely that an IMF program would be needed if Egypt has a chance

to regain investor confidence and catalyze economic growth.

Perhaps to demonstrate the government's commitment to these goals, in June

2015, the Planning Minister of Egypt, Ashraf El-Araby, announced that Egypt's Cabinet

had formally approved plans to set up a sovereign fund to be called *Amlak* which

translates to "your money" in English. This announcement was followed by a statement

by the Minster of Industry and Trade, Mounir Fakhry Abdel Nour, that Russian and Arab

SWFs would have a role in establishing the fund (Jacobs 2015). Although details

remained sparse, El-Araby announced that the government had allotted about $640

million[88] to the fund, with an equal amount to come from unused assets ($1.28 billion in

total). The minister also said that advisors were studying the necessary fiscal policies and

industries to be targeted as the government wanted investment operations to begin in

early 2016 (Farid 2015). Given that Egypt's first elected parliament under President El-

Sisi only sat for the first time on January 10, 2016, it seems improbable that *Amlak* would

be entrenched in law to meet this aggressive timeline. Moreover, with very little detail

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[86] Fuel subsidies cost the government 6.3% of GDP in 2013-2014 (International Monetary Fund 2015b).
[87] In 2015, Gulf countries deposited $6 billion in the Central Bank of Egypt to aid declining international reserves (Feteha 2015).
[88] Five billion Egyptian pounds.

regarding *Amlak*'s mandate, it remains to be seen whether it will actually be a SWF or a domestic development fund to co-fund domestic projects with foreign investors. Again, until further details emerge, any speculation as to the benefits of an Egyptian SWF is just that: speculation.

As a country deeply tied to its fellow Arab states with SWFs, the reason that Egypt did not emulate their Arab allies earlier cannot be known with certainty. However, knowing that Egypt's geographical positioning in the Middle East allowed the government to continually receive aid from bilateral donors to maintain peace with Israel is informative. As Momani (2004) outlined in her work, the IFIs' level of scrutiny over Egypt's fiscal policies varied during the Mubarak era and bilateral donor support for public fiscal management reform came too late in Mubarak's tenure to make a difference. At that point, the evidence of uneven benefits from the implementation of IMF-recommended fiscal reforms informed donors' decision to shift their focus to individual programs, aiding citizens, and decreasing donor influence over the Egyptian government. Because of its place on the map, Mubarak's government received outside money without improving the lot of its citizens and when the situation of its citizens became dire, government fiscal mismanagement continued to be ignored.

5.5   Why Nigeria and Ghana, but not Egypt?

From Figure 13, it is evident that Nigeria's creation of a SWF is consistent with the predictions made by the model from Chapter 2, but that the actions of Ghana and the inaction of Egypt were not. The most complete explanation for this divergence among these three poorer countries lies at the nexus of their level of engagement with the IFIs,

the timing of this engagement, and their differing abilities to leverage their geopolitical influence.

Although the statistical work in Chapter 4 does not suggest IFI influence on the SWF creation process, it is clear from the preceding explanations that the IFIs and bilateral donors were instrumental in the creation of the SWFs in Nigeria and Ghana. In the case of Nigeria, a former IMF official working on Nigeria at the time stated that the IMF was instrumental in the creation of the ECA (Ahmad 2016). With respect to Ghana, the Norwegian government, USAID, and the IMF all recommended a Ghanaian SWF (Bekoe and Evans 2016; Bridgewater 2008). Moreover, by making access to grants and credit conditional on improvements to budgeting and transparency, while admonishing pro-cyclical spending, the IFIs were explicitly telling these two countries that fiscal responsibility was needed. While it could be argued that there were other fiscal policy tools available to Ghana and Nigeria that would satisfy the IFIs, it is also true that it much more politically expedient for a government to present a policy of "saving for a rainy day" or transferring wealth to the future than, for example, to explain expenditure rules based on past debts. This notion is particularly powerful when coupled with the domestic sentiments in Nigeria and Ghana that not much had come from the huge accumulation of debt, and that their government had already mismanaged previous oil or mineral resources.

Figure 13: Calculated Posterior Probability of SWF Creation

Calculated Posterior Probability of SWF Creation
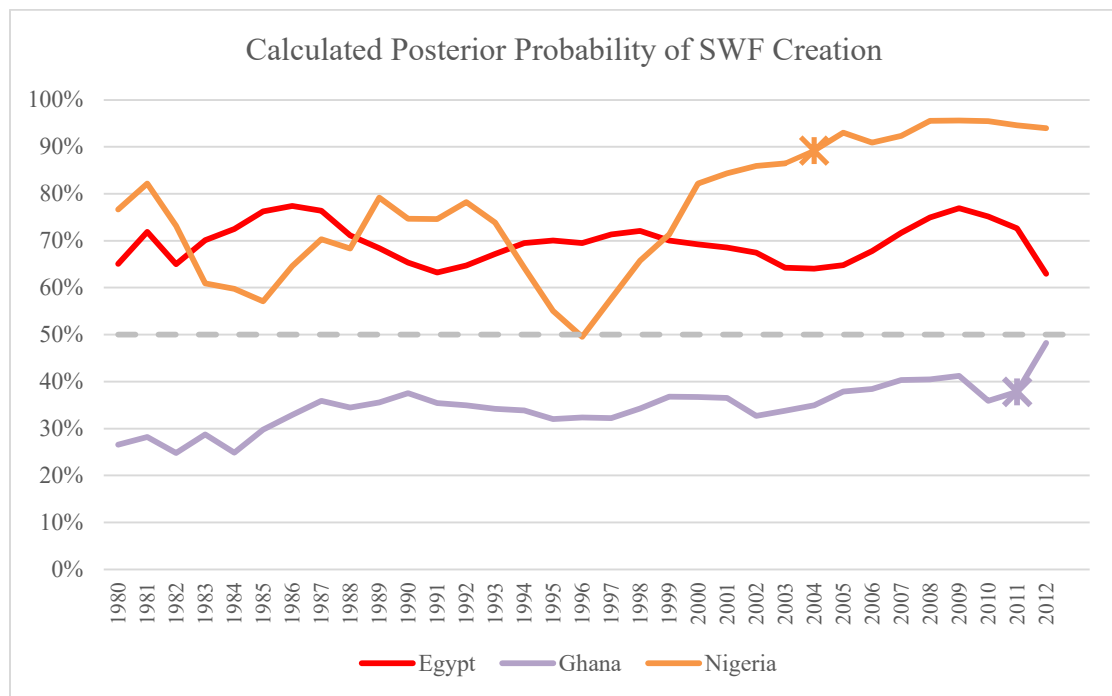
Moreover, it is important to look at the timing of the IFI interventions in the three

