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Founded in 1963 by two prominent Austrians living in exile – the sociologist Paul F. Lazarsfeld and the economist Oskar Morgenstern – with the financial support from the Ford Foundation, the Austrian Federal Ministry of Education, and the City of Vienna, the Institute for Advanced Studies (IHS) is the first institution for postgraduate education and research in economics and the social sciences in Austria. The **Political Science Series** presents research done at the Department of Political Science and aims to share "work in progress" before formal publication. It includes papers by the Department's teaching and research staff, visiting professors, graduate students, visiting fellows, and invited participants in seminars, workshops, and conferences. As usual, authors bear full responsibility for the content of their contributions.

Das Institut für Höhere Studien (IHS) wurde im Jahr 1963 von zwei prominenten Exilösterreichern – dem Soziologen Paul F. Lazarsfeld und dem Ökonomen Oskar Morgenstern – mit Hilfe der Ford-Stiftung, des Österreichischen Bundesministeriums für Unterricht und der Stadt Wien gegründet und ist somit die erste nachuniversitäre Lehr- und Forschungsstätte für die Sozial- und Wirtschafts-wissenschaften in Österreich. Die **Reihe Politikwissenschaft** bietet Einblick in die Forschungsarbeit der Abteilung für Politikwissenschaft und verfolgt das Ziel, abteilungsinterne Diskussionsbeiträge einer breiteren fachinternen Öffentlichkeit zugänglich zu machen. Die inhaltliche Verantwortung für die veröffentlichten Beiträge liegt bei den Autoren und Autorinnen. Gastbeiträge werden als solche gekennzeichnet.

Abstract

Sovereign wealth funds (SWFs), government-owned or managed investment vehicles, have proliferated at a remarkable rate over the past decade, even as political controversy has surrounded them. Why? The extant literature depicts the process of SWF creation as driven by functional imperatives associated with "excess" revenue and reserves accumulated from commodity booms and large current account surpluses. I argue that SWF creation also reflects in large part a process of contingent emulation in which first this policy has been constructed as appropriate for countries with given characteristics, and then when countries took on these characteristics, they followed their peers. Put simply, fashions and fads in finance matter for policy diffusion. I assess this argument using a new dataset on SWF creation that covers nearly 80 countries from 1984 to 2007. The results suggest peer-based contingent emulation has been a crucial factor shaping the decision of many countries to create a SWF, especially among fuel exporters.

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Keywords

Sovereign wealth funds, macroeconomics, international political economy, investment vehicles, fuel exporters.

General note on content

The opinions expressed in this paper are those of the author and not necessarily those of the IHS.

Contents

I. Introduction

Sovereign wealth funds (SWFs), government-managed or owned investment vehicles, are growing rapidly in number and size, particularly in emerging market and developing countries. This growth highlights two significant tensions in contemporary international economic relations. First, the growth of SWFs as important investors implies a redistribution of financial wealth and geopolitical clout away from the West to new emerging powers. Understandably, this redistribution has left some in the West uncomfortable. Second, the growth of public sector actors operating in private financial markets has generated significant normative tensions. By blurring the line between finance and politics and states and markets, the expansion of SWFs potentially introduces a framework for state-market relationships that is at odds with the private-sector, commercial-oriented framework with which most established powers, particularly the United States, are comfortable.

Sovereign wealth funds have proliferated at a remarkable rate over the past decade, even as controversy has surrounded them. Not surprisingly, they have attracted a great deal of attention. The primary focus of the existing literature, written largely by economists, policymakers, and market participants, has been on the economic causes and consequences of SWFs (Aizenman and Glick 2008; Gieve 2008; Jen 2007; Kern 2008; Lyons 2007; Merrill Lynch 2008). To the extent political scientists have explored SWFs, their focus has been largely on the national security implications of potentially politically driven investment vehicle (Drezner 2008; Kirshner 2009). What we lack is systematic knowledge about how political motivations may shape the decision to create a SWF.

Much of the literature, even that in international political economy (IPE), assumes that SWF creation is largely a functional response to the accumulation of “excess” revenue and reserves from recent commodity price booms, particularly for oil, and large and protracted current account surpluses, most notably in East Asian economies. I argue otherwise. The remarkable rate at which SWFs have been created has not been simply nor largely a functional response to macroeconomic determinants. In fact, much of it, I contend, has been driven by forces exogenous to countries that lie in the peer groups or networks in which they are situated. Put simply, “fashions” and “fads” have been an important factor shaping the creation of SWFs. More specifically, I argue that rise of SWFs has been linked to their diffusion as a socially constructed appropriate institutional form or policy for particular countries to emulate. The decision of many governments to create a SWF have been shaped by a process of contingent emulation in which first this policy has been constructed as appropriate for countries with given characteristics, and then when countries took on these characterized, they followed their peers.

The cognitive process of peer-based emulation is partly based on inductive reasoning in which countries 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. Peer-based emulation is also based on a desire to develop symbols that signal conformity with a peer-group's standards of behaviour as well as a desire to maintain or enhance esteem, pride, prestige, and status. It is thus deeply rooted in processes of identity formation and socially constructed standards of behaviour.

In contrast to learning, when countries emulate the policies of others they do so without reflection on the evidence of the efficacy of that policy. Empirically, I find this pattern of peer-based 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 "fashions" and "fads" among their peer group of fuel exporters to provide an important base of decision-making. When it became "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 rise of SWFs. The second section then outlines the process of contingent emulation and other various mechanisms of diffusion and links them to SWF creation. The third section discusses the method and a new dataset on SWF creation that covers nearly 80 countries from 1984 to 2007 that are used to assess the argument. The fourth section discusses the results. To preview the findings, the data are consistent with the argument that peer-based contingent emulation has been a crucial factor shaping the decision of many countries to create a SWF, especially fuel exporters. The results are robust to the inclusion of variables capturing other notable processes of diffusion such as competition and learning as well as widely-cited macroeconomic determinants. What is perhaps most noteworthy is the finding that the magnitude of the effect of peer-based contingent emulation is much larger than that for functional imperatives from fuel export specialization alone. The data also reveal to an extent that less democratic regimes and poor institutional quality are also weakly associated with SWF creation. The fifth section concludes the paper.

II. A 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. These national savings are typically established out of balance of payments surpluses, official foreign currency operations, the proceeds of privatization, fiscal surpluses, and/or receipts from commodity exports. 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.[1]

Sovereign wealth funds have become an important class of investors in terms of the size of assets under their management. In March 2010 SWF assets under management were estimated to have grown to $3.8 trillion (Sovereign Wealth Fund Institute 2010). Most forecasts predict SWF assets to reach at least $10 trillion over the next five years (Merrill Lynch 2008; Kern 2008; Lyons 2007; Jen 2007). While these holdings are much less than assets under management by mutual funds, pension funds, insurance companies, and central banks, they amount to considerably more than those under management by hedge funds and private equity groups.

