Fashions and Fads in Finance: Contingent Emulation and the Political Economy of Sovereign Wealth Fund Creation

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Abstract: Sovereign wealth funds (SWFs), government-owned or managed investment vehicles, have proliferated at a remarkable rate over the past decade. For the most part analysts have emphasized economic determinants related to reserve accumulation and commodity export specialization as responsible for their creation, with little attention to underlying political motivations. Absent thus far has been any systematic consideration as to whether policy diffusion may be an important causal force. My approach departs from these tendencies. Specifically, I develop and test hypotheses that posit common structural characteristics shape the way in which diffusion operates. I argue SWF creation reflects in large part a process of contingent emulation in which first this policy was constructed as appropriate and efficient for countries with given structural characteristics, and then when countries took on these characteristics, they followed their peers. Put simply, fashions and fads in finance matter for policy diffusion. Analysis of a new dataset that covers 148 countries from 1980 – 2008 reveals that SWF creation and the channels through which this policy choice diffuses are conditioned by economic structural characteristics. The results suggest peer-based contingent emulation has been a crucial factor shaping the decision of many countries to create a SWF, especially fuel exporters.

Since the last 1990s sovereign wealth funds (SWFs), government-managed or owned investment vehicles, have grown rapidly in number and size, particularly in emerging market and developing countries. While not a new phenomenon, their projected growth and some recent high-profile investments, perhaps most notably an estimated $70 billion spent on recapitalising Western banks in 2007 and 2008, have stirred debate about their effect on financial markets and whether their policies may be driven by non-economic considerations. Their growing importance is seen to represent a redistribution of financial and political clout away from the West to emerging markets, and toward a normative framework more consistent with state capitalism than with the liberal market norms that had spread since the 1980s.

Not surprisingly, SWFs have attracted a great deal of attention. Large current account surpluses, most notably in East Asian economies, and a commodity price boom, particularly for oil, enabled a number of emerging markets and developing countries to accumulate large revenues and foreign exchange rate reserves over the past decade. These revenues and reserves in turn became the primary funding source for many newly created SWFs. As a result, most analysts have emphasized economic determinants related to reserve accumulation and commodity export specialization as responsible for the growing number of SWFs.[1]

In few cases have analysts explored the political motivations for SWF creation.[2] Absent thus far from the literature has been a systematic assessment as to whether the policy choices of other countries may have influenced the decision to create a SWF. Put differently, scholars have overlooked policy diffusion to understand SWF creation, instead developing somewhat mechanistic accounts in which countries have responded similarly, but independently, to similar conditions.

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[1] Aizenman and Glick 2008; Cohen 2009; Drezner 2008; Gieve 2008; Jen 2007; Kern 2008; Lyons 2007; and Merrill Lynch 2008.
[2] See, however, Shih 2009.

This article departs from these tendencies in the literature. First, I argue that political motivations are central for understanding the decision to create a SWF, and that this decision has been shaped by the policy precedents among countries that share common economic structural characteristics. Economies with large holdings of foreign reserves and those specializing in commodity exports each face a unique set of policy challenges that create uncertainty, with the creation of a SWF presenting itself as one of many possible policy options. Common structural characteristics rooted in large reserve-holdings and commodity export specialization shape diffusion by heightening the salience of the experience with SWFs by relevant peers and by identifying such peers as countries that share these characteristics. In focusing on peer groups based on economic structure, I thus build on previous studies[3] that depart from prior research suggesting regional and cultural linkages as crucial for understanding policy diffusion in international finance.[4]

My argument, put simply, is that "fashions" and "fads" about what is understood to be appropriate and efficient policy have been important in shaping the creation of SWFs. More specifically, I argue the spread of SWFs has been linked to emulation in which countries created a SWF when doing so became identified as appropriate and efficient policy in their peer group based on common economic structural characteristics. I suggest this diffusion process is partly based on analogical reasoning in which policymakers surmise that what "works" for other members of a peer group will also "work" for them, even though such reasoning is not based on conclusive evidence.

In developing the argument I identify two perspectives on emulation. One perspective, derived from sociological institutionalism, sees it as a largely ritualistic process in which actors are motivated to adopt policies based on esteem, pride, prestige, status, and a

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[3] Brooks and Kurtz 2012.
[4] Simmons and Elkins 2004.

desire for normative conformity, irrespective of their objective characteristics[5] Another perspective, associated more with the work of some constructivists and others, sees emulation as rooted in uncertainty and bounded rationality in which problem-solving motivates actors to search for solutions for their policy challenges and where social constructs provide the basis for action.[6]

The argument here takes the latter perspective as its starting point by stressing the importance of policy challenges associated with reserve accumulation and commodity export specialization in creating uncertainty that prompts a search for solutions. Uncertainty and bounded rationality meant governments were unable to determine independently whether SWF creation improved on the status quo. Yet rather than considering policy alternatives based on performance, as a learning perspective would suggest, I show governments turned to policies that had become fashionable among their peer group.

The relationship between emulation and learning has attracted considerable attention in the literature on policy diffusion.[7] I suggest that what distinguishes emulation from learning is not that the latter is motivated by problem-solving and the former is not; but rather that the former occurs without a firm connection between the development of beliefs about the desirability and efficiency of a particular behaviour and evidence related to its actual performance, whereas the latter does not. As Chang Lee and David Strang show, emulators and learners are both attracted to the experience of others, but for different reasons; the former based on their contribution to social constructs, the latter for their informative evidentiary value.[8] In exploring these two mechanisms, I thus depart from the tendency in much prior research on policy diffusion that fails to assess emulation and learning side-by-

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[5] DiMaggio and Powell 1991; Meyer and Rowan 1977; and Meyer et al. 1997.
[6] Abdelal et al. 2010; and Dobbin et al. 2007.
[7] Dobbin et al. 2007; Meseguer and Gilardi 2009; and Weyland 2009.
[8] Lee and Strang 2008.

side.[9] The evidence provides strong empirical support for the claim that governments created a SWF as it increasingly became a norm among their peer group even though this policy choice was not based on systematic evidence about its actual performance.

I also seek to gain deeper insight into the process of policy diffusion by examining how the influence of the policy precedents of a country's peers may be contingent on other factors. In addition to delimiting the relevant peer group, I argue economic structural features conditioned the responsiveness of countries to the policy precedents of their peers. Rather than ritualistically adopting a norm irrespective of objective characteristics, I argue the decision to create a SWF has been shaped by a process of contingent emulation in which first this policy was constructed as appropriate and efficient for countries with given characteristics, and then when countries took on these characteristics, they followed their peers. Empirically, I find this pattern of contingent emulation to be particularly prominent among fuel exporters. In confronting the challenges, complexity, and uncertainty of specializing in fuel exports, policymakers turned to socially constructed fads and fashions among their peer group of fuel exporters to provide an important basis for decision-making. When it became a fad or fashionable for fuel exporters to create a SWF, those countries that specialized in fuel exports became more likely to create one.

This paper is organized as follows. The first section offers a primer on the growth of SWFs. The second section then outlines the argument. The third section discusses the method and a new dataset on SWF creation that covers 148 countries from 1980 to 2008 that is used to assess the argument. The fourth section discusses the results. To preview the findings, the statistical findings support my argument that channels of policy diffusion are shaped and conditioned by economic structural characteristics. The data are consistent with the argument that contingent emulation has been a crucial factor shaping the decision of

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[9] Dobbin et al. 2007, 454.

many countries to create a SWF, especially fuel exporters. The results are robust to the inclusion of variables capturing other notable mechanisms of diffusion such as competition and learning. What is perhaps most noteworthy is the finding that the effect of contingent emulation appears to be more important in encouraging SWF creation than widely-cited economic determinants. These findings contribute to our understanding of policy diffusion as well as the adoption of policy practices and institutional forms associated with state capitalism.

Primer on the Rise of Sovereign Wealth Funds

Sovereign wealth funds are government-managed or owned investment vehicles that use national savings to acquire international assets. While there is no universally shared definition of what constitutes a SWF, most observers agree that they share three common traits: (1) government ownership; (2) investment strategies that include the acquisition of international assets; and (3) no significant explicit short-term liabilities.[10]

Sovereign wealth funds are not a recent innovation – the first such modern entity, the Kuwait Investment Authority, was created in 1953 from oil revenues before Kuwait gained independence from the United Kingdom. Three years later a SWF was created by the British administration of the Gilbert Islands (now Kiribati) from revenues accrued from a levy on the export of phosphates used in fertilizer. A few additional SWFs were created in the 1970s (Abu Dhabi, Singapore), 1980s (Brunei, Oman, a second one in Singapore) and early 1990s (Botswana, Hong Kong, Malaysia, Norway).

Beginning in the late 1990s the rate at which governments created SWFs increased remarkably. It is when a number of observers suggest that SWFs became the new "fashion" or "fad" in international finance.[11] Figure 1, which uses data taken from Edwin Truman,

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[10] This definition thus excludes those funds that solely invest in domestic assets as well as government-employee pension funds, social security funds, government lending funds, and government-owned banks and enterprises. It does, however, include pension reserve funds, which do not have explicit pension liabilities.
[11] Cohen 2009, 714; and Warde 2009, 20.

shows the cumulative number of SWFs created from 1946 to 2008.[12] Two dozen SWFs have been created since 2000, bringing the total in 2008 to above 40. The year 2009 witnessed the creation of eleven new SWFs and four new funds were announced in 2010.[13]

Alongside their rise in number, sovereign wealth funds have become an important class of investors in terms of the size of assets under their management. One recent estimate indicates SWF assets under management have grown from $3.2 trillion in September 2007 to $5 trillion in July 2012.[14] A number of forecasts predict SWF assets will soon reach at least $10 trillion.[15]

Funds differ in terms of their size, their funding source, their geographic concentration, and their internal governance. In terms of their size, SWFs range from $300 million in the case of Mauritania to $627 billion for the Abu Dhabi Investment Authority (ADIA).[16] In addition to ADIA, fourteen other SWFs hold assets over $50 billion: Norway ($593 billion), Saudi Arabia ($532.8 billion), China (two funds; one with $439.6 billion), Kuwait ($296 billion), Hong Kong ($227.6 billion), Singapore (two funds; one with $247.5 billion, the other with $157.5 billion), Russia ($142.5 billion), Qatar ($100 billion), United Arab Emirates (two additional funds; one in Dubai with $70 billion, the other in Abu Dhabi with $65.3 billion), Libya ($65.3 billion), Kazakhstan ($58.2 billion), and Algeria ($56.7 billion). Assets under management are highly concentrated in these fifteen funds, with one recent estimate putting their combined holdings ($3.6 trillion) at nearly three-quarters of the total for all SWFs.[17] These prominent funds dominate the universe of SWFs.