countries. The IMF did not have another program with Egypt after 1996. In 1996,

Rozanov (2005) had yet to coin the term "sovereign wealth fund" and there were only

twelve countries having what are now considered to be SWFs. By 2004, when Nigeria

created the ECA, twenty-six countries had SWFs; for Ghana in 2011, it was forty-two

countries. This timing speaks directly to three ways indicated by Dobbins, Simmons, and

Garrett (2007) by which policies are diffused: learning, emulation, and coercion. In the

cases of Nigeria and Ghana, I argue that these diffusion mechanisms were not mutually

exclusive and were the catalyst for SWF adoption once the macroeconomic determinants

were recognized. For Egypt, without the influence of the IFIs, a desire to emulate or

learn from others, even if present, was not strong enough for the Egyptian government to consider a SWF.

For Nigeria, the progression from not having a SWF to the ECA to the NSIA demonstrates the impact of coercion and learning, as well as emulation. From the work above, it is clear that Nigeria needed to capitulate, at least on paper, to the IMF and the World Bank's demands for fiscal responsibility if they were going to get the much-need IMF program. Again, the IMF program was needed to negotiate with the Paris Club donors and receive a reprieve from the immense debt that Nigeria had accumulated under previous regimes. However, as the ECA was never codified in law, it was subject to the same politicized spending behaviour as the general budget. Learning from the problems associated with the ECA, the Nigerian government, in its creation of the NSIA, responded to the calls for a more transparent and accountable SWF entrenched in law (Gillies 2010). Moreover, Finance Minister Olusegun Aganga vocalized Nigeria's desire to emulate other OPEC countries by creating a SWF; pointing out on numerous occasions that Nigeria was the only OPEC member without a SWF, and that a SWF would aid the government in having a stronger fiscal framework (Akogun 2010).

Although Ghana did not follow the same path as Nigeria, it is evident that the IFIs and bilateral donors were influential in the country's decision to create a SWF. In a cable from Accra back to Washington, then-American ambassador Pamela Bridgewater (2008) stated that a Ghanaian revenue stabilization fund was suggested by USAID, the IMF, and others, with the Government of Ghana being receptive to the idea. She also stated that a USAID advisor to the Ghanaian Ministry of Finance was drafting a revenue stabilization fund proposal to be approved by the Minister of Finance at the Minister's request. Given

the IMF and the World Bank's relationship with Ghana as detailed above, it is reasonable

to think that a plan supported by the IMF would have had significant traction with the

Government of Ghana.

It is also important to note that many politicians and columnists were using the

poor petroleum revenue management in neighbouring Nigeria as an important lesson for

Ghana (Rice 2007; *The Economist* 2015). Having seen how Nigeria had struggled to

translate its oil from curse to blessing, Ghana was determined to learn from the mistakes

of Nigeria's informal ECA and create a SWF with legislative backing. For this reason, it

is not surprising that the Government of Ghana engaged with outside entities, including

the Norwegian government, to ensure that their plan to manage oil revenues emulated

best practices. Although it can be questioned as to whether the Ghanaian funds actually

deliver on this goal and whether a SWF was actually needed based on the economic

profile of the country, it is evident that the Ghanaian SWF is representative of

international policy diffusion via coercion, learning, and emulation once policymakers

identified the Ghanaian economic imperatives as sufficient to consider a SWF.

In the case of Egypt, it is apparent that in the 2000s, during the period when the

number of SWFs was growing, the IMF and the World Bank had no real influence on the

Government of Egypt. Up until the 2011 revolution, the IFIs were involved in financing

projects and supporting development programs, but nothing on a scale that would have

caused the Egyptian government to alter its fiscal policies. Moreover, the amount of

financial support received from the United States and other bilateral donors insulated

Egypt from the IFIs and possible pressures to adopt policies reflective of countries with

its economic profile. The pressure on the Mubarak regime to be viewed as stewards of

good economic management was much less than that of their counterparts in Ghana and

Nigeria. Given Ghana and Nigeria's commitments to democracy, both governments

needed to be responsive to sub-national politicians and citizens to retain power; among

which was the desire of citizens to finally have a government that can properly harness

extractive wealth. With constitutions that enforced presidential term limits, political

contestation required Ghanaian and Nigerian politicians to at least engage in discussions

of fiscal responsibility. Mubarak's regime in Egypt was far more concerned with

placating the elite with little political recourse for those not receiving these benefits.

With the business elite satisfied and the military–an immense presence in Egypt–being

well-funded by the United States, there was little need for the Mubarak government to

respond to international best practices with respect to a whole host of policies, let alone

fiscal responsibility. It was only until the regime's repression became too much that

Egyptians went to the streets demanding a more equitable system.