Sovereign wealth funds generally fall into one of three categories according to the primary sources of their foreign exchange assets. Some SWFs receive their primary funding from commodity sources, largely oil, gas, and mineral related revenues generated from state-owned firms or taxes. Other SWFs receive their primary funding from reserves transferred from the central bank. Recent estimates suggest that funds derived from oil and gas export revenues account for some two thirds of total assets under SWF management, with the remainder consisting of assets mainly controlled by East Asian countries that have accumulated large stockpiles of reserves from large and protracted balance of payments surpluses (Aizenman and Glick 2008:2). A much smaller group of SWFs receive their primary funding from budgetary surpluses, proceeds from privatization or transfers from the government's main budget

Sovereign wealth funds are not a recent innovation – Kuwait created the first such modern entity, the Kuwait Investment Authority, in 1953. Three years later a SWF was created is what is now Kiribati. 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).

[1] 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.

Beginning in the late 1990s the rate at which governments created SWFs increased remarkably. Figure 1, which uses data taken from Truman (2008), shows the cumulative number of SWFs created from 1946 to 2008.[2] 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 have been announced in 2010 (Monk 2010).

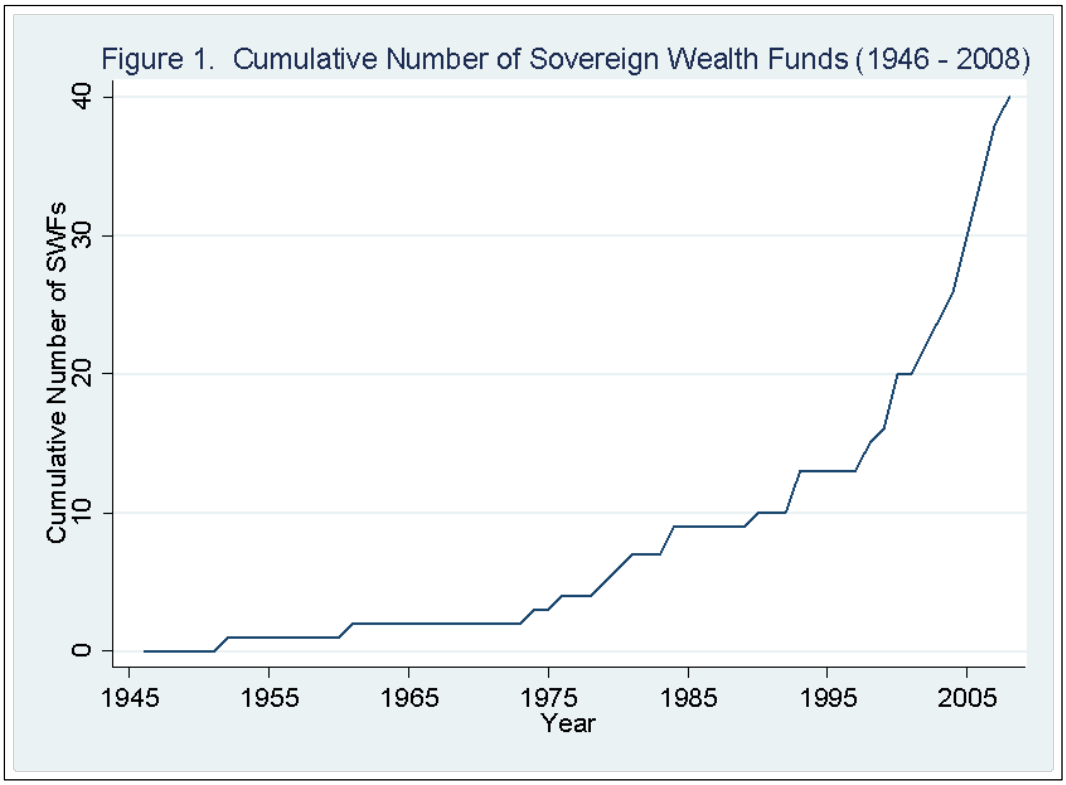
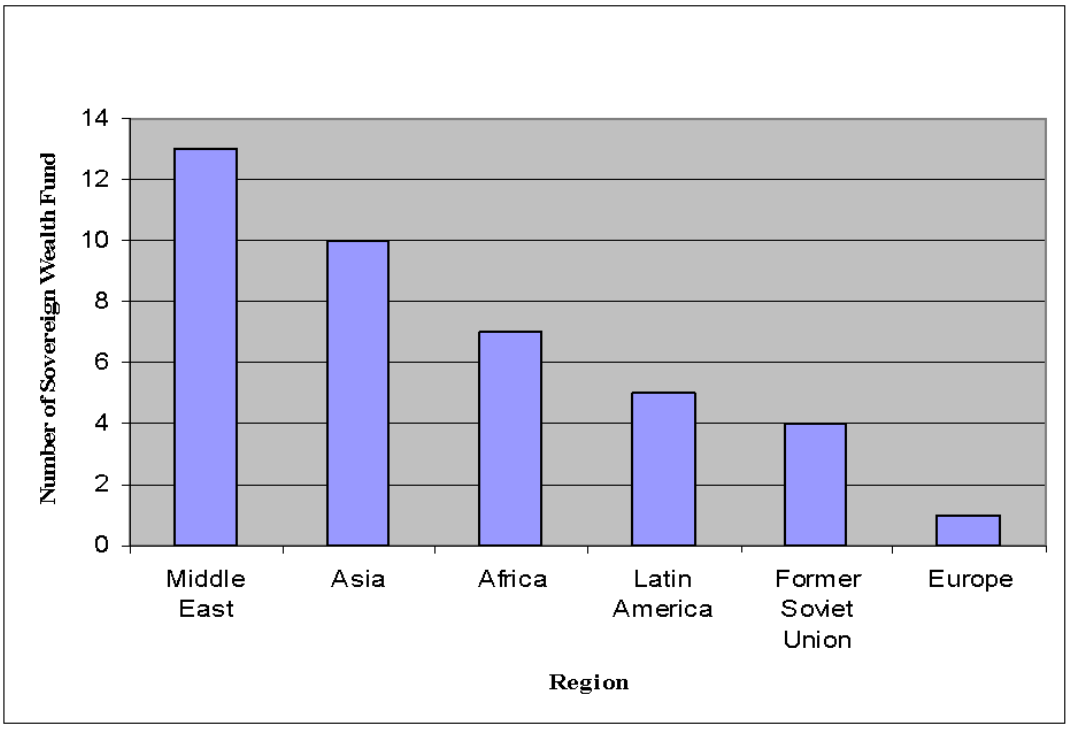


Figure 2 graphs the number of SWFs in 2008 by region. Reflecting their primary sources of funding in oil and gas related revenues and balance of payments surpluses, Figure 2 shows a significant concentration of SWFs in the Middle East and Asia. This is followed by a modest presence in Africa, Latin America, and the former Soviet Union. There is only one SWF located in Europe (Norway) and none located in North America (though there are four sub-national SWFs in Alaska, Alberta, New Mexico, and Wyoming).

[2] In contrast to Truman (2008), 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.