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[12] Truman 2008. In contrast to Truman, given the focus on cross-country differences in SWF creation, I exclude sub-national SWFs, such as the Alberta Heritage Savings Trust Fund and the Alaska Permanent Fund. But, like Truman, I make exceptions for the United Arab Emirates and Hong Kong.
[13] Monk 2010.
[14] SWF Institute 2012.
[15] Merrill Lynch 2008; Kern 2008; Lyons 2007; and Jen 2007.
[16] SWF Institute 2012.
[17] SWF Institute 2012.

Sovereign wealth funds generally fall into one of three categories according to the primary funding source. Some SWFs receive their primary funding from commodity exports, largely oil, gas, and mineral and ores related revenues generated from state-owned firms or taxes. Other SWFs – most notably a number in East Asia - receive their primary funding from reserves transferred from the central bank arising from current account surpluses and foreign currency operations. A much smaller group of SWFs receive their primary funding from budgetary surpluses, proceeds from privatization or transfers from the main government budget.

It is among fuel exporters where the fad or fashion of SWFs has been most strongly embraced. Funds financed from receipt from oil and gas exports constitute the largest in number and assets under management. By 2008 fuel exporters had created 24 of the 40 SWFs identified in Figure 1, and 13 of the 24 funds created since 2000. One recent estimate suggests oil and gas export revenues constitute nearly two thirds of total assets under SWF management.[18]

Figure 2 presents the number of SWFs in 2008 by region. Reflecting their primary sources of funding in oil and gas related revenue and reserve accumulation from current account surpluses, Figure 2 shows a significant concentration of SWFs in the Middle East and North Africa and in East Asia and the Pacific. This is followed by a modest presence in Sub-Saharan Africa, Latin America and the Caribbean, and Europe and Central Asia.

[INSERT FIGURE 2 HERE]

In addition to size, funding source, and geographic concentration, SWFs are a heterogeneous group in terms of their internal governance. It is the opacity of SWFs; most pronounced among fuel exporters, that has raised much of the concern about the potential for politically motivated investment decisions. Until recently, with the notable exception of

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[18] Aizenman and Glick 2008, 2

Norway, the SWFs of fuel exporters remained highly secretive, revealing little about their legal frameworks, their linkages to macroeconomic policy, funding and withdrawal rules, as well as their risk appetites, level of transparency, and risk management frameworks.[19]

Given their primary sources of funding, most observers have drawn a strong link between the increasing number of SWFs and the global imbalances and price boom for commodities, particularly oil, that began in the early 1990s and resulted in a threefold increase in reserves over the past decade, with much of it concentrated among oil exporters and East Asian economies.[20] Reserve accumulation, while useful for precautionary purposes, raises difficult policy challenges when it becomes sizeable. Many large reserve-holding countries rely on intervention and sterilization to maintain competitive exchange rates and to absorb resulting increases in domestic liquidity. Yet the vast majority of foreign reserves are invested in U.S. Treasury debt or its equivalent, which, though highly liquid, earn a low rate of return.

Sizeable reserve accumulation can also create funding cost challenges; most often when there is an increase in the rate of interest demanded on domestically issued sterilization bonds or expectations of exchange rate appreciation. Both developments erode returns earned on foreign exchange reserves. In China, for instance, in the years prior to the creation of the China Investment Corporation in 2007 the rates of return earned by foreign reserves invested in U.S. Treasury and agency bonds was on average 2.5 percent lower than the rates the Chinese central bank had to pay bondholders to sterilize its purchases of foreign exchange. Depreciation of the dollar against the yuan meant the rate of return on U.S. bonds was barely positive in domestic currency terms in 2007.[21]

While a number of fuel and minerals and ores exporters also hold sizeable reserves, specialization in commodities brings a separate set of challenges. Resource-rich countries

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[19] Truman 2008.
[20] IMF 2010a.
[21] Liew and He 2010, 36.

face challenges of using the revenues from natural wealth in a manner that is beneficial to their citizens rather than squandering it through weak institutions and corruption – a phenomenon known as the resource curse.[22] Volatile commodity prices make fiscal planning difficult and are often associated with pro-cyclical policies that lead to overheating and unsustainable fiscal positions. Countries specializing in commodities also face the challenge of Dutch disease – the appreciation of the local currency due to the capital inflow of resource revenues – that affects competitiveness and export diversification. Countries suffering from the resource curse are also often plagued by rent-seeking behaviour, corruption, civil war, and poverty.

For economies with sizeable reserves, SWFs may offer a way to raise the rate of return on a government's foreign exchange holdings beyond that traditionally received from holding low-yielding US Treasury debt or its equivalent (a "reserve investment" objective). For commodity exporters, SWFs may offer a way to insulate the budget and the economy against price swings (a "stabilization" objective). SWFs may also offer a way to convert non-renewable assets into a more diversified portfolio of assets for future generations and to mitigate the effects of Dutch disease (a "savings" objective). As Adam Dixon and Ashby Monk observe, "By sequestering some of their resource revenues in a SWF, these countries hope to smooth resource price volatility, make long-term fiscal policy, manage currency appreciation, facilitate intergenerational savings, and, perhaps most importantly, minimize corruption and tame the political temptation to misuse the newfound wealth."[23] Finally, for some, SWFs may offer a way to fund socio-economic projects or promote industrial policies that might raise output or aid in the internationalization of domestic firms (a "development" objective). It should also be noted that the objectives of a SWF may be multiple, overlapping, and changing.

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[22] Karl 1997; Ross 1999, 2012; Frankel 2010.
[23] Dixon and Monk 2011, 16.

However, despite the experience of countries with SWFs, "there are," as one recent IMF study observes, "no theoretical models yet for deciding when to set up a SWF."[24] In fact, creating a SWF is only one of many alternatives available to governments faced with the policy challenges associated with sizeable reserves and commodity specialization. One alternative, often advocated domestically, is to use a portion of the reserves and revenues to finance consumption, spending, or non-inflationary domestic investment to meet infrastructure and development needs. Thorvaldur Gylfason, for instance, identifies a variety of ways to invest resource wealth to promote development, many of which do not require creating a SWF.[25] Such arguments were made in a number of countries, including Norway, Russia, and China, in policy debates about creating a SWF.[26] These arguments are often politically difficult to resist. As Ross observes in his analysis of stabilization funds, "Their funding depends on politically altruistic – even suicidal – behaviour by politicians who must cut spending during booms, when the economy is strong and citizens often believe they should not make sacrifices."[27]

Another template, offered by Mexico in 2004 and 2005, is use a portion of foreign exchange assets to reduce or match external debt obligations.[28] A few resource-rich countries, such as Norway, have sought to control the pace of resource extraction, while some large reserve-holding countries, such as China, relied on lending from government-controlled financial institutions to help recycle current account surpluses.[29] Some observers suggest countries that peg or tightly manage their exchange rates, such as oil exporters in the Gulf

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[24] Das et al. 2009, 5.
[25] Gylfason 2011.
[26] Liew and He 2010; Fortescue 2010; and Tranoy 2010.
[27] Ross 2012, 242-243.
[28] Das et al. 2009.
[29] Tranoy 2010; Ross 2012; and Gallagher 2011.

and, until recently, China, could seek to limit further reserve accumulation and revenue earnings by permitting greater exchange rate flexibility.[30]

Contingent Emulation

The range of policy options available raises the question as to why some governments settled on SWF creation. In this section I argue that contingent emulation has been an important influence on this decision. Emulation, often associated with the work of sociological institutionalists[31] and constructivists,[32] is a mechanism of diffusion where actors model their behaviour based on the normative and epistemic appeal of social constructs, largely discounting evidence about actual performance of the behavior. There are two principal perspectives for understanding emulation.

One perspective, associated more with some constructivist work, sees the causal processes of emulation involving actors operating under uncertainty and/or bounded rationality. When there is uncertainty about the efficacy of a policy innovation or practice, or rationally-bounded actors find it difficult to collect and process all available information and assess the costs and benefits of each and every alternative, actors turn to social constructions and norms to collect, process and interpret information, and consider various alternatives. "Rationality per se," as Rawi Abdelal et al. note, "tells us little about which heuristics or shortcuts to employ. Instead, we tend to pick up certain scripts, schemas, cognitive maps, frames, or analogies from locally available social constructions."[33]

Emulation may take place through a process of analogical reasoning where actors adopt the practices pursued by their peers or revered exemplars because they perceive these practices to be an appropriate or efficient solution to the challenges they face, irrespective of whether there is actual evidence to support this conclusion. Actors mimic their peers or

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[30] Truman 2008, 28.

[31] DiMaggio and Powell 1991; Meyer and Rowan 1977; and Meyer et al. 1997.

[32] Finnemore 1996; and Abdelal et al. 2010.

[33] Abdelal et al. 2010, 10. In contrast to Weyland (2004; 2006; 2009), Abdelal et al. (2010, 10) see this "path of cognition" as leading social constructs to orient behaviour. See also Odell 2002.

revered exemplars because they reason that the policies of peers or revered exemplars will also "work" for them, even though this conclusion may not rest on systematic assessment of the evidence. In outlining this perspective, Frank Dobbin et al. suggest, "policy choices are based on fads, revered exemplars, or abstract theories, rather than solid evidence."[34] Put simply, when a particular practice becomes a fad or fashionable among a relevant peer group, uncertain and rationally-bounded actors within that peer group are more likely to adopt it.