　　　One issue that has only been mentioned tangentially thus far is the actual

production and consumption of oil and natural gas in these countries with respect to their

likelihood of creating a SWF. As the predicted probability that these three countries

would create a SWF is largely driven by the share of fuel exports as a share of

merchandise exports, it is important to analyze whether their patterns of production and

consumption changed over time. For Nigeria, it is remarkable that as crude oil

production increased from 2 million to 2.5 million barrels per day (bpd) from 2000 to

2012, consumption only increased by 33 thousand bpd to 279 thousand bpd. This huge

difference between production and consumption explains why oil remained Nigeria's

most important export. Differently, production and consumption in Ghana never peaked

over 80 thousand bpd, with production only catching up to consumption in 2011 once the

Jubilee Oil Field was online. Egypt, on the other hand, has seen its production of crude

oil remain stagnant since 2000, averaging 720 thousand bpd, whereas consumption rose

by almost 40% from 2000 to 2012; greatly outstripping production (United States Energy

Information Administration 2015a). This increase in consumption is stark when

compared to Nigeria and Ghana which did not increase their consumption in the same

manner, despite both countries experiencing higher-than-Egypt population growth and

higher annual GDP growth over the same time period (World Bank 2015a).

Much of the difference between the countries' consumption can be attributed to

two main factors. The first is that Egypt, unlike Nigeria and Ghana, has extensive

refining capacity. Due to violent disruptions in Nigeria and the relative newness of the

Ghana petroleum industry, Egypt refines a larger amount of crude oil and processes more

natural gas for domestic use than the other two countries (United States Energy

Information Administration 2015c; United States Energy Information Administration

2015b; United States Energy Information Administration 2015d). The second factor

contributing to higher Egyptian consumption is that Egyptians pay less for a liter of fuel

and have more cars per 1000 people than Nigeria and Ghana. In essence, Egyptians have

a greater opportunity to consume more of what they produce, undermining the

government's ability to conserve its natural resource, or monetize the resource and save it

for a rainy day (World Bank 2013). Although Egypt recently relaxed its fuel subsidy,

Ghana and Nigeria have also recently taken similar decisions, making it unlikely the

differences among the three countries will change in the near future; a future that the

governments of Nigeria and Ghana have pledged to save toward.

5.6   Nigeria and Ghana: The Past and Future Informing SWF Behaviour?

The preceding sections looked at the factors which led Nigeria and Ghana to create SWFs, but did not focus on the different approaches used by each to pursue this strategy. For Nigeria, the follow-up to the ECA, the NSIA was created to oversee three separate funds with three different mandates. Under the legislation passed by the Nigerian government, twenty percent of funds allocated to the NSIA were to be allocated to the Stabilization Fund, with the other eighty percent of funds split equally among the Future Generations Fund and the Infrastructure Fund. Beyond the controversial initial funding of the $1 billion, the NSIA Act called for the residual revenue from the Federation Account[89] over the amount expected based on oil price projections (Nigeria Sovereign Investment Authority 2015b). As mentioned earlier, due to the unexpected drop in oil prices, the NSIA has only ever received one injection of funding outside of its seed funding; a one-off installment based on a Eurobond issued by the government.

The Government of Ghana has followed a different path and, to a certain extent, has kept oil revenue off the government budget. By methodically reporting the revenue from each lift from the various oil fields, the Ghanaians have followed through on the original allocation model of the Petroleum Revenue Management Act (PRMA). As of the end of 2014, Ghana's Stabilization Fund (GSF) and Heritage Fund (GHF) have received thirty percent of petroleum revenue with the national oil company receiving another thirty percent and the Annual Budget Funding Amount (ABFA) being allocated

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[89] The Federation Account is the account holding the preponderance of revenue derived from government operations, mostly revenue from oil extraction activities (Akindele, Olaopa, and Obiyan 2002). This amount is split between the federal, state and local governments based on a prescribed formula.

the remaining forty percent (Public Interest and Accountability Committee 2014). This type of allocation is not the case in Nigeria where the annual budgets at the federal, state, and local levels are tied to their respective percentages of the benchmark price of oil and oil revenue remains a major part of their general budgets. As a result, the contributions to the Ghanaian funds have continued, despite lower oil prices, whereas contributions to the NSIA have stagnated.

The split between the GSF and the GHF under the original PRMA outlined that the GHF would receive thirty percent of funds allocated to the SWFs and the GSF would receive seventy percent. However, as noted above, the Ministry of Finance capped the GSF at $300 million and an amendment to the PRMA introduced a third fund, the Ghana Infrastructure Investment Fund. Nevertheless, the amendment stipulates that funding for the infrastructure fund will come from the ABFA, to a maximum of twenty-five percent of the ABFA, meaning the funds allocated to the GSF and the GHF will remain thirty percent of petroleum revenue (*Petroleum Revenue Management (Amendment) Act, 2015* 2015). As the $300 million cap was not codified in the amendment, there is no way of knowing whether the GSF will continue to grow or not, but it is likely that the GHF and the new infrastructure fund will increase.

There are three particularly intriguing points regarding the different approaches taken by Nigeria and Ghana in designing their SWFs. First is the difference amongst the stabilization funds. Nigeria, with an economy much more reliant on oil extraction, has only allocated twenty percent of their residual revenue to stabilization.[90] According to

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[90] Residual revenue is the oil revenue accumulated in excess of the budgeted amount, with the budgeted amount based on a benchmark price.

the NSIA's 2014 Annual Report, the Nigerian government's 2015 budget, and my

calculations, the amount in the stabilization fund is worth 0.8% of projected 2015

expenditures (Nigeria Sovereign Investment Authority 2015a; PricewaterhouseCoopers

Limited 2015). Ghana has been more aggressive in their stabilization savings, but its

stabilization fund, capped at $300 million, would still only cover 1.9% of 2015 projected

expenditures (Public Interest and Accountability Committee 2014;

PricewaterhouseCoopers Limited 2014). Furthermore, it can only be accessed to stabilize

oil revenues, not the wider economy (Bekoe and Evans 2016; Adam 2016). If the price

of gold or cocoa were to plummet, but the price of oil was to remain stable, the

stabilization fund could not be employed to stabilize the revenues from these other

sectors. Although saving for future generations and investing in infrastructure are

important, such a small stabilization fund and the rules limiting its usage are short-

sighted. Yet, as the Ghanaian economy is far more diversified than Nigeria and as the

stabilization fund is–in legislation–more decoupled from the price of a barrel oil, it is

likely that Ghana's goal of stabilization is more attainable than the stabilization goal of its

Nigerian neighbours.