Figure 2: Sovereign Wealth Funds by Region (2008)



Given their primary sources of funding, most observers have drawn a strong link between the recent remarkable rate of SWF creation and the commodity price boom, particularly for oil, and global imbalances that began in the early 1990s. There has been a threefold increase in reserves over the past decade, with much of it concentrated among oil exporters and East Asian economies (IMF 2010). 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). In fact, many of the early SWFs were created with precisely these objectives in mind.

As the reserves of many economies reached levels deemed adequate for precautionary reasons, policymakers searched for a way to manage these "excess" reserves. For economies with an "excess" of reserves, SWFs may offer a way to raise the rate of return on a government's foreign exchange holdings (a "reserve investment" objective) beyond that traditionally received from holding low-yielding US Treasury debt or its equivalent. Finally, for some, SWFs may offer a way to use "excess" revenues and reserves 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, and that some countries, such China, Singapore, and the United Arab Emirates, have more than one SWF (see Table 2).

In addition to different objectives, SWFs are a heterogeneous group in terms of their internal governance and their size. Funds differ significantly in terms of the legal frameworks, their linkages to macroeconomic policy, funding and withdrawal rules, as well as their risk appetites, level of transparency, and risk management frameworks (Truman 2008). 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. Perhaps most notably, SWFs differ in terms of their size, ranging from $300 million in the case of Mauritania to $627 billion for the Abu Dhabi Investment Authority (ADIA) (Sovereign Wealth Fund Institute 2010). In addition to ADIA, eight other SWFs hold assets over $100 billion: Norway ($443 billion), Saudi Arabia ($415 billion), China (two funds; one with $347.1 billion, the other with $288.8 billion), Singapore (two funds; one with $247.5 billion, the other with $133 billion), Hong Kong ($227.6 billion), Kuwait ($202.8 billion), and Russia ($142.5 billion).

III. Diffusion Mechanisms

The extant literature assumes SWF creation to be a functional response to "excess" revenue and reserves linked to commodity price booms and large and protracted balance of payments surpluses. I argue, however, that SWF creation is also linked to its diffusion as an appropriate institutional form or policy for particular countries to emulate.[3] More specifically, the decision of many countries to create a SWF was shaped by a process of contingent emulation in which first this policy was constructed as appropriate for countries with given countries, and then when countries took on these characteristics, they followed their peers.

Emulation is a model of diffusion where actors model their behaviour on the socially constructed legitimate examples provided by others. This mechanism of diffusion is often associated with organizational sociology (DiMaggio and Powell 1991; Meyer and Rowan 1977; Meyer et al. 1997) and constructivism (Finnemore 1996; Abdelal et al. 2010). The causal processes of emulation involve actors operating under bounded rationality and/or uncertainty. Bounded rationality means that actors cannot possibly collect and process all available information that might bear on a particular set of beliefs. In a related fashion, constrained by uncertainty, even the most rational of actors cannot find conclusive evidence to support the efficacy of a particular policy. Actors therefore rely on shortcuts to gather, process, and interpret the world. Social constructs such as theory, rhetoric, norms, values, and meaning thus serve as the basis for action; and this basis for action often comes from cues taken from peer-based reference groups.

Emulation takes place through a process of inductive reasoning where actors adopt the practices pursued by their peers in part because they view them as more or less similar. Emulation is thus based on the logic of appropriateness and deeply rooted in processes of identity formation and understanding. States adopt policies pursued by their peers partly for reasons related to their identities as members of that peer group.

Some governments may emulate their peers because they reason that the policies of peers fitting a set of characteristics will also "work" for them, even though this conclusion is based on inductive reasoning rather than conclusive evidence. Indeed, peer-based emulation implies that the creation of a SWF would be a function of governments acting out of a desire to conform to standards of behaviour constructed by actors in a reference group with which they identify, regardless of any performance-based metric. Governments may conform in to develop symbols, or what Axelrod (1986:1105) calls "social proof," that they belong to a particular group. Governments may also emulate valued peer groups because of reasons related to esteem, pride, prestige, and status (Finnemore and Sikkink 1998:903-904). Thus, the desire to enhance or defend one's esteem, pride, prestige or status via a particular peer group can explain following particular standards of behaviour. Emulation does not entail

[3] For a framework conceptualizing different diffusion mechanisms, see Simmons, Dobbin, and Garrett (2008).

any reflection on information about the efficacy of a policy; as such, some refer to this mechanism as “symbolic imitation” (Weyland 2004).

Unlike organizational sociologists, who have concentrated on ritualistic adoption of standards from an increasingly global culture or “world polity,” I argue that emulation reflects a contingent process in which first a particular policy is constructed as appropriate for countries with given characteristics, and then when a country fits those characteristics, it will follow others that fit the prescription. Governments are thus unlikely to create a SWF until they have fit certain characteristics.

Countries often look to their structural equivalents to as a key reference group. Countries may seek to emulate their equivalents in international trade such as those with similar export product profiles. This, however, complicates efforts to disentangle the influence of emulation from competition in any empirical analysis (see below). In addition to export product profiles, other reference groups may have been influential for the decision to create a SWF.

“Reserve accumulators,” for instance, may seek to emulate the policies of other “reserve accumulators.” When a critical number of “reserve accumulators” create SWFs, other countries, when they reach a particular concentration in fuel exports, may follow other “reserve accumulators” in creating a SWF. A similar dynamic may have motivated the decision to create a SWF for countries specializing in fuel exporters and those specializing in ores and minerals exports. The decision may have been motivated by esteem, pride, prestige, or status or by a belief that creating a SWF will also “work” for them managing “excess” revenue and reserves. Evidence for such proposition would suggest that processes of social construction had been at work for defining appropriate behaviour for the identity called “reserve accumulators,” “fuel exporters” or “ores and minerals exporters.”

Peer-based emulation implies that countries will influence each other more when they are engaged in close interaction or proximity, or when they share characteristics. Put simply, when a particular policy becomes “fashionable” among a relevant peer group, countries within that peer group are more likely to adopt it. In emulating others countries adopt their policies without reflection on evidence of their efficacy, rather they may surmise based on inductive reasoning that the policies of their peers will also “work” for them.

Emulation implies that some countries may have created SWFs without reflecting on the evidence of whether such a policy choice fit their particular functional need. Indeed, a number of observers have referred to SWFs as the new “fashion” (Cohen 2009:714) or “fad” (Warde 2009:20) in international finance, but none has empirically assessed the possibility that emulation may have driven the decision of some governments to create them. There are several reasons to suggest why this may be a reasonable approximation of the cognitive processes underpinning the decision to create some SWFs.

First, it should be noted that setting up a SWF is not the only way for countries to manage their "excess" revenues and reserves. Governments may also use their foreign exchange assets to reduce or match external debt obligations, as Mexico did in 2004 and 2005 (Das et al. 2009). Although this policy may be an equally efficacious way to manage "excess" revenues and reserves, governments may have been less inclined to pursue it because it was less "fashionable."