Another perspective, rooted more in sociological institutionalism, sees actors as motivated to emulate the innovations of others because they wish to signal normative conformity with standards of behaviour of a valued reference group, irrespective of whether their objective characteristics warrant it. In this view, actors may ritualistically adopt policies pursued by their peers partly for reasons related to their identities as members of that peer group, and thus conform, as Robert Axelrod suggests, as "social proof" that they belong to a particular group.[35] Actors may also emulate valued peer groups because of reasons related to esteem, pride, prestige, and status.[36]

Thus, whereas the first perspective links emulation more to problem-solving, the second sees it related more to what Kurt Weyland calls "symbolic imitation."[37] A wide range of empirical work supports both perspectives. For instance, when education became constructed as integral to modernity in the two decades after the Second World War, governments expanded mass schooling regardless of whether they had an economic need for it or an infrastructure to support it.[38] Developing countries implemented women's rights policies not based on their internal characteristics but rather when it became popular among their peers[39] and accepted as an important norm.[40] Governments agreed to election

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[34] Dobbin et al. 2007, 451.
[35] Axelrod 1986, 1105.
[36] Finnemore and Sikkink 1998, 903-904.
[37] Weyland 2004.
[38] Meyer et al. 1977.
[39] Boli and Thomas 1999.

monitoring to signal their commitment to political liberalism even when elections were rigged.[41] Free market norms encouraged the spread of independent central banks,[42] public sector downsizing,[43] capital account liberalization,[44] and market-oriented infrastructure policies.[45]

Governments may have created SWFs, as the second perspective on emulation suggests, as a way of enhancing esteem, pride, prestige, and status and to signal normative conformity with standards of behaviour for a valued reference group, irrespective of their characteristics. Viewing SWFs as integral to modernity, Gordon Clark and Ashby Monk, for instance, suggest countries in the Persian Gulf created SWFs in part as a way "to signal…that their country has attained a level of maturity consistent with the leading edge of global innovation."[46] While plausible, I argue emulation of SWF creation has been related more closely to a reasonable effort on the part of policymakers constrained by uncertainty and bounded rationality to identify appropriate and efficient policy practices.

I thus approach the diffusion of SWFs largely from the first perspective. Unlike those stressing a largely ritualistic process of emulation irrespective of objective characteristics, I argue that emulation in the case of SWFs takes place largely through a contingent process linked to problem-solving in which first a particular policy is constructed as "best practice" for countries with given characteristics, and then when a country fits those characteristics and encounters policy challenges associated with them, it follows relevant others in their policy practices. Governments are thus unlikely to consider following others in creating a SWF until they fit certain characteristics; in the particular, the accumulation of sizeable reserves or significant specialization in fuel or minerals and ores exports.

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[40] Wotipka and Ramirez 2008.
[41] Hyde 2011; and Kelley 2008.
[42] Polillo and Guillen 2005.
[43] Lee and Strang 2008.
[44] Abdelal 2007.
[45] Henisz, Zelner, and Guillén 2005.
[46] Clark and Monk 2010, 6.

As suggested, these characteristics pose considerable policy challenges for which there exists a range of alternative courses of action. Uncertainty about how to evaluate these alternatives prompts policymakers to look at the experience of other relevant actors. Since emulation takes place at least partially based on analogical reasoning, actors are likely to devote more attention to the experience of those countries with which they interact more intensely and/or perceive to be most similar to them. This implies that countries are likely to influence each other when they are engaged in close interaction or proximity, or when they share characteristics.

Earlier research suggests cultural ties to be a particularly important source for defining reference groups. [47] Since many economies with large reserve-holdings or specializing in fuel exports tend to be clustered in East Asia and the Middle East and North Africa, this makes such ties a likely channel for policy diffusion. Yet there is also reason to suspect that governments may turn to other reference groups with some countries standing out as more salient based on common structural characteristics. Sarah Brooks and Marcus Kurtz, for instance, find that the structural legacies of advanced import substitution industrialization are critical for understanding the diffusion of capital account liberalization. [48]

The argument here follows this line of reasoning by suggesting that the political economy of SWF creation is conditioned by economic structural characteristics associated with large-reserve holdings and commodity export specialization. Economies with large reserve-holdings or rich in natural resources face unique challenges that create uncertainty about policy choices, therein increasing the value of the experiences drawn from peer decisions. Evaluating these policy alternatives heightens considerably the importance of information from other countries facing similar policy dilemmas. Relevant peer groups are

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[47] Simmons and Elkins 2004.
[48] Brooks and Kurtz 2012.

thus defined based on these economic structural characteristics rather than geographic or cultural proximity.

In an environment of uncertainty and bounded rationality, the policy initiatives of a reference group, especially one based on common structural characteristics, represent a model with normative and epistemic appeal that supports analogous policy initiatives and may trigger a process of cross-national diffusion. The logic behind this process reflects very closely the "threshold" or "critical mass" models of policy adoption that Beth Simmons and Zachary Elkins and Martha Finnemore and Kathryn Sikkink describe.[49] The basic idea is that when a critical number of relevant countries pursue a policy option, other countries will follow suit. While Simmons and Elkins discuss this model in terms of altered reputational payoffs, Finnemore and Sikkink relate it to altered self-understandings. Both may be relevant for understanding SWF creation.

The prevalence of a policy initiative within a reference group heightens the legitimacy of a particular policy option, particularly when it becomes perceived, rightly or wrongly, as "best practice" for countries fitting a particular set of characteristics that face common policy challenges. As the Simmons and Elkins model suggests, when a critical number of countries create a SWF, policymakers may be motivated to avoid the reputational costs of non-conformity by following them. Policymakers that resist this trend could face reputational consequences that cast doubt on their economic management and potentially their legitimacy to govern.[50]

As the Finnemore and Sikkink model suggests, when a critical number of countries create a SWF, policymakers also may be motivated to follow because it has been defined as an appropriate and efficient way to manage their policy challenges, irrespective of any conclusive evidence supporting its effectiveness. Since policymakers are seldom able to

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[49] Simmons and Elkins 2004; and Finnemore and Sikkink 1998.
[50] Kelley 2008.

determine whether an innovation improves upon the status quo, rather than systematically consider a range of alternatives, they turn to fads and fashions among a reference group to provide the basis for action. As the norm of SWF creation cascaded among certain reference groups, policymakers may have become convinced that it was the optimal solution to their policy challenges without having adequately considered other options. Indeed, some policymakers, as Paul Collier et al. note, moved to creating a SWF before having explored the range of alternatives that better suited their circumstances.[51]

Models used by countries within a reference group may also provide rhetorical support in domestic debates that accompany policy evaluation.[52] Policymakers in favour of creating a SWF may use their prevalence among a relevant reference group as a way of identifying best practice in the face of criticism that revenue or reserves should be spent domestically. Widespread creation of SWFs among a reference group may thus provide political cover and thus shift the burden of proof to actors who do not want the policy introduced.[53]

As suggested, there is a strong degree of overlap between emulation and learning in which I situate the dividing line as based on the role of performance assessments. Learning refers to a change in beliefs, or a change in the strength of one's confidence in existing beliefs, in light of acquisition of new information connected to some reasonable measure of performance offering some informative evidentiary value. There are several perspectives on learning. One perspective, rational learning, stresses a process in which actors collect all available information that might bear on a policy choice and update their prior beliefs in a Bayesian fashion. Empirically, this perspective sees the diffusion of SWFs as based on a systematic and thorough process of information searching and processing about their performance in addressing the policy challenges discussed earlier.

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[51] Collier et al. 2009.
[52] Simmons and Elkins 2004, 176, Elkins and Simmons 2005, 39; and Brooks and Kurtz 2012.
[53] Gilardi 2012.

An alternative perspective on learning suggests that it occurs in a bounded rather than a fully rational fashion. Rather than search for all available information, actors use cognitive shortcuts to make sense of information in uncertain circumstances. Bounded learning, as developed most fully in the work of Weyland, posits that the availability heuristic leads particularly vivid examples to be more influential than less striking events.[54] For instance, Chile's extremely bold pension privatization plan in 1981 had a disproportionately high impact on other Latin American economies, which embraced similar measures.[55] Bounded learning may also occur via a representativeness heuristic in which actors quickly extrapolate trends based on very small amounts of information and engage in haphazardous extrapolation. Weyland, for instance, shows that despite the fact it was just a single case, the success of the French revolution was critical in stirring a revolutionary wave in Europe in 1848.[56]

This process of bounded learning closely resembles the contingent emulation argument outlined earlier. However, there are some notable differences that make it possible to tease out contrasting observable implications. In contrast to the bounded learning perspective, contingent emulation suggests that less striking events should be influential as actors notice them as part of a general fad or fashion that help them to manage uncertainty. Similarly, contingent emulation implies that actors should be responsive to a broader range of information associated with a larger fad and fashion rather than small amounts associated with the representative heuristic.

There is also some overlap between contingent emulation and a variant of rational learning developed by Covadonga Meseguer.[57] To the extent that fully rational learners give greater weight to results where there is less noise (variability in the results), Meseguer

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[54] Weyland 2004; 2006; 2009.
[55] Weyland 2006.
[56] Weyland 2009.
[57] Meseguer 2006.

suggests the use of select sources such as existing reference groups (where there may be less noise) would also be consistent with the pure Bayesian model. However, what distinguishes this variant of rational learning from contingent emulation is its connection to a reasonable measure of performance. Rational learning is present only when there is credible evidence of a policy's efficacy (Would it result in clear improvements from the status quo? Is it superior to alternatives?). Empirically, there would be good reasons to suppose this variant of rational learning is occurring if we observed the creation of a SWF in a particular country following credible evidence within its reference group of highly successful performance in countries where SWFs are in operation.

Data and Method

I test the argument quantitatively on a data set of 148 countries from 1980 to 2008. The dependent variable is the number of years that a country exists without creating its first SWF. Table 1 summarizes the data on SWF creation, taken from Truman, including fund name and date of establishment.

[INSERT TABLE 1 HERE]

Diffusion Effects.

