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Patterns and Trends in Sovereign Wealth Fund Investments: A Post-Crisis Descriptive Analysis

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Abstract

Analyzing more than 9,400 investment transactions performed by 32 sovereign wealth funds (SWFs), from 23 countries, and targeted towards 77 countries, between 2010 and 2013, this study highlights some of the most important visible patterns and nuances in SWF investments. First, lion's share of SWF investments are cross-border transactions that originated from and targeted towards high-income economies, while SWFs from emerging economies (mainly China) are also becoming important players in the global capital markets. Second, the most popular sectors are the financial and the real estate sectors mainly because of their more liquid nature and the energy sector for its strategic importance. Finally, domestic investments are relatively more popular among non-commodity based SWFs in comparison to commodity based SWFs. The results also show that while infrastructure investments are in line with the time horizon of SWF investments and their objectives, only five percent of SWF investments were targeted toward the infrastructure sector.

Keywords: Sovereign Wealth Fund, Investment, Financial Industry, Real Estate, Oil, Gas.

JEL Classification: G23, E22, F21.

1. Introduction

Over the past decade, Sovereign wealth funds (SWFs) have emerged as major players in global capital markets. While assets of SWFs are less than 10% of the global assets management industry and only about 4% of all financial assets[2], their rapid growth in the past decade as well as their increasing presence in assisting troubled financial institutions during the 2007-2009 global financial crisis have pushed SWFs to the forefront of the capital markets.

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2. See IMF (2015, 94-95).

Standing at about $7.4 trillion in the second quarter of 2015, the assets managed by SWFs have experienced a whopping $3 trillion or 68% growth since 2010. The relatively large size of liquid assets of Persian Gulf and East Asian SWFs made it possible for these SWFs to invest nearly $40 billion in troubled U.S. financial institutions in 2007.[1]

In fact, between 2007 and 2009, Persian Gulf and East Asian SWFs performed 35 cross-border investments in 13 banks and financial institutions headquartered in high-income economies. Ten of such investments were in four of the largest U.S. financial institutions: Bank of America, Citigroup, Morgan Stanley, and Merrill Lynch.[2] Following such high profile international investments in the U.S. and similar ones in UK and other European countries in a short span of two years, target nation started focusing on SWFs and their operations, objectives, motives, roles, and influence in the global financial landscape. "With SWFs growing rapidly in size and scope, the global political outcry is likely to grow even louder" (Bortolotti, Fotak, & Megginson, 2009: 6). Concerns about SWFs have mainly focused on three areas: (a) their influence on markets and companies, (b) their investment being potentially politically motivated, and (c) SWFs being a venue to boost the fortunes of firms in the home country by controlling positions in the foreign market.[3]

While this recent focus on SWFs has mainly been driven by the "fear of the unknown" due to the low levels of transparency of many of the Persian Gulf and East Asian SWFs investing in American and European banks, the scholarly literature on SWFs have since tried to answer important questions on how SWFs invest and what are the effects of these investment on the target countries and companies. Thus far, however, the literature has been largely based on a few dozen sporadic SWF transactions, resulting in an incomplete picture and often contradictory findings on the patterns, objectives, and consequences of SWF investments.

Through employing detailed information on more than 9,400 SWF transactions between 2010 and 2013, this work attempts to highlight several the most important observable patterns and trend in SWF

1. See Jory, Perry, & Hemphill (2010, 592).
2. See Anderloni & Vandone (2012).
3. See Borst (2015).

investments from around the world in the aftermath of the recent global financial crises. The choice of focusing on the post-financial crisis period is mainly driven by the fact that the data on SWF transactions before the financial crisis is sporadic and irregular, while the increased interest and focus on SWFs in the aftermath the financial crisis has led to more robust and regular data collection efforts on SWF transactions by various public and private institutions, making a post-crisis analysis more coherent and accurate. Thus, this work is unique in the scope of data it employs and the rich global picture it provides of SWF investments, making it a valuable contribution to the available literature on SWFs and their investment choices. In particular, this work will provide answers to the following questions:

- Who are the main players and directions (i.e. source and target countries) in the world of SWF investments?
- What are the most popular industries for SWF investments?
- Are there any observable differences in SWF investments across income levels of countries?
- What does the available data say on the size and nature of domestic versus cross-border SWF investments?