The second intriguing point of divergence between the two countries is the

transparency of their respective funds. Although the management of the Ghanaian funds

has been relatively open and transparent with regard to how the revenue from the

different streams are derived and divided among the funds, the Auditor General for

Ghana and others have been critical of the lack of benchmarking for the investments

made. As well, there is a lack of detail regarding the types of investments undertaken by

the different funds (Quartey 2015). Simply putting bonds and treasuries as descriptions

of investments does little to inform stakeholders about the quality of investment or the investment horizon. In this respect, the NSIA is vastly superior. The NSIA's annual reports provide a detailed breakdown of the investments made, why the asset mixes differ between funds, the rationale for liquidity choices, and a whole host of other details making it among the most transparent SWFs in the world. Unfortunately, as the funding for the NSIA is based on the amount of excess in the government budget, which is based on a benchmark oil price chosen behind closed doors, there are elements of the NSIA's operations which are not accountable or transparent through no fault of the actual leadership of the NSIA.

A final difference between the two countries relates to the urgency with which the two countries decided to create savings mechanisms, and the urgency to begin accumulation. According to the EIA, in 2013, Nigeria produced twenty-three times as much crude oil as Ghana, while only consuming four times more. It is estimated that Nigeria has 37 billion barrels of proven crude oil reserves waiting to be drilled; Ghana has 700 million barrels of proven reserves (United States Energy Information Administration 2015a). For the Ghanaian government there is greater urgency to take advantage of the Jubilee Oil Field and its limited reserve; a fact exemplified by Kofi Annan's call to Erik Solheim even before the Jubilee field reserves were proven. Given Nigeria's post-colonial history and federal system, it is no surprise that imposing new constraints on how to allocate oil revenue was a difficult process and that the savings rates were not nearly as aggressive as those of its Ghanaian neighbours.

5.7 Concluding Remarks

In the case of Egypt, this chapter has shown that due to its strategic importance to the United States, there was little in the way of foreign influence pressuring the Egyptian government to reform after the Camp David Accords. Additionally, the Egyptian government was under no real domestic pressure to capitalize on and distribute their natural resource wealth as the government was focused on placating business elites while offering subsidized goods, including fuel, to the poor and impoverished. By retaining a stranglehold on power, there was little impetus for the Mubarak government to emulate or learn from their Arab allies by creating a SWF to manage their revenues from fuel resources. Therefore, while the economics over much of Mubarak's regime pointed to creating a SWF, there was no trigger. After the fall of Mubarak, chaos ensued and it was only after the inauguration of President El-Sisi that long-term economic planning regained a foothold. Unfortunately, current production and consumption figures indicate that Egypt has likely missed its opportunity to meaningfully stabilize its natural resource revenue streams or save the depleting resource by monetizing the proceeds and investing for the future.

For Nigeria and Ghana, a combination of factors: the influence of the IFIs and bilateral donors; learning from past experiences; and wanting to emulate best practices, have all been instrumental in the SWF creation process. In Nigeria, the desire to resolve debt issues, the subsequent troubles associated with the creation and management of the ECA, and continued engagement with the IFIs led Nigeria to create one of the most transparent SWFs in existence. For a country that has long been synonymous with corruption, particularly in the oil industry, the NSIA is an exemplar of good management.

The outstanding issue is how the Nigerian government will take steps to ween its government off of revenue from oil extraction so that it can take some of the proceeds of that same oil extraction to stabilize government budgets when needed, save for future generations, and invest in much-needed infrastructure. The NSIA was a response to the flaws of the ECA and its codification in Nigerian law implies that it will remain an important part of Nigeria's plan for fiscal responsibility if oil prices rebound.

In the case of Ghana, the discovery of oil later in the development cycle has helped the government be more aggressive in accumulating wealth in its SWF. Learning from its own challenges related to the management of its gold and cocoa sectors, as well as seeing the struggles of neighbouring Nigeria, Ghana was receptive to policy advice from the IFIs and bilateral donors. Compounding the import of this advice was the fact that Ghana had a long history of good relations with the IFIs and the donor community. Thus, when the IFIs called for greater fiscal responsibility after oil was found in the Gulf of Guinea, Ghana was quick to engage with bilateral donors to learn best practices of petroleum management. Furthermore, studies initiated by Ghanaian policymakers to investigate different petroleum management options targeted SWF-having countries. It was evident from the start of the process that a SWF was being sought so as to learn from the past and emulate those countries seen to be correctly managing their oil resources. Although the model developed in Chapter 2 questions whether the macroeconomics of Ghana in the lead-up to oil production really warranted a SWF, the openness and transparency of how the oil-generated revenue is allocated ensures that there will continue to be robust debate regarding the Government of Ghana's spending and investing decisions.

This chapter is an investigation of the domestic circumstances which either led or inhibited Egypt, Ghana, and Nigeria to create a SWF. It was shown that, for poorer countries, the IFIs and bilateral donors have employed lending agreements, credit facilities, and other funding mechanisms to encourage fiscal responsibility and, ultimately, a SWF. More recently, the IFIs and donors have buttressed this encouragement with technical advice as to how the SWF should be set up and managed (Bridgewater 2008; Bekoe and Evans 2016). It is evident from these countries that a combination of soft coercion, a desire to emulate, and learning from the country's own past or from the mistakes of other countries have acted in concert to catalyze the policy diffusion process. However, in cases where poor countries are not as susceptible to these diffusion mechanisms–particularly influence from IFIs and donors–domestic stakeholders and the retention of power outweigh the potential benefits of long-term fiscal responsibility.