To empirically capture my argument about contingent emulation, I develop a number of individual spatial effects centred on reference groups that builds on Strang and Tuma.[58] For a given country i in year T its generic spatial effect is:

$$Pit = Z_{it}(\sum_{z \neq i} SWF_{zt} / \sum_{z \neq i} z_t)$$

where Z_{it} is a binary variable equal to 1 when country i meets a particular set of characteristics at time T and 0 otherwise. SWF_{zt} is the number of SWFs that have been created by countries with the particular set of characteristics z at time T and z_t is the total number of countries that share the particular set of characteristics at time T. Thus, if

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[58] Strang and Tuma 1993.

countries specializing in fuel exports seek to emulate the behaviour of other countries specializing in fuel exports then this measure seeks to tap into that process by representing how a country specializing in fuel exports reacts to the ratio of SWFs created by other countries specializing in fuel exports. The process is contingent because governments seek to emulate the behaviour of other countries specializing in fuel exports only once they meet the characteristics that define fuel export specialization; hence the Z_{it} binary variable. Put differently, it captures whether a country is more likely to create a SWF when many fuel exporters have done so, but only once the adopting country is a fuel exporter as well.

I define a fuel exporter as countries in the top decile of fuel export specialization as measured by fuel exports as a proportion of GDP.[59] In the dataset this reference group most often includes Algeria, Kuwait, Oman, Qatar, Trinidad and Tobago, and Saudi Arabia. Among this group I calculate the cumulative ratio of SWFs created and then multiply it by the value of the Z_{it} binary variable that takes on a value of one if the country is in the top decile of fuel exporters, and zero otherwise. For countries in the top decile of fuel exporters the potential range of this indicator begins at zero and then extends to higher values to indicate a greater prevalence of SWFs among other countries in the top decile. The measure takes on a value of zero for all countries not in the top decile. The measure ranges from a minimum of 0 to a maximum of 1.7.

I also create similar variables for countries specializing in minerals and ores exports and for those countries with a high level of foreign reserves.[60] Countries in the former category, in which the ratio ranges from 0 to .25, often include Bahrain, Bolivia, Chile, Jordan, and Peru. Countries in the latter category, in which the ratio ranges from 0 to .73,

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[59] In ancillary analysis, I assessed the impact of thresholds and settled on the top decile as the appropriate benchmark for generating stable parameter estimates for this category and the others. This analysis found no evidence to suggest aspirational emulation in which economies in lower deciles follow the policies of economies in higher deciles. For a similar approach, see Simmons and Elkins 2004.

[60] The empirical findings presented below are similar to those using fuel or minerals and ores exports as a proportion of exports and reserves as a proportion of imports or as a proportion of short-term debt.

often include China, Malaysia, Saudi Arabia, and Singapore. Since some economies specialize in fuel and minerals and ores exports, which, due to a recent commodity price boom, are also linked to reserve accumulation, a number of countries find themselves in multiple categories.

In the statistical analysis I also assess other alternative explanations. The first set of explanations relates to alternative reference groups and mechanisms of diffusion. In addition to the reference groups outlined above, government policy choices may be shaped by the policies of countries in close proximity or sharing similar cultural characteristics, such as language or religion.[61]

Alternatively, competition may drive diffusion. According to competition models of diffusion, governments have a strong incentive to adopt policies that make their economies an attractive place for investors or that make their products and firms more competitive in global markets. For instance, in a series of papers, Simmons and Elkins show how competitive dynamics have led governments to liberalize their capital accounts, current accounts, and exchange rate regimes as well as create bilateral investment treaties.[62]

I assess the impact of these alternative reference groups and mechanisms using a series of monadic spatial effects that build on the method discussed in Eric Neumayer and Thomas Plümper.[63] Monadic spatial effects aim to assess how one unit's choice is influenced by the choices of other units given that the level of influence varies depending on the "proximity" of the units. When using time-series cross-sectional data, the traditional spatial effect modelling for this process for a country i is given as:

$$SE_{i,t} = \sum_k W_{ik,t} Y_{k,t}$$

[61] Simmons and Elkins 2004.
[62] Simmons and Elkins 2004; and Elkins, Guzman, and Simmons 2008.
[63] Neumayer and Plümper 2010.

where W_{ik} is an N_i by N_k by T spatial weighting matrix measuring the proximity between countries i and k at time T. The closer country i is to country k at time T the more likely the creation of a SWF in k will influence i to do the same.

In the traditional model, the dependent variable Y, and therefore the spatial effect, is coded as 1 in the year that this policy is implemented, 0 in all proceeding years. Substantively, this would imply that the effect of creating a SWF is felt only in the year of creation, but that it fails to be influential thereafter. This modelling does not fit with the argument outlined, which suggests that policy choices continue to be influential in years following their creation. I therefore modify the traditional model so that it employs cumulative spatial effects. Instead of Y dichotomous variables I use the cumulative number of SWFs country k is observed to have created between 1948 and a given year T. The modified cumulative spatial effect thus becomes:

$$SE_{i,t} = \sum_k W_{ik,t} C_{k,t}$$

where W_{ik} is an N_i by N_k by T spatial weighting matrix measuring the proximity between countries i and k at time T and $C_{k,t}$ is the cumulative number of SWFs that country k has created up until and including time T. For example, Singapore has created two SWFs; one in 1974, another in 1981. Its cumulative C from 1974 to 1981 was 1 and 2 from 1981 until the end of the observation period in 2008. While not a true spatial lag, these monadic cumulative spatial effects better capture policy influences between countries over time.

To assess the impact of alternative reference groups, I develop individual spatial effects for a country's regional neighbours and those with which it shares a common language or religion. These data are from Simmons and Elkins.[64] To investigate competitive processes of diffusion, I create a measure of "competitive distance" that follows from Elkins

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[64] Simmons and Elkins 2004.

et al.[65] Since the reference group spatial effects may also partly capture the extent to which countries are competitors, I seek to disentangle the influence of competition by using a measure that captures export market similarity using the IMF *Direction of Trade* data to produce an N by N by T matrix of correlations (between countries) across the countries' proportion of exports to each trading partner.   In theory, this distance varies from -1 to 1, with countries that export goods in the same proportions to foreign markets scoring the latter; while those with the opposite relationship scoring the former.

Macroeconomic and Political Determinants.

I also control for various economic and political determinants. It is widely presumed that SWF creation has been related to reserve accumulation, commodity price cycles, and large and protracted current accounts surpluses.[66]   I therefore include measures of reserves, fuel exports, minerals and ores exports taken as a proportion of GDP and a measure of a country's terms of trade. In addition, some observers suggest governments have created SWFs to promote development.[67] To assess this possibility I include a measure of per capita income measured in constant 2005 U.S. dollars. All of these data are from the World Bank's *World Development Indicators*.[68]

The literature has thus far developed few hypotheses about the domestic political factors shaping SWF creation.   Yet it seems sensible to suppose that such factors may be influential. In countries with less democratic institutions or where leadership survival may face serious threats from challengers, SWFs may resemble other state-owned enterprises in often being used as a private good to provide a relatively unscrutinized, off-budget source of resources that may be used to cultivate political support. Indeed, Victor Shih suggests that

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[65] Elkins, Guzman, and Simmons 2008.
[66] Aizenman and Glick 2008; Cohen 2009; Drezner 2008; Gieve 2008; Jen 2007; Kern 2008; Lyons 2007; and Merrill Lynch 2008.
[67] Blackburn et al. 2008; and Abdelal 2009.
[68] The empirical findings presented below are similar to those using three or five-year moving averages rather than annual levels.

SWFs in China and Singapore were first and foremost "tools of domestic political survival."[69] As the resource-curse literature suggests, opportunities for similar rent-seeking behaviour is likely to be prevalent in economies endowed with natural resources.[70] To control for these possibilities, I include a measure of democracy from Polity IV as well as an indicator of the loyalty norm taken from Bruce Bueno De Mesquita et al.[71] The Polity IV measure runs from -10 (the least democratic) to +10 (the most democratic), while the loyalty norm data extends from 0 (low loyalty to the incumbent leader) to 1.001 (high loyalty to the incumbent leader). All data, including the spatial effects, are temporally lagged one year to avoid endogeneity.

Methods.

The analysis uses a Cox proportional hazard model to estimate the duration of time before a country creates a SWF. An attractive feature of this model is that one does not have to make assumptions about the specific functional form of the baseline propensity (or hazard) to experience an event (i.e. create a SWF). I use robust standard errors to take into account possible heteroskedasticity or intra-group correlation of the data.

Missing values are an important concern in this analysis. Creation of SWF is a notably rare event with only 24 created in the period under investigation. Inclusion of all the above covariates further depletes this already small number of events. However, the results do not substantively change when multiple imputation is used (see below and the Appendix). This finding should increase the confidence one has in the results presented using the original unimputed data.

<div align="center">**Results and Discussion**</div>

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[69] Shih 2009
[70] Karl 1997; and Ross 1999; 2012.
[71] Bueno De Mesquita et al. 2003.

Table 2 presents the results in the form of coefficients for different Cox proportional hazard models of SWF creation.[72]   In all of the models reported in Table 2, the coefficient for the fuel exporter reference group spatial effect is positively and significantly related to SWF creation. This finding provides very consistent and convincing evidence in line with the arguments made here about the importance of contingent emulation in explaining the creation of SWFs.   In each model specification, there is highly suggestive evidence that when countries specialize in fuel exports, they emulate the creation of SWFs by other fuel exporters.

[INSERT TABLE 2 HERE]

Following Christopher Achen, the fourth and fifth columns in Table 2 present the results of reduced-form specifications that include only two control variables, which express fundamental economic features of countries discussed in the literature on SWF creation.[73] This specification minimizes the problems associated with what Achen calls "garbage-can" regressions, including multicollinearity, which is often an issue in event history analysis.[74] Since the data on terms of trade have a very high level of missingness, this variable cannot be included in the more extensive model specifications. [75]   However, a reduced-form specification does enable it to be used with the original unimputed data. The coefficient and standard errors for the fuel exporter reference group spatial effect are of similar size in these two specifications as they are in the more extensive ones.

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[72] A common procedure in event history analysis is to sequentially add variables to the model to assess the stability of the parameter estimates and hence to ensure the harmful effects of multicollinearity are minimized. In ancillary analysis, it was determined that the highly correlated spatial effects for regional and cultural reference groups should be included separately to ensure stable parameter estimates.   Table A6 provides a correlation matrix for the spatial effects.