Second, and more importantly, the opaqueness of most SWFs meant that governments considering setting up a SWF had little way of accessing detailed evidence as to whether other they were meeting their objectives in terms of "reserve investment," "stabilization," and so on. Indeed, the vast majority of SWFs fail to disclose detailed information on their assets, investment portfolios, governance structures, and performance (Truman 2008). Governments would have been able to observe other structurally equivalent countries creating SWFs, but they would have found it difficult to "learn" whether creating a SWF was an efficacious policy.

Learning closely resembles emulation. 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. Governments learn by acquiring new information from the experience of others and updating their prior beliefs in a Bayesian fashion. Yet the pure Bayesian approach is often said to be too demanding in terms of the information requirements for decision-making. Because actors cannot possibly collect all available information that might bear on a policy choice, many learning models typically argue that the process of updating beliefs takes place in a bounded rather than fully rational fashion. Rather than search for all available information, governments search for relevant information from select sources (Weyland 2004; 2005).

Actors therefore rely on various shortcuts to gather and process information. Sociologists and constructivists see learning as being channelled, with some sources being more relevant than others. To the extent learning is channelled, it is likely to occur along existing communication networks. In such models, the cognitive process of actors is shaped by an "availability heuristic" in which actors are drawn to those experiences that are most available to them (Weyland 2004; 2005; Meseguer 2005). However, to the extent that fully rational learners give greater weight to results where there is less noise (variability in the results), the use of select sources such as existing communication networks (where there may be less noise) would also be consistent with the pure Bayesian model (Meseguer 2006).

Learning thus involves new information about the success or failure of policy change in other countries influencing the probability of policy change in the country under investigation. Learning may be fully rational as in the pure Bayesian model; or it may be bounded or channelled. But what all models of learning share, and what distinguishes them from emulation, is reflection on causal pathways leading from policies to outcomes. Learning thus entails some connection to a reasonable measure of performance. Empirically, there would

be good reasons to suppose learning is occurring if we observed the creation of a SWF in a particular country following highly successful performance in countries where SWFs are in operation.

Competition is another important mechanism of diffusion. Competition models have focused largely on how rivalry among governments for capital and market share has resulted in the diffusion of liberal economic policies. According to this view, 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 (Simmons and Elkins 2004; Elkins, Guzman, and Simmons 2008).

Much of the competition model literature assumes that rivalry induces governments toward market-friendly policies. Rarely is consideration given to the possibility that competition could drive countries toward more statist forms of economic management. While the convergence literature has explored the possibilities for activist economic management, scholars have yet to devote much attention to the rise of policies and associated with “state capitalism.” Instead, the defining feature of much of the diffusion literature has been its narrow focus on the spread of economic liberalism.

Competition models are also usually silent about the deeper beliefs that presumably give rise to the perception that liberalization abroad should be with similar measures at home (Simmons, Dobbin, and Garrett 2008:23). Pressure from policy rivalry alone is represented as sufficient to induce convergence toward market-friendly policies. Missing from these accounts is attention to the deeper constitutive questions as to how governments come to believe in the first place that liberalization is desirable.

Such questions have been the focus of constructivists (Abdelal et al. 2010) and organizational sociologists (Lee and Strang 2008) who show that much of what diffuses depends on the constitutive norms that prevail within the world economy in a given time period. These constitutive norms define the boundaries of choice and affect how governments react to competitive pressures. The importance of such norms often make a cameo appearance in the work of competition models (see, for instance, Simmons and Elkins 2004:173-174), but rarely are these norms investigated systematically.

Incentives give rise to particular courses of action because of the meaning that action has to the actors themselves, and this meaning is in turn a function of constitutive norms. If a competitor liberalizes capital controls, this may induce others to follow suit if constitutive norms in one time period define such policy as desirable, but the same action may have little or no effect in a different time period where alternative norms prevail. In terms of

understanding SWF creation, this line of argument suggests the growing attractiveness of state capitalism over the past decade may have shaped the manner in which governments reacted to SWF creation in policy rivals. In the absence of such beliefs, it would be difficult to understand how governments came to believe in the first place of the desirability of creating a SWF.

The rise of SWFs has been associated with growing recognition of the state as a normatively appropriate actor in the world economy. The 1990s was a decade when the Washington Consensus and free-market oriented norms – macroeconomic stabilization, liberalization, privatization, and deregulation – were triumphant. Yet a decade of market reforms failed to meet many of the expectations of officials and citizens in emerging markets and developing countries. It became clear to many, particularly after the uneven economic performance of many Latin American economies and the wave of financial crises in emerging markets in the late 1990s, that a rethink was necessary. Among many in the West, the new emphasis was to supplement market reforms with a focus on institutional development (North 1990; Singh et al 2005).

Yet among many emerging market and developing countries the diagnosis was not to supplement free market policies with stronger institutions, but to minimize their vulnerability to free markets through greater state interventionism. The shift for many emerging markets and 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 (Kurtz and Brooks 2008; Weiss 2003; Underhill and Zhang 2005). Following the demise of the Washington Consensus, new theories in development economics lent increasing legitimacy to greater interventionism, particularly the use of industrial policy (Rodrik 2004). China's record of spectacular growth also heightened the appeal of state capitalism (Halper 2010).

Empirically, competition models of diffusion typically rely on indicators that seek to capture rivalry among similar actors who want access to some third party or market. Since governments create SWFs to export rather than attract investment, it is unlikely that competition for capital has been an important influence. Competitive trade pressures among countries exporting to the same market ("market competition") or among countries exporting similar products ("role competition"), however, may have been an important motivation for creating SWFs. As suggested, some SWFs have a "development objective" to support the internationalization and competitiveness of domestic firms. Brazil's SWF was created in 2009 partly with this objective in mind.

Diffusion studies also often examine a fourth diffusion mechanism, coercion, where powerful external actors impose their policies on others. However, it seems unlikely to have played an

important role in the decision to create a SWF. Indeed, rather than being endorsed, SWFs have caused much anxiety and concern among many powerful developed countries, particularly in the West (Cohen 2009).

IV. Method and Data

This investigation uses an event history model to estimate the duration of time before a country creates a SWF. I estimate this model with a Cox proportional hazard model, a useful estimator that does not make strong assumptions about the effect of time on the baseline propensity to experience an event (i.e. create a SWF). I calculate the spatial and peer effects (see below) using data from 1948 to 2007 across a sample of 182 countries. However, data limitations, particularly those on macroeconomic determinants, limit the event history analysis to data from 1984 to 2007 across a sample of 104 countries.

Dependent Variable

The dependent variable is the creation of a SWF where a value of 1 captures the occurrence of the event and 0 otherwise. Table 1 summarizes the data on SWF creation, taken from Truman (2008), including fund name and date of establishment.

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

Country	Current Name	Year Established
	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

Diffusion Effects

Countries with excess reserves or countries that can significantly expand reserves through high levels of fuel or mineral and ore exports may be prone to create a SWF. The creation of a SWF is not the only way to manage excess reserves, however (Das et al. 2009). Creating a SWF may not necessarily be a functional response to having significant reserves or specific export profiles. It may depend on the behaviour of other countries with similar characteristics.