The findings of this chapter are intriguing when put in context with the previous chapters. As the coefficients of the IFI influence variables were found not to be statistically significant in the Chapter 3 model which studied the entire population of SWF-creating countries, there is dissonance between those findings and the findings of this chapter. I contend that this divergence underlines the importance of mixed method studies and does not negate the findings of previous chapters. Capturing the influence of the IFIs on countries' policies is difficult because while there have been many studies on IFI programs catalyzing macroeconomic changes (Barro and Lee 2005; Bird and Rowlands 2008; Bird and Rowlands 2009), there has been one study of how SWFs catalyze similar shifts (Coulibaly, Omgba, and Raymond 2015). Therefore, the

traditional method used to capture the influence or effect of IFI advice is less compatible

with this study. It is not possible to state that an IFI program helped create a SWF which

had a specific set of observed outcomes for the country, because there are not enough

studies of the observed outcomes following SWF creation. The variables employed in

Chapter 3 to capture the influence of IFIs were simple, but a best effort to create indicator

variables which would speak to the amount of leverage IFIs had with member countries

and the frequency of their discussions. This chapter was an inductive investigation of the

influences not captured in previous statistical models which impact the SWF decisions of

poorer countries. While this chapter's findings may point to a weakness of the IFI

engagement indicator variables used in Chapter 3, the evidence presented in this chapter,

supplemented by interviews, demonstrated the influence of the IFIs in the creation of

SWFs. Moreover, the differing findings point to the importance of qualitative work to

present comprehensive explanations of SWF creation which capture the complex

environment in which some of these vehicles are created.

Appendix 14: List of Interviewees

Interviews were conducted in accordance with the details outlined in the research ethics application approved by the Carleton University Research Ethics Board A (CUREB-A). Most interviews were one hour in duration, depending on the availability of interviewees, and were recorded digitally to ensure accuracy. All interviews on the topic of Nigeria and Ghana were done via Skype, while most interviews on Egypt were done in-person.

Nigeria Interviews

Dr. Ehtisham Ahmad, former IMF official covering Nigeria

Dr. Akpan Ekpo, former Non-Executive Director, Central Bank of Nigeria, 2005-2009

Dr. Ulrich Barstch, former IMF Senior Economist in Abuja

Stephen Nwoye, former International Finance and Development Fellow at the World Bank

Ghana Interviews

Dr. Mohammed Amin Adam, Executive Director, Africa Centre for Energy Policy

Dr. Joseph Amoako-Tuffour, Director of Research, Africa Center of Economic Transformation

Samuel Bekoe, Africa Associate, Natural Resource Governance Institute

Mark Evans, Africa Economic Analyst, Natural Resource Governance Institute

Stephen Yeboah, Research Fellow at the Africa Progress Panel

Egypt Interviews

Angus Blair, founder of the Signet Institute

Sherif El-Diwany, former Executive Director of the Egyptian Center for Economic Studies

Dr. Hisham A. Hellyer, Senior Fellow for the Middle East at the Atlantic Council

Dr. Bessma Momani, CIGI Senior Fellow and Associate Professor at the University of Waterloo

Patrick Werr, columnist for The National, based in Cairo

Chapter 6: Conclusions and Possibilities for Future Research

As the calendar rolled over from 2015 to 2016, it was apparent that Stephen Jen's (2007) much-cited prediction that SWFs would be worth $15 trillion by 2015 would prove false. At less than half that figure–$7.2 trillion–and oil prices at levels not seen since the global financial crisis, it seems unlikely that Jen's $15 trillion prediction will be seen in the near future (SWF Institute 2015). However, low oil prices have also brought with them a greater interest in SWFs as economists and other analysts attempt to predict which oil-producing countries have the funds to withstand the turmoil of low prices without having to slow production. Moreover, for those who have been studying SWFs for some time, these lower prices offer insight as to the value a country places on its SWF *vis-à-vis* the rest of its economy. Does an oil-producing country finance its budget deficit with debt or does it liquidate SWF assets? Which types of SWF assets get liquidated first? Can a country retain its assets in a SWF while eliminating subsidies for citizens or raising taxes? Although the 2008 decline in oil prices was much worse than the declines of 2014 and 2015, with more countries having a SWF, there are many areas for new, innovative work on SWFs.

This thesis delivered a greater and more accurate understanding of why a country creates a SWF. While there have been numerous studies looking at different aspects of SWFs, the reasons why a country creates a SWF had never been explored in such depth. Prior studies have looked at the conditions common to countries having a SWF or provided an in-depth study of a particular country's SWF operations, but there was nothing in the literature that tested the theoretical assumptions of SWF creation. As was

outlined in Chapter 2, the qualitative literature on SWFs has largely focused on the

assertion that countries create SWFs for one or all of these reasons: 1) to address their

dependence on natural resources; 2) to manage international reserves; and 3) to address

real exchange rate effects associated with constant current account surpluses. These

assertions have become accepted as conventional wisdom regarding SWF, however, it

was established in Chapter 2 that this conventional wisdom needs to be questioned. The

population of countries having SWFs is becoming more diverse and, as a result, the ways

in which countries are coming to the SWF decision differ. Instead of applying old

knowledge to new realities, this thesis set out to create a new framework and a foundation

from which others interested in SWFs can work.

The purpose of Chapter 2 was to test the conventional wisdom mentioned above

and to uncover other factors influencing a government's decision to create a SWF.