[73] Achen 2005. Using similar reduced-form specifications the results for alternative spatial effects did not change when they were substituted in the model.

[74] Diagnostic tests reveal that these specifications do not encounter any of the issues related to non-proportionality addressed below.

[75] The empirical findings are not altered substantially by (1) using more widely available data on the ratio of export volume to import volume to substitute for terms of trade; and (2) including a measure of the oil price level and its volatility.

Using the results from the fourth column of Table 2, Figure 3 compares the survival rates for an economy in the top decile of fuel exporters when there are no SWFs among its reference group and one where it is facing the mean ratio of SWFs among its reference group (.691). All other variables are set to their mean. This comparison helps to disentangle the effect of fuel export specialization from the effect of the policy precedents set by countries within the fuel exporter reference group.

[INSERT FIGURE 3 HERE]

Figure 3 reveals the policy precedents of countries in the fuel exporter reference group have a sizeable substantively important impact on their peers. It indicates that when SWF creation increasingly becomes the norm among fuel exporters that this dramatically reduces the time before the mean economy in the top decile of fuel exporters creates a SWF. By 2000, whereas more than 50 percent of the mean economies in the top decile of fuel exporters with the mean ratio of SWFs in their reference group would have created a SWF, less than 5 percent of those with no SWFs among their reference group would have created one. Importantly, the confidence intervals of these two categories do not overlap. In the dataset there are fourteen countries that take on or exceed the values used to create Figure 3. Eleven of these countries have created one or more SWF. In the recent wave of SWF creation these countries include Algeria (2000), Azerbaijan (1999), Gabon (1998), Nigeria (2003), Qatar (2005), and Trinidad and Tobago (2007). Altogether, these countries constitute 35 percent of all SWFs in the dataset, a considerable total. These results provide compelling evidence suggesting contingent emulation has been central to the spread of SWFs.

A number of network and communicative links exist among fuel exporters that likely proved important for disseminating experiences with SWFs, and hence helped to make them fashionable. Among fuel exporters there are a number of channels for direct contacts at the intergovernmental level to facilitate policy discussions. As Simmons and Elkins observe,

"Frequent intergovernmental meetings at multiple official levels can transmit information to policy makers about 'what works' in other settings."[76] The Gulf Cooperation Council and OPEC are two forums where officials would have had close interactions to facilitate an exchange of experiences.[77] The International Monetary Fund has also played a part in disseminating experiences with SWFs by generally favouring the establishment of these funds in resource-rich countries through its advice to member states,[78] and by convening high-level seminars that have brought together officials from resource-rich countries to discuss their common policy challenges.[79] Intergovernmental contacts such as these have been shown to be conducive social environments for the dissemination of ideas.[80]

Dialogue between policymakers and private actors also helped make SWF creation fashionable among fuel exporters. Many public sector reserve managers in resource-rich and large-reserve holding countries often had limited capacity for considering and implementing alternative investment strategies.[81] As a result, a survey of SWFs belonging to the International Forum of Sovereign Wealth Funds reveals that many policymakers turned to Western funds management firms, private equity companies, and hedge fund managers for investment advice and experience.[82]

These private actors have been influential in a number of countries advising governments on setting up a SWF and serving as external asset managers. In fact, it was an external asset manager working in sovereign advisory services who coined the term "sovereign wealth fund" in 2005.[83] An IMF study based on survey responses from 21 SWFs indicates that only two do not use external managers at all, and that some have assigned most

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[76] Simmons and Elkins 2004, 175
[77] Legrenzi 2008.
[78] IMF 2008; and Ross 2012.
[79] IMF 2010b.
[80] Gheciu 2005; Johnston 2001; 2008; and Greenhill 2010.
[81] Das et al. 2009, 18.
[82] IFSWF 2011.
[83] Rozanov 2005.

or all of their assets to external managers.[84] Interviews with external asset managers, some of who have worked in sovereign advisory services for two decades, indicate they relied on their experience working with other fuel exporters in providing advice to their clients on how to create and manage a SWF.   Since other fuel exporters, when faced with similar policy challenges, had created SWFs, external asset managers tended to present this policy option to their clients as the "optimal solution" and "the sensible thing to do."[85]

Table 2 provides some surprising indications of negative effects from the policy precedents of countries in close geographic proximity.   In contrast to the findings from earlier studies, regional linkages appear to discourage countries following one another in creating SWFs.   The remaining variables add little to our understanding of SWF creation.   It is noteworthy that consideration of alternative reference groups does not diminish the importance of the effect of the fuel exporter reference group.   Alternative reference groups for minerals and ores exporters, large reserve-holding countries, and countries sharing a common language or religion do not appear influential in shaping the process of SWF creation.   There is also no evidence that export market competition affects the decision to create a SWF.   Measures of economic and political determinants also fail to attain significance in any of the models.

Since the significance of the fuel exporter reference group spatial effect could be interpreted as consistent with both emulation and learning, it is important to take further steps to disentangle the two mechanisms. Putting aside for a moment Meseguer's variant, one can begin to disentangle emulation from rational learning based on Bayesian updating by assessing whether fuel exporters engaged in a systematic and thorough process of information searching and processing about the effectiveness of SWFs in helping to manage the policy challenges of resource-rich countries. If this variant of rational learning was influential, then

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[84] Hammer et al. 2008, 14-15.
[85] Author's interview with Senior External Asset Manager for several sovereign wealth funds, London, August 2012.

policymakers should be responsive to all relevant information for their experience.   Since resource-rich economies face similar policy challenges, this implies that fuel exporters should look to the experience of minerals and ores exporters (and vice-versa) rather than simply toward a narrower subset of resource-rich economies among whom a fad had developed. Since, as indicated, some economies specialize in fuel and minerals and ores exports, it is possible that the significant finding for the fuel exporter reference group spatial effect could reflect a systematic search process.

To help disentangle this possibility, I rely on the same operationalization used to create the spatial effects for reserve accumulators and fuel and minerals and ores exporters to develop an additional spatial effect that assesses how countries within the top decile of fuel and minerals and ores exporters react to the policy precedents of one another.   I then estimate a model in which I use this additional spatial effect rather than the fuel and minerals and ores exporters reference group spatial effects included in Table 2.   A positive and significant coefficient for this additional spatial effect would provide evidence suggesting a systematic search process.   However, the coefficient on the additional spatial effect fails to attain statistical significance in any of the models presented in Table 3.

This finding is consistent with evidence from the case of Trinidad and Tobago, which established a SWF in 2007 funded from fuel export revenues.   Here officials have revealed the creation of their SWF was partially based on the experience of other fuel exporters, but that the experience of Chile, a country in close geographic proximity with a SWF funded from copper exports, played no part in their decisions.[86]   The traditional variant of rational learning thus seems a less convincing explanation for SWF creation, as it suggests that fuel and mineral and ores exporters are not influenced by each other's policies despite sharing common policy challenges as resource rich countries.   Interestingly, the coefficient on fuel

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[86] Sovereign Wealth Fund Initiative 2012, 3.

exports / GDP attains statistical significance only in these models; that is, where the reference group of fuel exporting economies seems poorly specified.

[INSERT TABLE 3 HERE]

Still, the importance of policies within the fuel exporter reference group could be interpreted as consistent with Meseguer's variant of rational learning. There would be reasonable support for this variant of rational learning if there was evidence of the efficacy of SWF creation in responding to the policy challenges facing fuel exporters *before* second- and third-movers adopted it.[87] Indeed, some analysts suggest the creation of SWFs among fuel exporters reflects learning from policy mistakes of the 1970s and 1980s when oil revenues were used to primarily finance consumption and spending.[88]

Yet, as Michael Ross concludes, "A closer inspection…shows that these funds have been surprisingly ineffective."[89] Indeed, the empirical evidence is at best inconclusive; and for the most part pessimistic as to whether the creation of a SWF, on its own and even under favourable circumstances, systematically improves macroeconomic volatility, fiscal performance, or other outcomes related to the resource curse.[90] Without credible systematic evidence linking SWF creation to improved performance it is difficult to conclude this variant of rational learning, let alone the traditional one, was particularly influential.

The importance of policies within the fuel exporter reference group also may be related to bounded learning. Government Pension Fund – Global (GPF-G), Norway's SWF, has attracted a great deal of attention among fuel exporters not only due to the size of its assets under management, which, at $593 billion, are the second largest in the world, but, perhaps more importantly, due to its apparent success in helping Norway avoid the resource

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[87] Dobbin et al. 2007, 462.
[88] Ziemba and Malkin 2012, 112-113.
[89] Ross 2012, 207.
[90] Davis et al. 2003; Bagattini 2011; Crain and Devlin 2002; and York and Zhan 2009.

curse.[91] As Dixon and Monk observe, "a plethora of potential SWF sponsors have been making pilgrimages to Oslo to learn how to set up a 'successful sovereign fund' in the image of Government Pension Fund – Global."[92] The Abu Dhabi Investment Authority (ADIA), the SWF with the largest pool of assets under management, has also attracted a great deal of attention from fuel exporters.[93] Attraction to these particularly vivid examples would suggest the availability heuristic at work. Yet simply invoking the availability heuristic may not be a complete explanation. Indeed, the availability heuristic has greater difficulty in accounting for why some governments took notice of less striking examples of SWFs, with some fuel exporters directing their attention to the experience of much smaller and less prominent SWFs in Trinidad and Tobago, the Gabon, and São Tomé and Príncipe.[94]

The evidence is even less supportive of the representative heuristic, which would posit that fuel exporters should react quickly in creating SWFs based on a small amount of information. This did not occur; in fact, there was a considerable lag between the explosion of SWFs created among fuel exporters in the past decade and the creation of SWFs in Kuwait (1953), the United Arab Emirates (1976 and 1984), Oman (1980), Brunei (1983), and Norway (1990). Given the size and prominence of these SWFs, it is difficult to claim that they would have gone unnoticed among fuel exporters. Yet rather than quickly extrapolating trends based on this very small amount of information, fuel exporters seem to have waited for the fashion and fad of SWF creation to take hold since the late 1990s.