To study contingent emulation, I develop a number of individual peer effects that builds on Strang and Tuman (1993). For a given country *i* in year *T* its generic peer 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 "fuel exporters" seek to emulate the behaviour of other "fuel exporters," then this measure seeks to tap into that process by representing the ratio of SWFs created by "fuel exporters." The process is "contingent" because governments seek to emulate the behaviour of "fuel exporters" only once they meet the characteristics that define a "fuel exporters;" hence the Z_{it} binary variable.

I develop two peer effects to assess contingent emulation based on different reserve accumulation thresholds. International best practice for reserve management provides two general rules of thumb for assessing reserve adequacy for precautionary reasons: (a) reserves should be more than or equal to three months of imports; and / or (b) reserves should be more than or equal to short-term external debt.[4] I therefore use these rules of thumb to set the thresholds for fitting the characteristics of a "reserve accumulator." I also create similar thresholds and ratios for countries with a high level of fuel exports and for countries with a high level of mineral and ore exports; in particular whether a quarter of their exports are composed of such products.

I develop a similar measure to capture learning. Following Simmons and Elkins (2004), I assume that governments are likely to draw lessons for policymaking from those countries that are perceived to be successful. While there are many measures of success, I opt for the most visible and well-publicized metric: growth rates. I then calculate the ratio of SWFs among the top growth decile. The higher this ratio, the greater the likelihood that governments will conclude there is evidence that creating a SWF enhances economic performance. Like the contingent emulation peer effects, this measure assumes that only governments that qualify as "reserve accumulators" or "fuel exporters" or "minerals and ores exporters" will be motivated to learn about the efficacy of SWFs. Note that policymaker use of the top growth decile alone to update beliefs about the efficacy of SWF creation may be a short-cut (i.e. bounded learning) or it may reflect giving greater weight to results where the noise (variability) of results is less (i.e. rational learning).[5] It may also reflect "follow the leader" emulation.[6]

The effects of various other diffusion mechanisms are represented using a series of monadic spatial effects that build on the method discussed in Neumayer and Plümper (2010). 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:

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

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.

[4] Other factors, such as large current account deficits, overvalued exchange rates, and weak banking systems, would suggest a need for even higher levels of reserves for precautionary purposes.

[5] On the substantive similarity of bounded and rational learning in such circumstances, see Meseguer 2006.

[6] On "follow the leader" emulation, see Simmons, Dobbin, and Garrett (2008:34-35).

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 theory 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 competitive processes of diffusion, I create two measures of "competitive distance" that follow from Elkins, Guzman, and Simmons (2008). One measures the degree to which governments compete in the same foreign markets. "Export market similarity" is constructed 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.

Another measure of competitive distance captures the degree to which countries export the same basket of goods. "Export product similarity" is constructed using information from the World Bank's *World Development Indicators* that describes a country's export profile. I calculate the correlation between countries for each year across over a dozen such indicators.[7] In theory, this distance varies from -1 to 1, indicating the similarity between country export profiles. In addition to capturing "role competition," this measure of export product similarity also taps into processes of "role emulation." I also develop a spatial effect to measure the influence of peer-based emulation based on a country's trading partners. The data are from Simmons and Elkins (2004) and supplemented by the IMF's *Direction of Trade* database.

[7] I use the following variables to capture export product similarity: agricultural raw materials, arms, communications, food, fuel, high-technology, insurance and financial services, international tourism, manufactures, ores and metals, other commercial services, transport services, and travel services.

Macroeconomic and Political Determinants

I also control for various macroeconomic and political determinants. It is widely presumed that the creation of a SWF is a functional response to reserve accumulation, commodity price cycles, and large and protracted current accounts surpluses. I therefore include five-year moving averages of the current account balance as a proportion of GDP, fuel exports as a proportion of exports, ores and minerals exports as a proportion of exports, reserves as a proportion of months of total imports, and reserves as a proportion of short-term debt. These data are from the World Bank's World Development Indicators.

The literature on SWF creation has thus far devoted little attention to theorizing the domestic political determinants of SWF creation; let alone empirically testing for their impact. Yet it seems sensible to suppose that such factors may be influential. In less democratic or poorly governed countries, 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. As the "resource-curse" literature suggests, opportunities for such rent-seeking behaviour are likely to be particularly strong in economies endowed with natural resources (Karl 1997; Ross 1999). Such rentier states are typically characterized by the relative absence of domestic taxation, as their resource wealth precludes the need extract income from their citizenry. This lack of a fiscal connection between the government and its citizenry in turn retards political development and may lead to efforts to limit the transparency of state-owned enterprises so as to prevent citizens from potentially posing a threat to the benefits that rent-seekers enjoy. This line of argument is consistent with the finding that SWFs in fuel-exporting economies tend to be the least transparent (Aizenman and Glick 2008). To the extent governments use SWFs as private goods, they should be associated with less democratic and weak institutions.

In more democratic or strongly governed countries, SWFs may resemble public goods by helping to provide the benefits of stabilization, savings, reserve investment, or development for all citizens to enjoy. Indeed, not all resource-rich countries have suffered from the resource curse. Countries that seem to avoid the resource curse – including Norway and Botswana (both of whom have SWFs) – had democratic regimes and strong institutions when they discovered their natural resource wealth (Mehlum et al. 2006). Not surprisingly, in more democratic and better governed countries, SWFs tend to exhibit greater transparency (Aizenman and Glick 2008).

In line with these arguments, I assess the influence of two domestic political determinants: democracy and institutional quality. Data on democracy are taken from Polity IV with the scale ranging from -10 (the least democratic) to +10 (the most democratic).[8] Data on institutional quality are taken from the Political Risk Service's International Country Risk

[8] http://www.systemicpeace.org/polity/polity4.htm

Guide.[9] I use the composite measure “political risk,” which contains twelve components capturing government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality. The composite measure runs from zero to 100, with higher values indicating poorer institutional quality.

[9] http://www.prsgroup.com/ICRG.aspx

V. Results and Discussion

Table 2 presents the results in the form of hazard ratios. A hazard ratio greater than 1 represents a positive effect on the odds of creating a SWF; less than 1, a negative effect. Networks of ties between countries tend to overlap. Moreover, many of the spatial and peer effects are highly correlated with the macroeconomic determinants on which they are based. Multicollinearity thus presents a significant challenge.[10] 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 effect of multicollinearity is minimized. In ancillary analysis, I assessed the impact of different correlation cut-offs and settled on .30 as an appropriate benchmark for generating stable parameter estimates.[11] In a few instances, judgement was called for in overlooking this benchmark so as to permit the assessment of a fuller range of diffusion processes.[12]

[10] Multicollinearity creates unreliable parameter estimates (i.e. the magnitude of the coefficient is inflated or deflated and/or the sign varies) and inflates the standard errors.

[11] Results are available from the author upon request.