Chapter 2 makes a contribution to the broader SWF literature as the first-ever work to

investigate the macroeconomics of a country in the years leading up to the creation of a

SWF. As mentioned previously, the preeminent statistical analysis of SWF-having

countries had offered insight into the conditions common to countries after the

establishment of the SWFs (Aizenman and Glick 2009), but did not study the conditions

preceding SWF creation. Although Aizenman and Glick's findings support the idea that

countries with current account surpluses, or countries reliant on fuel exports, or countries

with higher levels of international reserves are more likely to have SWFs, these variables

are not the determinants of SWF establishment as the authors claimed. Given the

methodology Aizenman and Glick employed, their results indicated that countries already

having a SWF are likely to have the characteristics outlined above. In order to

confidently describe the determinants of SWF establishment, I studied the time periods prior to countries' SWF creation and conducted a comparison of the pre-establishment periods amongst these countries.

In Chapter 2, I performed numerous quantitative analyses to find the macroeconomic indicators most associated with countries creating a SWF. By looking at the three-, five-, seven-, and ten-year periods leading up to SWF creation, I tested for differences between the periods and assessed the robustness of the main models which were based on the five-year periods. Moreover, I conducted this testing on data that I had averaged over the time period in question so as to ensure that my results were not prone to one-year spikes in the macroeconomic data. It is my contention that this methodology gives the clearest explanation of the trends being addressed by policymakers when the SWF was created.

The most important finding from Chapter 2 was that the coefficients of the GDP growth variable were consistently statistically significant in the probit regressions. This result is particularly important as the GDP growth variable had been overlooked in prior quantitative and qualitative analyses. More predictably, the reliance on fuel and/or mineral extraction coefficients were also found to be consistently statistically significant in explaining SWF establishment. These two findings are particularly interesting in tandem as the former indicates a unique addition to the SWF literature and points to countries employing SWFs as a way to harness GDP growth; policymakers realizing that higher levels of GDP growth may not continue and that they should prepare for a downturn. The latter finding also indicates a similar type of future planning, but one which is explicitly tied to the price of the resource being extracted and exported.

Therefore, while the statistical significance of the resource dependence coefficients is not surprising given that SWFs are sometimes created for stabilization purposes, the fact that SWFs may be created to "stabilize" future GDP growth or transfer GDP growth from the present to the future is an interesting result from which to conduct further exploration.

Another notable finding was that a country's current account and a country's international reserves do not, in general, solely influence a country's decision to create a SWF. Due to the various ways I conducted my testing, it is obvious that the claims of other analyses that the coefficients of these variables being statistically significant relied on the model specifications of these other works and the cases which the authors chose to include or exclude. Chapter 2 informed us that if Botswana and Libya were removed from the sample of SWF-creating countries, the coefficients of the international reserves to GDP ratio variables were not statistically significant in any of the regressions. In the years that Botswana and Libya created their SWFs, each country had international reserves worth almost as much as their annual GDP, far surpassing any other SWF-creating country. Therefore, while their large international reserves may have induced Botswana and Libya to create a SWF, it should not be held up as an explanatory variable for all SWF-creating cases. With respect to current account levels, the coefficients of the current account to GDP ratio variables were not statistically significant in most equations and only statistically significant in those equations in which Iraq was excluded due to a lack of full data. Again, it is important that this idea of the international reserve hoarding country or the chronic current account surpluser be challenged when speaking of the entire population of SWF-creating countries. In some cases, it is true that these economic

factors played a role in the SWF decision-making process, but Chapter 2 proved the necessity of reassessing how we characterize all SWF countries.

In Chapter 2, I also divided the sample to tease out some of the nuances among SWF-creating countries. There were three notable findings from these divided samples. First, countries which created their SWF without ever having a commodity revenue stabilization fund (CRSF) were shown to be reacting to their GDP growth and were, for the most part, democratic. Second, countries which created their SWF after 2005, when Rozanov (2005) coined the term "sovereign wealth fund", did so out of dependence on fuel or mineral extraction. The countries which created prior to 2005 did so based on this same reliance, but also GDP growth. Third, the widely-held perception that SWFs are created by autocrats is outdated. The influx of democratic nations, specifically in Africa, creating SWFs has meant that the number of democratic SWF-having countries outnumber autocratic ones[91] and suggests these SWFs may be used to provide legitimacy and credibility to newer democracies.

With Chapter 2 providing a solid foundation from which to work, I expanded my main model in Chapter 3 to include international policy diffusion variables to investigate the non-economic reasons leading a country to create a SWF. By focusing on policy diffusion via learning, emulation, competition, and coercion, I assessed whether some SWFs were created because of these diffusion mechanisms or whether the economic indicators from Chapter 2 remained the best explanation. To test whether SWF-creating countries were learning from or emulating other countries, I created a variable accounting

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[91] On the forty SWF-creating countries on which I had Polity IV data, thirteen countries were considered autocratic, twenty-one countries were considered democratic and six countries were considered anocracies in the year that the SWF was created.

for the percentage of resource dependent countries already having a SWF and a variable capturing the number of SWF-having countries in a given country's region. To investigate the effect of competition, I created a variable calculating the average foreign direct investment into a country as a ratio of its GDP to test whether a SWF was established to signal sound economic governance to potential investors. To assess the presence of coercion, I tested a country's use of IMF credit and the number of times a country had a program with the IMF or World Bank to ascertain if these organizations influenced a country's SWF decision. These metrics permitted me to statistically test the complex concept of policy diffusion.

The results from the inclusion of the diffusion variables differed slightly from those of the main model, however, the prior findings remained robust. Of the findings relevant to the diffusion variables, the coefficients of the variables capturing the percentage of resource dependent countries already having a SWF and capturing foreign direct inflows were positive and statistically significant. This outcome indicates that there is validity to the claim that countries may have created SWFs as a way to emulate other resource-dependent countries, or may have created a SWF to compete with other countries for foreign investment, or both. However, both of these variables, when compared to the resource dependence binary variable and the GDP growth variable, had far less influence on the SWF establishment decision. At the margins, another resource-dependent country creating a SWF or an increase in FDI increased the probability of creating a SWF by much less than a country becoming resource dependent or experiencing an increase in its GDP growth. Thus, while international policy diffusion

may be present in some cases as I showed in Chapter 5, most countries create a SWF to respond to their own macroeconomic realities.