For all these reasons it seems reasonable to conclude that the significance of policies within the fuel exporter reference group relates more to emulation than to rational or bounded learning. In comparison to other reference groups, the fashion or fad of SWF creation became increasingly prominent among fuel exporters. From 1999 to 2008 the cumulative

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[91] Tranoy 2010.
[92] Dixon and Monk 2011, 6.
[93] Waki 2010.
[94] Waki 2010; and Frankel 2010.

ratio of SWFs created among the top decile of fuel exporters nearly trebled from .583 to 1.67. In seeking to manage the policy challenge associated with fuel export specialization, the results suggest policymakers were influenced by this cascade of SWF creation within an important reference group. This influence appears to have been a substantively important determinant of policy decisions, irrespective of the actual impact that SWF creation had on helping other fuel exporters to manage their policy challenges. For fuel exporters, more so than other groups, the results are consistent with the argument that SWFs diffused in part because of their normative and socially constructed properties as an appropriate and efficient policy.

Robustness Checks: Non-Proportionality and Frailty

I also carry out a number of tests to assess the robustness of these results. First, I address the issue of potential non-proportionality, which occurs when the hazard rate (here the rate of SWF creation per time unit conditional on not having a SWF at or beyond time T) changes over the survival time (here the length of time not having a SWF). A test of the proportional hazard specification reveals that the effect of some variables shifts depending on the duration of the survival time. The presence of the non-linear relationships often leads scholars to a mistaken diagnosis that their model specification violates the proportional hazards assumption of the Cox model.[95]

Theoretically, my argument suggests that the effect of the policy precedents of reference groups may be non-linear. If the spread of SWFs has been linked to threshold or critical mass models of policy adoption, then it makes sense to think of that effect as resembling the S-shaped curve often described in diffusion studies. When an initial group of relevant countries created a SWF, this may have had a small, but noticeable, effect on the policy choices of other countries. Then, once a critical number of relevant countries created a

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[95] Keele 2010.

SWF, and thus it became more fashionable, this may have heightened the influence of these policy precedents on the policy choices of others. However, once a critical mass was reached, the creation of additional SWFs in other relevant countries may have had little additional influence to policy choices of others.

Strategies for addressing non-linearity, which involve, the use of splines, are computationally very intensive.[96] By estimating a parsimonious model including only a few covariates, I am able to include splines for each of the main time-varying economic and political covariates. Following Luke Keele, I first re-estimate the results from the reduced-form specification using a Cox model with smoothing splines.[97] I then estimate another model using an alternative strategy, suggested by Royston and Lambert, which employs cubic splines to deal with the issue of time-varying covariates, but permits a fuller model specification.[98] As Table 4 shows, the sign, magnitude, and significance of the fuel exporter reference group spatial effect does not change in either of these specifications.[99] That the findings are robust to the inclusion of these splines should increase our confidence in the results presented earlier, especially since the reduced-form specification suggests that even if splines cannot be used for a more extensive model, there is good reason to believe that the results would still hold.

[INSERT TABLE 3 HERE]

Consistent with the threshold or critical mass argument, there is evidence from these specifications that the effect of the policy precedents of countries in the fuel exporter reference group is nonlinear. Specifications using alternative functional forms based on various polynomial transformations return similar results. None of the other reference group

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[96] Keele 200, 196.
[97] Keele 2010.
[98] Royston and Lambert 2011.
[99] None of the variables included in these models showed evidence of non-proportionality after implementing these non-linear specifications.

spatial effects attain statistical significance under alternative functional forms based on splines or polynomials.

I also assess whether excluded country-level covariates may systematically affect SWF creation. However, this specification, which incorporates a vector of country-level shared frailties, is also computationally very intensive and requires estimation of the reduced-form specification in column 4 of Table 2. The results in Table 4 indicate inclusion of this vector produces essentially similar results for the fuel exporter reference group spatial effect. Furthermore, a likelihood ratio test against a simpler model without frailties invariably leads to the conclusion that frailties should not be added to the models.

Finally, as indicated, I perform multiple imputation of missing values based on the procedures outlined by James Honaker and Gary King to avoid excluding SWFs due to missing values in some covariates.[100] On the one hand, the imputation process adds uncertainty to parameter estimates by increasing the standard errors. On the other hand, by increasing the sample size, multiple imputation permits more efficient estimation. Results based on the imputed data – which are reported in Tables A1 and A2 of the Appendix – are essentially identical to those reported above.

Conclusion

Sovereign wealth funds have grown significantly in size and number over the previous decade. Indeed, they have become what some are calling important "new power brokers" in the world economy.[101] Yet our understanding as to why a growing number of governments have created these investment vehicles remains limited. The literature has thus far largely emphasized economic determinants while overlooking important political

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[100] Honaker and King 2010.
[101] Farrell et al. 2007.

motivations. Surprisingly, there has been no systematic investigation as to whether international diffusion has played an important role.

The evidence this paper provides suggests that analysts may have overestimated the importance of reserve accumulation and commodity export specialization in accounting for the growing number of SWFs. There is little doubt that multiple motives likely exist for the creation of SWFs, but these economic determinants alone do not provide an adequate account of the reasons that a growing number of countries have created SWFs. A fuller understanding requires being attentive to forces exogenous to countries that lie in the peer groups in which countries are situated.

Policy diffusion rests on strong theoretical foundations and finds consistent support from the data. When more SWFs were created among fuel exporters, countries that specialize in fuel exports were more likely to follow suit. The robustness of this finding across multiple model specifications provides strong evidence of a tendency of countries to match the policy choices of their peers. There was also support for the threshold or critical mass argument from evidence suggesting the policy precedents of fuel exporters have a non-linear effect on their peers.

This analysis speaks to a number of important issues in the study of policy diffusion. While contributing much to our understanding of the spread of specific policy choices and institutions, studies of policy diffusion have neglected to test systematically side-by-side a broad range of perspectives on diffusion.[102] Even less consideration has been given to modelling the complexity of the diffusion process as a contingent or conditional outcome.[103] Scholars of diffusion also rarely seek to disentangle the closely related mechanisms of emulation and learning.[104] This analysis thus builds on a growing literature investigating policy diffusion, by systematically assessing a broad range of perspectives on diffusion, by

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[102] Dobbin et al. 2007, 462.
[103] Meseguer and Gilardi 2009, 531-533; and Neumayer and Plümper 2012.
[104] Meseguer 2005; Dobbin et al. 2007; and Gilardi 2012.

exploring and assessing contrasting observable implications of emulation and learning, and by breaking from the strong homogenizing assumption in much of the literature and showing that diffusion is often a contingent process associated with common structural economic conditions.

This analysis also extends the study of diffusion into understanding the policy practices and institutional forms associated with state capitalism, which diffusion scholars have thus far largely overlooked. One defining feature of much of the diffusion literature has been its narrow focus on the spread of economic liberalism.[105] This focus has been understandable given the spread of liberalization, privatization, and deregulation since the 1980s.

However, in the developing world the decade since the Asian financial crisis was a period when there was a growing recognition of the state as a normatively appropriate actor in the world economy that some analysts link to the emergence of a new "Beijing Consensus."[106] The normative shift for many developing countries was not particularly difficult. When many liberalized in the 1990s, they did so only partially and often grudgingly. Despite measures to liberalize the economy, a history of state involvement left legacies of state-owned enterprises, most notably in the banking, energy, utilities, infrastructure, and corporate insurance industries, and privately-owned national champions in many emerging markets and developing countries.[107]

All of this suggests that our empirical analyses have not yet adequately kept up with important contemporary developments.[108] The growing number of SWFs is one clear observable empirical policy practice and institutional form associated with state capitalism. This paper strengthens our understanding of the spread of state capitalism by theoretically

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[105] Simmons et al. 2008; Meseguer and Gilardi 2009; and Gilardi 2012.
[106] Halper 2010.
[107] Kurtz and Brooks 2008; Weiss 2003; and Underhill and Zhang 2005.
[108] Keohane 2009; and Cohen 2010.

and empirically elucidating how SWFs have spread in the developing world and unpacking

the features that condition the mechanisms of policy diffusion.