[12] This occurred most often in the case of “export market similarity” and “export product similarity” which tended to have moderately strong correlations (.3 to .44) with some of the peer effects. Multicollinearity issues also ruled out controlling for the influence of peer-based emulation based on common religion, language, and colonial power. None of these alternative measures of peer-based emulation was significant in ancillary analysis.

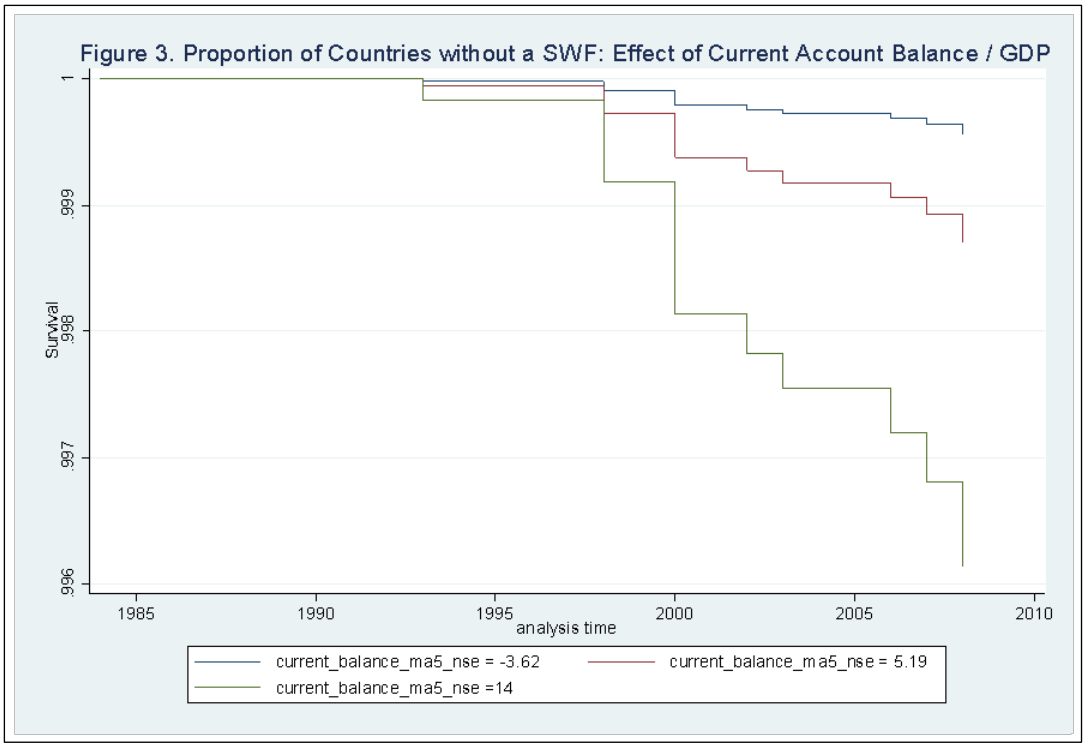
Table 2: Effects on Creation of Sovereign Wealth Fund, 1984 - 2007

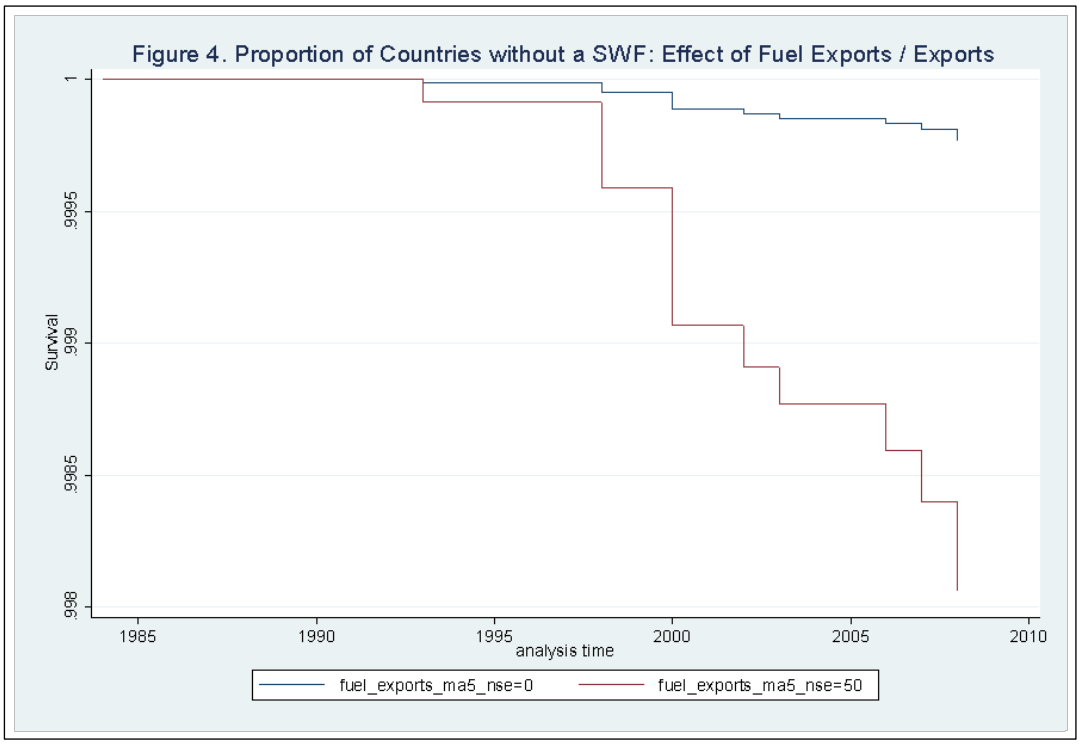
Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Current Account Balance / GDP	1.13**	1.02	1.02	1.01	.998	1.04	1.02	1.02	.992
	(.064)	(.063)	(.060)	(.062)	(.059)	(.139)	(.135)	(.119)	(.115)
Fuel Exports / Exports	1.04**								
	(.013)								
Ores and Minerals Exports / Exports	1.02								
	(.024)								
Reserves / Months of Imports	1.13			1.05	1.09			.982	1.06
	(.141)			(.149)	(.168)			(.129)	(.143)
Reserves / Short-term Debt	.794	1.00	1.00			1.00	1.00		
	(.134)	(.002)	(.002)			(.003)	(.003)		
Democracy	.923	.917	.921	.917	.921	.908	.914	.903*	.917*
	(.066)	(.056)	(.055)	(.054)	(.051)	(.058)	(.062)	(.054)	(.048)
National Governance Quality	1.10	1.06*	1.07**	1.07*	1.07**	1.04	1.05	1.03	1.04
	(.075)	(.035)	(.033)	(.035)	(.034)	(.039)	(.037)	(.038)	(.039)
Policies of Reserves Accumalators (Imports)		.977	.978						
		(.032)	(.038)						
Policies of Reserve Accumulators (Short-term Debt)				.989	.988				
				(.091)	(.095)				
Policies of Fuel Exporters		1.05**	1.06**	1.06**	1.06**				
		(.019)	(.027)	(.019)	(.026)				
Policies of Ore and Mineral Exporters		1.06	1.09*	1.05	1.08				
		(.070)	(.054)	(.062)	(.053)				
Policies of Trade Partners		1.04	1.04	1.04	1.03				
		(.032)	(.032)	(.035)	(.035)				
Policies of Export Product Competitors			1.01		1.03		1.13		1.15
			(.154)		(.143)		(.121)		(.094)
Policies of Export Market Competitors		.809		.804		.641		.662	
		(.200)		(.179)		(.204)		(.188)	

Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Policies of High-Growth Countries - Reserves Accumalators (Imports)		.977	.979			.976	.991		
		(.032)	(.038)			(.042)	(.056)		
Policies of High-Growth Countries - Reserve Accumulators (Short-term Debt)				.988	.989			1.04	1.04
				(.091)	(.095)			(.038)	(.040)
Policies of High-Growth Countries - Fuel Exporters						1.15	1.14	1.16*	1.14*
						(.113)	(.098)	(.102)	(.089)
Policies of High-Growth Countries - Ores and Minerals Exporters						.996	1.01	.998	1.01
						(.082)	(.077)	(.082)	(.069)
Number of Subjects	79	78	78	78	78	78	78	78	78
Number of Failures	10	10	10	10	10	10	10	10	10
Observations	1365	1157	1164	1177	1184	1157	1164	1177	1185
Log Likelihood	-27.69	-26.84	-26.96	-27.14	-27.26	-29.89	-30.34	-30.08	-30.41

* Significant at 10%; ** Significant at 5%

Column 1 presents results from the baseline model for all countries, which includes the macroeconomic and political determinants outlined above. The coefficients on current account balance and fuel exports are in the expected direction and significant. Figures 3 and 4 illustrate the effect of these variables of the probability of creating a SWF by plotting survival curves for different levels of current account balances and concentrations of fuel exports. Figure 3 compares the survival rates for governments facing current account balances at the mean and one and two standard deviations above the mean. Figure 4 compares the probability of creating a SWF for a government largely dependent on fuel exports (50% of exports) versus one without fuel exports. In both figures all other variables are held at their mean.





The effects, while significant, are not particularly strong. In both cases slightly less than 1% of governments with large current account surpluses or fuel export economies would have created a SWF by 2007. Functional imperatives may have shaped the decision to create a SWF, but not in a substantively significant way. Remarkably, measures of reserve accumulation have no significant impact on the probability of creating a SWF.[13]

Columns 2 - 9 add the diffusion mechanisms. Several clear empirical patterns begin to emerge. There is very consistent and convincing evidence of the importance of contingent emulation among fuel exporters in explaining the creation of SWFs. In each model specification, there is highly suggestive evidence that when countries reach a particular threshold of concentration in fuel exports, they emulate what other fuel exporters do.[14]

[13] There is no change in these results in ancillary analysis where for the five-year moving averages I substitute dummy variables indicating whether a country had surpassed precautionary thresholds for reserve accumulation.

[14] Like all the peer and base effects, the peer effect for fuel exporters and the five-year moving average are highly correlated (.77). Despite their covariance, the rate of change for each variable is vastly different, with the peer effect showing a much faster rate of increase over time. This provides at least the basis for the peer effect to be logically identifiable, which is made apparent in Figures 4 and 5.

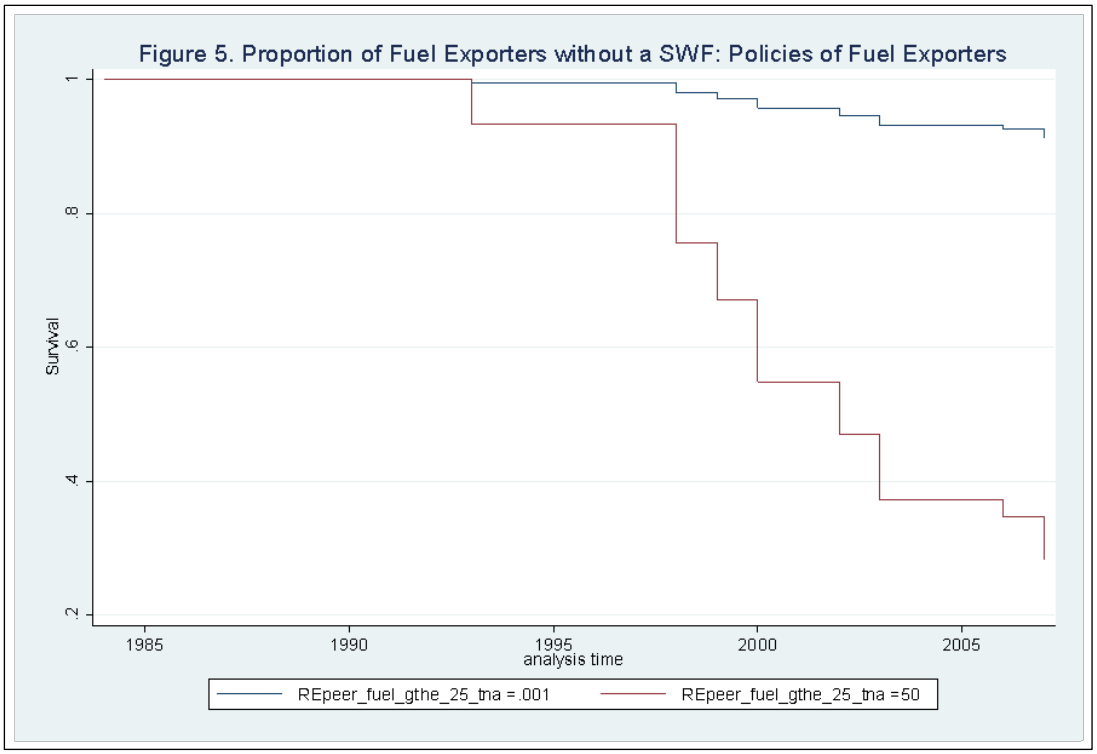


Figure 5 illustrates the influence of the fuel exporter peer effect on the probability of creating a SWF by plotting survival curves for two conditions: one in which the cumulative ratio of SWFs among fuel exporters is set to .001 and another in which it is set to 50. The lower value was selected for two reasons. First, because the peer effect takes on an observed value of zero only for economies not specializing in fuel exporters, this specification enables a comparison of the influence of the peer effect among fuel exporters. Second, by setting the lower value close to zero, it provides a basis for teasing out the peer effect from the effect of specializing in fuel exports alone. Since the cumulative ratio of SWFs among fuel exporters is near the lower bound of the measure, the curve largely captures functional imperatives for economies specializing in fuel exports.

The effect of contingent emulation is much greater in magnitude than the effect essentially capturing the functional imperatives facing fuel exporters. Almost 50% of those fuel exporters with a substantial cumulative ratio of SWFs among their peers would have created one as well by the start of the new millennium, while less than 5% of those essentially without peers with SWFs would have created one by that time. These results provide strong preliminary evidence that contingent emulation is central to the spread of SWFs among fuel exporters.