Chapter 4 outlined how previous authors have tried to group SWFs or SWF-having countries based on the mandates of the funds, the monetary sources of the funds, or the geographic locations of the countries where SWFs are based, while no one had grouped SWF-creating countries based on the macroeconomics which preceded SWF creation. In Chapter 4, I completed this task by conducting a statistical cluster analysis employing the variables found to be statistically significant in the Chapter 2 model. I determined that the population of SWF-creating countries can be divided into eight groups which are robust regardless of the pre-creation time period used to do the clustering. The typology outlined in Chapter 4 laid bare which countries created SWFs under similar economic circumstances. Looking at the groupings, some may quibble with the fact that qualitatively different countries such as Iran and Norway are grouped together and that these qualitative differences undermine the typology. To this type of challenge, I retort that the more important question for observers of SWFs is why these two countries created different types of SWFs. While I accept that the politics of these two countries differ, both domestically and internationally, the macroeconomic conditions under which they created their SWFs were actually quite similar. The typology produced in Chapter 4 allows researchers to go forth and compare countries within and across groups in the typology while knowing that there is a statistical basis for this comparison and that comparisons must be made in such a way as to respect the time period in which the SWF was created and how long the SWF has been operational. Comparing a SWF created in 1990 to one created in 1999–even though they have similar

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mandates or similar sources of wealth–fails to truly recognize the economics from which the SWF was established. Furthermore, such a comparison may overlook that the SWF created earlier has had more time to evolve their institutional and investment practices. By categorizing countries based on their similarities at the time of creation, this typology offers others the opportunity to study evolutions and provide deeper, more meaningful comparisons.

The second part of Chapter 4 presented the results from a classification analysis whereby I employed the statistically significant variables from the Chapter 2 model to determine which of the SWF-creating countries would have been likely to create a SWF based on these variables. As well, I used these same variables to ascertain which countries had the macroeconomic conditions consistent with SWF creation, but which never took the SWF decision. These two tests were particularly interesting as they highlighted those countries which created a SWF without a similar economic profile to those countries having already created a SWF, and countries which had a similar economic profile, but did not create a SWF. In the case of the former, these countries provide a sample of cases to study the non-economic forces which push the SWF agenda. For the latter, this sample of countries provides cases to investigate the non-economic reasons suppressing the SWF decision. In most cases of the countries listed in Chapter 4, it is likely that civil unrest or a pre-existing stabilization fund undermined economic reasons to create a SWF, but case study analysis is the best avenue to get a fuller response to the outstanding questions attached to these countries.

In Chapter 5, I completed this type of analysis by conducting in-depth studies of the SWF decisions of Nigeria, Ghana, and Egypt. The countries were chosen because

they are poorer, with a GDP per capita of less than $3,500 per year, and they are the best examples of three different types of responses to the SWF question. In the case of Nigeria and Ghana, both countries created a SWF, but in the case of Ghana, my model found it unlikely that Ghana would have created its SWF when it did. Ghana's economics prior to SWF creation were not consistent with other SWF-having countries. Nigeria, on the other hand, is amongst a set of countries so reliant on fuel exports that my model predicts that it should have created a SWF in every year on which I had data. For Egypt, its economics were steadily consistent with SWF-creating countries over a period of 30 years, yet Egypt never created a SWF. Each of these countries had a different story to tell and an in-depth study allowed for a broader understanding of the non-economic differences among the three which influenced their different SWF decisions.

The main finding from the extensive qualitative research and interviews conducted for Chapter 5 was that the IFIs and bilateral donors played an influential role in the creation of SWFs in Nigeria and Ghana, while having had less sway over Egypt. In the cases of Nigeria and Ghana, programs from the IMF and World Bank had long preached government fiscal responsibility and were influential in both countries having their external debts forgiven by Paris Club creditors. These calls for fiscal responsibility were not only woven into the program documents between the countries and the IFIs, but also the Article IV consultations conducted during the 2000s. Moreover, interviews and documents indicated that the IMF, in particular, had an immense influence on the creation of Nigeria's Excess Crude Account and that the IMF was part of a cadre of institutions that suggested a stabilization fund to Ghana. These facts, complemented by the IMF's role in the formation of the International Forum for Sovereign Wealth Funds

(IFSWF) and the IMF's continued research on SWFs, indicates that the IMF did believe SWFs were a best practice for countries reliant on resource exports. In Ghana, the case for the SWF was also supported by bilateral donors. The involvement of USAID in the drafting of Ghana's SWF and the Norwegian government in coaching Ghana on how to manage oil revenue no doubt carried influence among policymakers in Ghana; a darling of the aid world. Therefore, for poorer countries with resource wealth, it can be said that the IMF and bilateral donors encourage fiscal responsibility and that over the past fifteen years, a key aspect of fiscal responsibility has taken the form of a SWF.

Before turning to Egypt, it is important to point out that much of the research on Nigeria and Ghana indicated elements of policy emulation and learning. With regard to Nigeria's Sovereign Investment Authority (NSIA), evidence points to the NSIA having been a reaction to the lessons learned from the ECA and the ECA not being entrenched in legislation. Furthermore, it was made quite clear by its most ardent supporters that a SWF in Nigeria was appropriate as it was the only OPEC member that did not have one at the time. For its part, Ghana's creation of its SWF was influenced by what Ghanaians had seen as their government's failures to capture the wealth of Ghana's gold deposits, as well as observing the failures of Nigeria to capitalize on its oil endowments. Prior to creating the SWF, politicians commenting in Ghanaian newspapers routinely cited Nigeria as *the* example of resource mismanagement and the path to be avoided; these comments were echoed during the interviews I conducted. Therefore, while the economic arguments for a SWF in Nigeria may have been stronger than in Ghana, this fear of becoming Nigeria was a key driver in influencing Ghanaians to create its own SWF.