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Figure 1. Cumulative Number of Sovereign Wealth Funds (1946 - 2008)
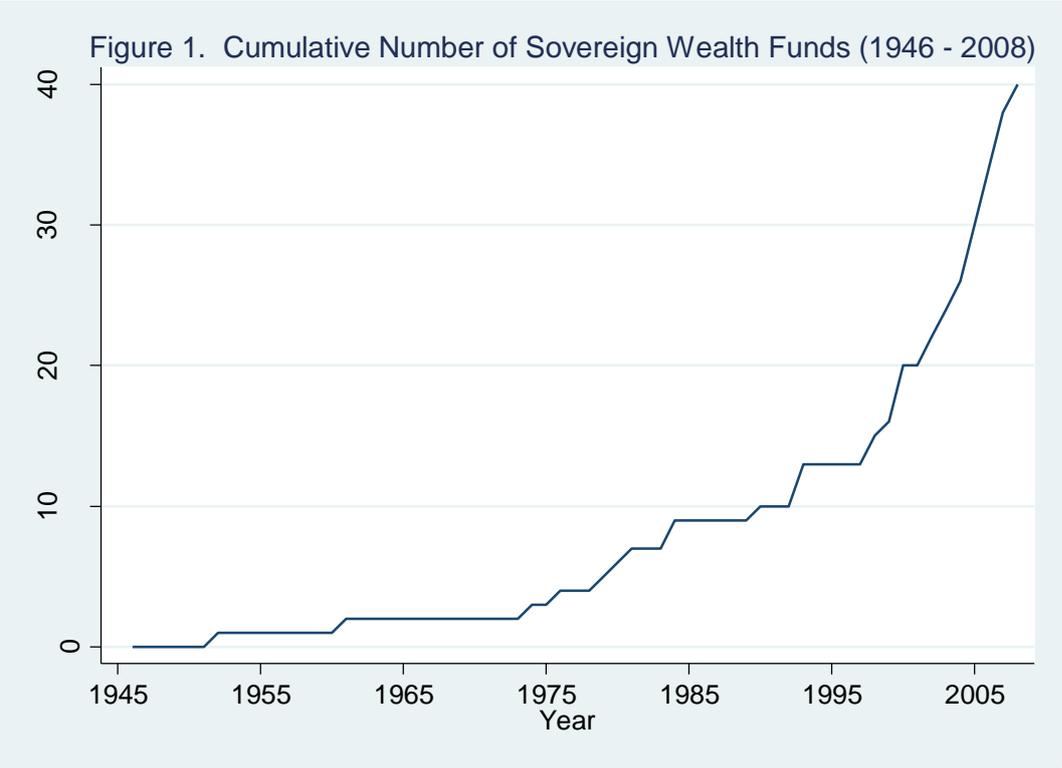
Figure 2. *Sovereign Wealth Funds By Region (2008)*
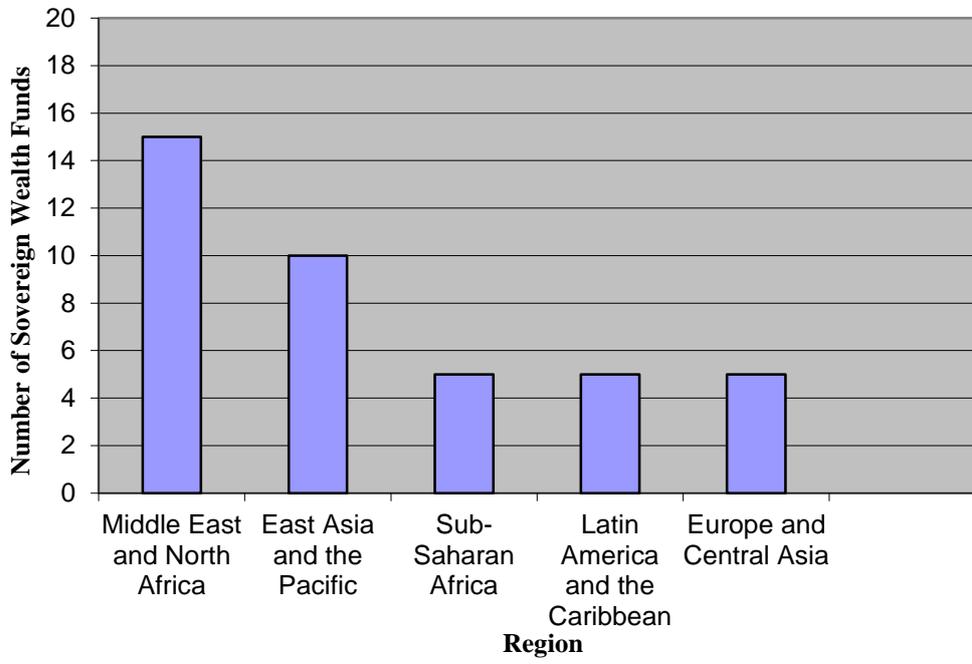
Table 1. *Sovereign Wealth Funds*

Country	Current Name	Year Established
Algeria	Revenue Regulation Fund	2000
Azerbaijan	State Oil Fund of the Republic of Azerbaijan	1999
Botswana	Pula Fund	1993
Brunei Darussalam	Brunei Investment Agency	1983
Chile	Economic and Stabilization Fund	2006
China	China Investment Corporation	2007
	Shanghai Financial Holdings	2007
Gabon	Fund for Future Generations	1998
Hong Kong	Exchange Fund Investment Portfolio	1993
Iran	Oil Stabilization Fund	2000
Kazakhstan	National Fund for the Republic of Kazakhstan	2000
Kiribati	Revenue Equalization Reserve Fund	1956
Korea	Korea Investment Corporation	2005
Kuwait	Kuwait Investment Authority	1953
Libya	Libyan Investment Authority	2006
Malaysia	Khazanah Nasional	1993
Mexico	Oil Income Stabilization Fund	2000
Nigeria	Excess Crude Account	2003
Norway	Government Pension Fund - Global	1990
Oman	State General Reserve Fund	1980
Qatar	Qatar Investment Authority	2005
Russia	National Welfare Fund	2008
	Reserve Fund	2008
São Tomé and Principe	National Oil Account	2004
Saudi Arabia	Saudi Arabian Monetary Agency	1952
Singapore	Government of Singapore Investment Corporation	1981
	Temasek Holdings	1974
Sudan	Oil Revenue Stabilization Account	2002
Timor-Leste	Petroleum Fund	2005
Trinidad and Tobago	Heritage and Stabilization Fund	2007
United Arab Emirates	Emirates Investment Authority	2007
United Arab Emirates (Abu Dhabi)	Abu Dhabi Investment Authority and Council	1976
	International Petroleum Investment Company	1984
	Mubadala Development Company	2002
United Arab Emirates (Dubai)	DFIC Investments	2006
	Dubai Investment Capital	2004
	Investment Corporation of Dubai	2006
	Istithmar World	2003
Venezuela	Macroeconomic Stabilization Fund	1998
	National Development Fund	2005

Table 2. Effects on Creation of Sovereign Wealth Fund, 1980 - 2008

Variable					
Policies of Fuel Exporters	4.78** (1.84)	4.63** (1.52)	5.09** (1.51)	4.01** (.907)	2.13** (.593)
Policies of Minerals and Ores Exporters	-1.72 (10.24)	-1.84 (9.64)	-2.58 (12.01)		
Policies of Reserve Accumulators	6.03 (4.56)	5.12 (5.09)	4.14 (5.10)		
Policies of Regional Neighbours			-10.04** (4.48)		
Policies of Language Partners	-.002 (3.50)				
Policies of Religion Partners		-4.53 (3.07)			
Policies of Export Market Competitors	-48.23 (49.87)	-40.53 (43.84)	-35.99 (41.54)		
Reserves / GDP	-6.70 (9.35)	-2.69 (10.26)	-3.01 (4.80)	.709 (3.36)	
Fuel Exports / GDP	2.76 (4.05)	3.39 (3.63)	2.86 (3.30)		
Minerals and Ores Exports / GDP	3.38 (4.33)	3.87 (5.44)	-2.58 (12.02)		
GDP Per Capita	-.00002 (.00002)	-.000005 (.00002)	.00002 (.00002)	-.000009 (.00002)	.00005 (.00006)
Terms of Trade					.016 (.017)
Democracy	-.022 (.088)	-.056 (.082)	-.071 (.091)		
Loyalty Norm	-1.15 (1.66)	-1.06 (1.89)	-1.61 (1.72)		
Number of Subjects	122	118	122	148	93
Number of Failures	10	10	10	14	3
Observations	2004	1923	2004	2626	393
Log Likelihood	-31.04	-29.98	-28.99	-51.29	-8.69

*p<.10; **p<.05. Robust standard errors in parentheses.

Table 3. Assessment of Rational Learning on Creation of Sovereign Wealth Fund, 1980 -

2008

Variable					
Policies of Fuel and Minerals and Ores Exporters for Fuel and Minerals and Ores Exporters	-.977 (3.39)	-.669 (3.41)	-.768 (3.81)	.017 (1.79)	-.149 (1.20)
Policies of Reserve Accumulators	4.69 (3.74)	3.95 (4.31)	2.84 (3.87)		
Policies of Regional Neighbours			-7.66* (4.26)		
Policies of Language Partners	.636 (2.84)				
Policies of Religion Partners		-3.67 (3.23)			
Policies of Export Market Competitors	-59.99 (49.56)	-52.49 (45.41)	-49.75 (40.85)		
Reserves / GDP	-4.99 (8.35)	-1.14 (9.45)	-1.42 (4.54)	2.65 (1.68)	
Fuel Exports / GDP	10.31** (2.45)	10.66** (2.52)	10.55** (2.57)		
Minerals and Ores Exports / GDP	3.18 (3.01)	3.72 (4.47)	4.93* (2.56)		
GDP Per Capita	-.00003 (.00002)	-.000008 (.00002)	.00001 (.00002)	.00003 (.00002)	.00009* (.00004)
Terms of Trade					.019 (.013)
Democracy	-.034 (.079)	-.063 (.080)	-.078 (.069)		
Loyalty Norm	-.706 (1.92)	-.743 (2.34)	-1.11 (1.97)		
Number of Subjects	122	118	122	148	95
Number of Failures	10	10	10	14	3
Observations	2004	1923	2004	2738	409
Log Likelihood	-32.96	-32.17	-31.56	-64.97	-10.33

*p<.10; **p<.05. Robust standard errors in parentheses.

Table 4. Assessment of Non-Proportionality and Frailty

Variable	Smoothing Splines	Cubic Splines	Cubic Splines	Frailty
Policies of Fuel Exporters	3.91** (.062)	4.23** (.789)	4.28** (1.82)	4.24** (.789)
Reserves / GDP	-6.59** (1.24)	.837 (2.51)	-3.44 (4.55)	.837 (.2.51)
Fuel Exports / GDP			1.39 (3.76)	
Minerals and Ores Exports / GDP			4.01 (4.42)	
GDP Per Capita	.00001 (.00001)	-.00001 (.00002)	-.00002 (.00002)	-.00001 (.00002)
Democracy			-.019 (.078)	
Loyalty Norm			.419 (2.19)	
Likelihood Ratio Test of Frailty Parameter				p = .427
Number of Subjects				148
Number of Failures	14	14		14
Observations	2626	2626	2072	2626
Log Likelihood	38.7	36.92	25.95	-51.28

*p<.10; **p<.05. Robust standard errors in parentheses.