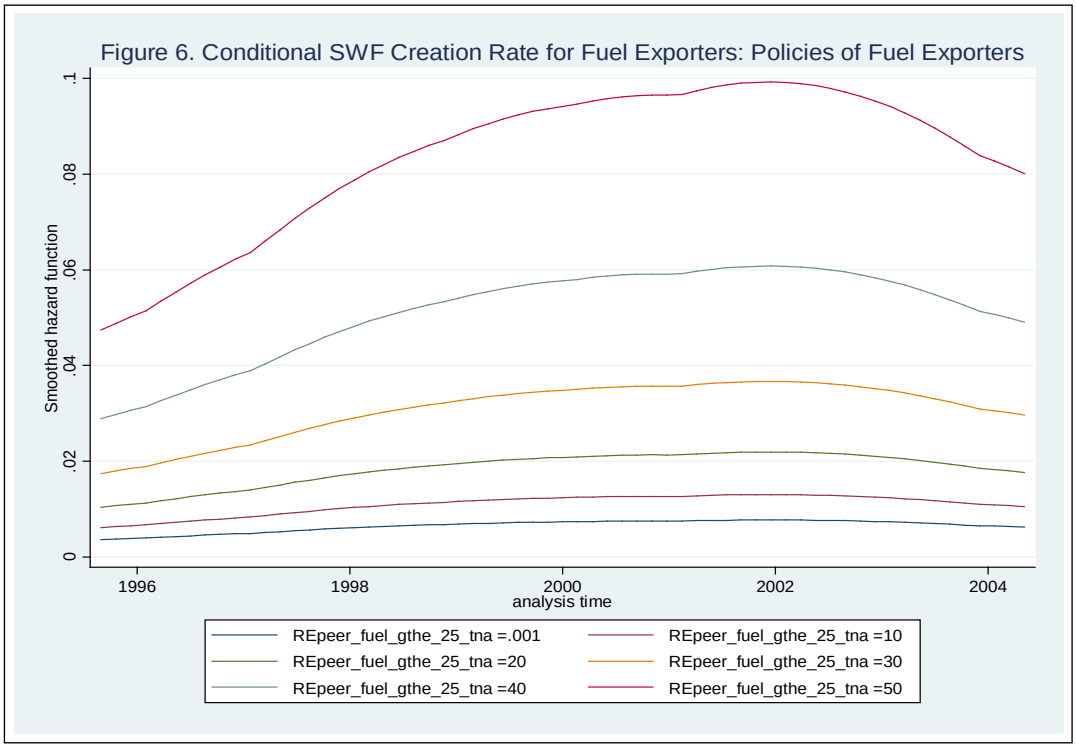


Figure 6 compares the smoothed hazard rate for an economy specializing in fuel exporters facing varying cumulative ratios of SWFs among its peers. The hazard rate denotes the rate of SWF creation per time unit conditional on not having a SWF at or beyond time *T*. It suggests that the influence of the peer effect on the rate of SWF creation does become particularly large until the cumulative ratio begins to approach 40. This provides highly suggestive evidence that at this threshold, processes of social construction work to define creating a SWF as appropriate behaviour for the identity called “fuel exporters.”

In addition to the peer effect among fuel exporters, results from one model (column 3) suggest that contingent emulation may have been shaped the decision of ores and minerals exporters as well. However, the evidence is not overwhelming ($p < .10$). The hypothesis that successful performance attracts adherents is only weakly supported by these results. In two models (columns 8 and 9), there is weak evidence ($p < .10$) of a tendency of fuel exporters to follow the policies taken by countries in the fastest-growing decile. One possibility is that decisions of fuel exporters are driven partly by a process of updating beliefs about the efficacy of creating a SWF. Another possibility is that these results reflect a process of contingent emulation in which fuel exporters are simply “following the leader.”

Measures of trade competition generally add little to understanding SWF creation. The market similarity variable had no effect, while export product similarity variable was attained a weak level of significant ($p < .10$) in only one model (column 9). Overall, there is little compelling evidence that competition alone affects the decision to create a SWF.

The measures for democracy and institutional quality fare somewhat better, but yield no definitive conclusions. Poor institutional quality is consistently signed to increase the likelihood of SWF creation, but it fails to attain statistical significance in models where the effect of the policies of high-growth countries is considered. The effect of less democratic institutions is also consistently signed to increase the likelihood of SWF creation, but it manages to achieve only a weak level of significance ($p < .10$) in two models (columns 8 and 9). There is thus some evidence to suggest associated less democratic and poor institutional quality with SWF creation, but it is not particularly robust.

VI. Conclusion

The number of SWFs has grown significantly over the previous decade. Their growth has been a remarkable illustration of changes to both the distribution of financial power and geopolitical clout between the West and emerging powers and to the distribution of ideas about states and markets. How can we understand the rise of what some (Farrell et al. 2007) are calling important "new power brokers" in world economy?

The evidence this paper provides suggests that observers may have overestimated the importance of functional imperatives associated with the accumulation of "excess" revenue and reserves from recent commodity price booms and large and protracted current account surpluses. There is little doubt that multiple motives exist for the creation of SWFs, but functional imperatives alone do not provide an adequate account of the reasons that countries have created SWFs. A fuller understanding requires being attentive to forces exogenous to countries that lie in the peer groups or networks in which they are situated.

Peer-based contingent emulation rests on strong theoretical foundations and finds consistent support from the data. When more SWFs are created among fuel exporters, countries that specialize in fuel exports are more likely to follow suit. The robustness of this finding across multiple model specifications provides strong initial evidence of a tendency of countries to match the policy choices of their peer groups or networks. Given the alternatives available for countries with "excess" revenue and revenues and the difficulty policymakers face in accessing detailed evidence on the performance of other SWFs, emulation is arguably a reasonable approximation of the cognitive processes captured by the data.

In dealing with the challenges, complexity, and uncertainty of specializing in fuel exporters, policymakers were likely motivated to search for an appropriate means to manage "excess" revenue and reserves. Yet the opacity of most SWFs means that policymakers would have encountered great difficulty in finding incontrovertible evidence of their efficacy. The "fashions" and "fads" of other fuel exporters therefore served as an important base of decision-making. The microfoundations of such emulation are based inductive reasoning ("what 'works' for other fuel exporters will 'work' for our country too"), social proofing, symbolic imitation, esteem, pride, prestige, and status. As the results here suggest, the influence of such motivations, and "fashions" and "fads" more generally, may provide far more explanatory power for understanding policy choices than much of the literature in international political economy has allowed.[15] Indeed, the evidence provided here suggests that processes of social construction have been at work for defining appropriate behaviour for the identity "fuel exporters" and possibly others.

[15] Emulation and the motivations for it has been a primary focus for organizational sociologists, but, with the notable exception of Simmons and Elkins (2004), few scholars of international political economy have systematically examined its influence on policy choices.

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