So, what happened in Egypt? One would think that Egypt, geographically and culturally close to the largest SWFs in the world, would have viewed their SWF-having Arab allies as good examples of fiscal responsibility. While the Mubarak government could have thought this, they also had the most powerful nation in the world as its most important ally following its signing of the Camp David Accords. The United States wanted peace between Egypt and Israel and was willing to pay for it. Not only was the United States willing to spend financial capital, but it was also willing to spend political capital and influence the IMF for Egypt's benefit when Egypt was negotiating Stand-by Arrangements (SBAs) with the IMF in the early 1990s. The IMF's softer conditions– supplemented by enormous sums of American military aid to Egypt during the 1990s and 2000s–ensured that Egypt was not reliant on the IMF or any other donor. It has only been since Mubarak's removal in 2011 and the following macroeconomic turmoil, that the Egyptian government has finally started to take long-term fiscal responsibility seriously. The recent announcement of a domestically-focussed SWF is a demonstration of this commitment. However the lack of details regarding how the SWF will be funded and its mandate casts doubt as to whether this announcement will ever be realized.

This thesis, in addition to making an important contribution to the SWF literature, points to three main areas of SWF study in desperate need of better research and insights. First, further case studies that trace the evolution of specific funds. This thesis looked at the evolution of the creation of SWFs; however, it would be useful to explain how a SWF operated at certain points in time. Currently, comparisons among SWFs fail to capture the temporal differences among funds. It is not surprising that recently created SWFs are more transparent in their operations than older SWFs as the IFSWF, with the help of the

IMF, has been advocating for greater transparency and providing technical assistance to SWF-having countries. However, in many studies, this important detail is not mentioned and authors call for transparency without fully acknowledging the possibility of institutional inertia facilitating non-transparency in some SWFs. Greater study of how a country and its SWF evolve over time is crucial to understanding whether a SWF is actually deviating from more traditional SWF operations, or if it is simply following the path of older SWFs.

A further deliverable of these type of case studies is studying where a country's SWF is placed in the wider context of a country's fiscal and monetary policy. Lower oil prices are causing countries to reassess their SWFs and their capacity to take on debt; but there is very little in the literature that tackles this issue. As mentioned in the previous chapter, Ghana has capped its stabilization fund to pay down debt. Without a clear understanding of how much debt Ghana has, or could accumulate while commodity prices stay low, a proper assessment of Ghana's actions is baseless. Analysts need to discuss SWFs in the wider context of a country's economy to properly understand when deposits into and withdrawals from a SWF will be triggered and the appropriateness of these actions. Without a more holistic approach to these assessments, studies will remain critically flawed.

The second area for further research is comparative studies of SWF asset allocations strategies. With forty-five countries having SWFs, and more in the offing, the population of investments to analyze continues to grow. Although studies have looked at some of the factors influencing a country's asset allocation or the impacts of this investment in the receiving country, there has been less literature comparing SWF

allocations among countries. One would assume that countries with similar economics prior to creating a SWF would pursue similar investment strategies. Prior to this thesis, no one had grouped these countries based on their prior economics; with this new typology, such comparisons can be fruitful. Why do two countries in the same group pursue different strategies? Are these different strategies influenced by non-economic factors such as the interests of politicians, the presence of external managers, or the long-term view of the SWF? Now having a proper foundation to conduct these comparisons allows others to go forth and delve deeper into specific funds with purpose.

The third area of research, and perhaps the most important, is an in-depth study of the impact of SWFs on dampening the effects of Dutch Disease. The majority of papers written on SWFs refer to SWFs as a tool to manage resource revenues so as to avoid the resource curse and minimize Dutch Disease effects. Unfortunately, this claim has been mostly based on theory. In their work testing the effect of SWFs on exchange rate misalignments, a symptom of Dutch Disease, Coulibaly, Omgba, and Raymond (2015) found that SWFs did dampen the transmission of energy price shocks. While this finding is an important first step, their analysis was focussed on energy-exporting countries and only included sixteen SWF-having countries. As well, their work remained focussed on the exchange rate element of Dutch Disease and did not look at other symptoms of Dutch Disease, such as shifts in labour and the negative impacts on other non-energy sectors of the economy. Nevertheless, the fact that the authors tackled the exchange rate misalignment question is an important first step and allows for the prescription of SWFs to energy-producing countries to be based in some evidence.

The end of the commodity super cycle and the inability of countries to rely on traditional investments to garner sufficient yield on their accumulated wealth provides an important context for any future research. While the work presented above has touched upon the decisions made by individual countries to create SWFs, the current economic environment will provide an interesting dynamic for the population of SWF-creating countries. In one respect, one would expect a decrease in the number of new countries creating SWFs as countries reliant on resource extraction are receiving less for their goods and have less wealth for non-core budget investments. However, in another respect, the low-yield economic environment makes the historical yields of SWFs that much more attractive and may encourage countries to follow such a policy. In addition, countries experiencing the downside of the commodity cycle may begin to appreciate the importance of building up a SWF in good times as a buffer against the subsequent downturn. At this point, one can only speculate if or when commodity prices will increase or when central banks will significantly reverse their loosened monetary policy and increase interest rates. Indications are, in both cases, that policymakers will have to remain patient and that SWF research must remain attuned to these dynamics.

The most important economic shifts of the period during which I conducted my research have been the dramatic fall of oil prices and the slowdown of the Chinese economy. While this thesis has underlined the propensity of resource-dependent and fast-growing Asian countries to create SWFs, most SWFs do not have enough assets to entirely fill the resulting holes in their governments' budgets and important decisions will need to be made. It is this fungibility of saved revenues that makes SWFs so interesting

to study. This thesis has made an indelible mark on these types of studies going forward

and I look forward to the progress to be made on the foundation built here.

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