Figure 3. Proportion of Countries without a SWF: Effect of Policy Precedents within Fuel Exporter Reference Group
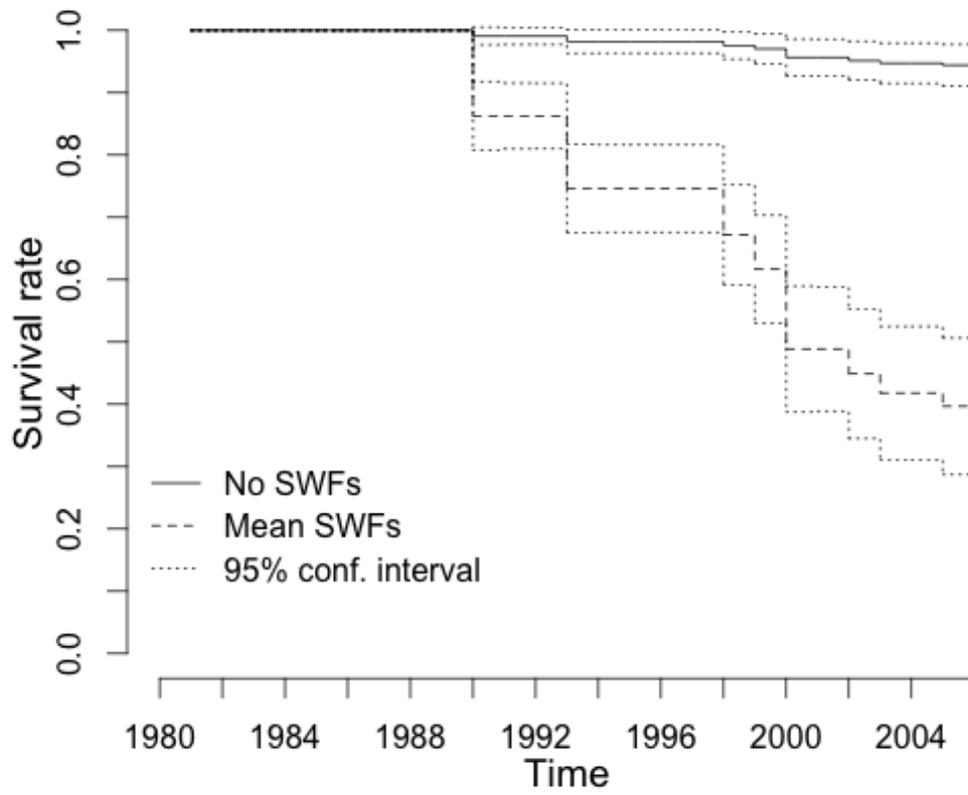
The rarity of SWF creation means that excluding country-years with missing values on other variables risks depleting the number of observed SWFs from an already low number. Table A5 describes missingness in the sample of countries, which shows that the terms of trade and export data show particularly high levels of missingness. I perform multiple imputation of missing values based on the procedures outlined in Honaker and King to avoid excluding SWFs due to missing values in some covariates.[109] These procedures add uncertainty to the parameter estimates, and thus increase the standard errors, but also provide for more efficient estimation by increasing the sample size. I first replicate the specifications in Table 2 and 3 and provide the results in Table A1 and A3 Since terms of trade could not be included in the more extensive specifications in columns 1 – 3 of Tables 2 and 3, I re-estimate those models with this variable among the covariates and provide the results in Table A2 and A4.   In all tables the results based on the imputed data are similar to those reported in Table 2 and 3.

Table A1. Multiple Imputation Data - Effects on Creation of Sovereign Wealth Fund, 1980 - 2008

Variable					
Policies of Fuel Exporters	2.29* (1.25)	2.75* (1.45)	2.47** (1.24)	2.72** (.931)	2.59** (.727)
Policies of Minerals and Ores Exporters	1.19 (8.38)	1.69 (11.38)	.984 (9.77)		
Policies of Reserve Accumulators	-.246 (3.44)	-2.79 (3.85)	1.21 (3.69)		
Policies of Regional Neighbours			-5.25* (2.83)		
Policies of Language Partners	-.006 (2.87)				
Policies of Religion Partners		-3.54 (2.98)			
Policies of Export Market Competitors	-65.08 (99.82)	-52.90 (95.17)	-36.82 (61.54)		

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[109] Honaker and King 2010.

Reserves / GDP	-.885 (6.44)	-.014 (8.95)	.013 (5.27)	-.130 (.3.28)	
Fuel Exports / GDP	2.16 (2.99)	4.36 (3.88)	2.33 (2.96)		
Minerals and Ores Exports / GDP	3.26 (2.55)	5.82* (3.44)	3.51 (2.84)		
GDP Per Capita	-.00002 (.00002)	-.00009 (.0002)	.00008 (.00002)	-.000007 (.00002)	.000002 (.00002)
Terms of Trade					.010 (.007)
Democracy	-.057 (.081)	-.027 (.074)	-.091 (.075)		
Loyalty Norm	-.761 (1.94)	-1.32 (2.17)	-.901 (1.84)		
Observations	2618	2519	2618	2797	2797

*p<.10; **p<.05. Robust standard errors in parentheses.

Table A2. Multiple Imputation Data - Effects on Creation of Sovereign Wealth Fund,

including Terms of Trade, 1980 – 2008

Variable			
Policies of Fuel Exporters	2.17* (1.24)	2.75* (1.49)	2.35* (1.25)
Policies of Minerals and Ores Exporters	.233 (7.43)	.750 (9.42)	.426 (8.36)
Policies of Reserve Accumulators	-.406 (3.53)	-2.97 (3.83)	1.01 (3.71)
Policies of Regional Neighbours			-5.26* (3.02)
Policies of Language Partners	.055 (3.04)		
Policies of Religion Partners		.011 (.007)	
Policies of Export Market Competitors	-65.2 (101.79)	-49.04 (88.24)	-35.80 (58.82)
Reserves / GDP	-.407 (6.32)	.182 (9.17)	.542 (5.25)
Fuel Exports / GDP	1.76 (3.01)	3.92 (3.96)	1.98 (2.97)
Minerals and Ores Exports / GDP	3.05 (2.81)	5.58 (3.87)	3.25 (3.05)
GDP Per Capita	.000004 (.00002)	.00002 (.00002)	.00001 (.00002)
Terms of Trade	.009 (.007)	.011 (.007)	.009 (.007)
Democracy	-.07 (.085)	-.032 (.073)	-.101 (.078)
Loyalty Norm	-.641 (1.91)	-1.25 (2.07)	-.757 (1.82)
Observations	2618	2519	2618

*p<.10; **p<.05. Robust standard errors in parentheses.

Table A3. Multiple Imputation Data - Assessment of Rational Learning on Creation of

Sovereign Wealth Fund, 1980 - 2008

Variable					
Policies of Fuel and Minerals and Ores Exporters for Fuel and Minerals and Ores Exporters	-1.81 (2.14)	-1.71 (2.32)	-1.52 (1.97)	-.269 (1.73)	.716 (1.66)
Policies of Reserve Accumulators	-1.08 (4.25)	-4.51 (4.16)	.269 (3.55)		
Policies of Regional Neighbours			-5.08 (2.69)		
Policies of Language Partners	.689 (2.78)				
Policies of Religion Partners		-4.04 (2.78)			
Policies of Export Market Competitors	-61.97 (91.62)	-54.11 (85.69)	-42.48 (62.55)		
Reserves / GDP	.636 (5.25)	1.62 (6.69)	2.01 (3.92)	2.45 (1.69)	
Fuel Exports / GDP	5.53* (3.02)	9.38** (3.05)	6.41** (2.39)		
Minerals and Ores Exports / GDP	4.85 (3.52)	8.13** (2.99)	5.12* (2.74)		
GDP Per Capita	.000002 (.00002)	.00001 (.00001)	.00001 (.00002)	.00002 (.00002)	.00001 (.00002)
Terms of Trade					.011 (.007)
Democracy	-.402 (.079)	-.013 (.072)	-.071 (.067)		
Loyalty Norm	-.657 (1.87)	-1.16 (2.05)	-.801 (1.69)		
Observations	2744	2635	2744	2925	2925

*p<.10; **p<.05. Robust standard errors in parentheses.

Table A4. Multiple Imputation Data - Assessment of Rational Learning on Creation of

Sovereign Wealth Fund including Terms of Trade, 1980 - 2008

Variable			
Policies of Fuel and Minerals and Ores Exporters for Fuel and Minerals and Ores Exporters	-2.09 (2.11)	-1.92 (2.23)	-1.74 (1.90)
Policies of Reserve Accumulators	-1.09 (4.23)	-4.52 (2.23)	.139 (3.54)
Policies of Regional Neighbours			-5.06* (2.82)
Policies of Language Partners	.010 (.007)		
Policies of Religion Partners		.-4.01 (2.95)	
Policies of Export Market Competitors	-62.59 (92.42)	-51.39 (80.74)	-41.47 (59.76)
Reserves / GDP	1.08 (5.10)	1.88 (6.86)	2.43 (3.99)
Fuel Exports / GDP	4.94 (3.15)	8.79** (3.22)	5.81** (2.48)
Minerals and Ores Exports / GDP	4.67 (3.57)	7.94** (3.36)	4.92 (3.06)
GDP Per Capita	.000008 (.00002)	.00002 (.00002)	.00001 (.00002)
Terms of Trade	.010 (.007)	.011 (.007)	.010 (.008)
Democracy	-.054 (.085)	-.021 (.074)	-.085 (.073)
Loyalty Norm	-.555 (1.85)	-1.11 (1.99)	-.675 (1.68)
Observations	2744	2635	2744

*p<.10; **p<.05. Robust standard errors in parentheses.

Table A5. Proportion of Missing Values

Variable	Percent Missing
Reserves / GDP	24.4
Fuel Exports / GDP	43.4
Minerals and Ores Exports / GDP	41.3
GDP Per Capita	15.5
Terms of Trade	81.7
Democracy	21.1
Loyalty Norm	31.9

Table A6. Correlation Matrix for Spatial Effects

	Policies of Fuel Exporters	Policies of Minerals and Ores Exporters	Policies of Reserve Accumulators	Policies of Regional Neighbours	Policies of Language Partners	Policies of Religion Partners	Policies of Export Market Competitors
Policies of Fuel Exporters	1.0						
Policies of Minerals and Ores Exporters	-.0299	1.0					
Policies of Reserve Accumulators	.1869	.0459	1.0				
Policies of Regional Neighbours	.4099	.0424	.3523	1.0			
Policies of Language Partners	.4495	.0433	.3410	.7479	1.0		
Policies of Religion Partners	.4058	.0351	.3308	.6643	.5755	1.0	
Policies of Export Market Competitors	.1299	.0479	.0978	.4073	.2376	.3843	1.0