The remainder of the paper is organized as follows. The next section provides an overview of SWFs and the size of assets under their management, the sources of various SWFs' funds, geographic distributions, mandates, and transparency levels. Section III presents the observed patterns and trends in 9,400-plus SWF transactions during the 2010-2013 period while also providing a brief analysis. Section IV provides a short note on development policy and SWF investments. Section V concludes the discussion.

2. Sovereign Wealth Funds: An Overview

There is no one single definition of SWFs that literature has agreed on. In this study we adhere to the definition put forth by Beck & Fidora in their 2008 ECB occasional paper series. According to these authors, "SWFs are broadly defined as public investment agencies which mange part of the assets of national states…Three elements can be identified that are common to such funds: First, SWFs are state-owned. Second, SWFs have no or only very limited explicit liabilities and, third, SWFs are managed separately from official foreign exchange reserves" (Beck & Fidora, 2008: 6).

Based on the above definition, there are 78 SWFs around the world that are believed to manage almost $7.4 trillion of assets. Table 1 captures some of the information about these funds. As seen from this table, SWFs vary in size of their assets: smallest being Equatorial Guinea's Fund for Future Generations with $80 million in assets and the largest being Norway's Government Pension Fund Global with $882 billion in assets. Furthermore, global SWF assets are heavily concentrated among a few of these funds. For example, the top three, top five, and top 10 SWFs accounted for 32, 51, and 75 percent of global SWF assets respectively. This growth of SWFs have brought about one main challenges and that is "governments own or control a substantial share of the new international wealth through SWFs" (Truman 2008, 3) leading to more complex dynamics in the international financial relations because objectives and mandates of governments are often driven by factor other than simple profit-maximization motives.

Five important observations that often contradict the popular view on SWFs can be discerned from Table 1. First, while oil and gas revenues constitute the source of funding for the majority of global assets managed by SWF, they are not the only nor the main funding sources. In fact, non-commodity exports are responsible for about 40 percent of all SWF assets. The funding source of only five of the top 10 SWFs were from oil and gas. It is also interesting to note that from the other five non-commodities based SWFs, three are Chinese and all are East Asian. Nevertheless, oil and gas sales do play a crucial role in SWFs as the revenue of the three largest SWFs, holding about one-third of all SWF assets globally, is based on oil revenues.

Table 1: Top 20 Sovereign Wealth Funds Sorted by the Size of Assets under Management (2015)

Country	SWF Name	Assets (Billion $)	Year of Inception	Source of Funds	Linaburg-Maduell Transparency Index
Norway	Government Pension Fund Global	882	1990	Oil	10
United Arab Emirates	Abu Dhabi Investment Authority	773	1976	Oil	
Saudi Arabia	SAMA Foreign Holdings	757.2	1952	Oil	4
China	China Investment Corporation	746.7	2007	Non-Commodity	8

Country	SWF Name	Assets (Billion $)	Year of Inception	Source of Funds	Linaburg-Maduell Transparency Index
China	SAFE Investment Company	592	1997	Non-Commodity	4
Kuwait	Kuwait Investment Authority	548	1953	Oil	6
Hong Kong SAR, China	Hong Kong Monetary Authority Investment Portfolio	400.2	1993	Non-Commodity	8
Singapore	Government of Singapore Investment Corporation	344	1981	Non-Commodity	6
Qatar	Qatar Investment Authority	256	2005	Oil & GAS	5
China	National Social Security Fund	236	2000	Non-Commodity	5
Singapore	Temasek Holdings	193.6	1974	Non-Commodity	10
Australia	Australian Future Fund	95	2006	Non-Commodity	10
United Arab Emirates	Abu Dhabi Investment Council	110	2007	Oil	
Russia	Reserve Fund	88.9	2008	Oil	5
Korea, Rep.	Korea Investment Corporation	84.7	2005	Non-Commodity	9
Russian Federation	National Welfare Fund	79.9	2008	Oil	5
Kazakhstan	Samruk-Kazyna JSC	77.5	2008	Non-Commodity	
Kazakhstan	Kazakhstan National Fund	77	2000	Oil	2
United Arab Emirates	Investment Corporation of Dubai	183	2006	Oil	5
United Arab Emirates	International Petroleum Investment Company	68.4	1984	Oil	9
	Total Assets Managed by All SWFs	$7,369			
	Total Assets Managed by Commodity Based SWFs	$4,429			
	Total Assets Managed by Non-Commodity Based SWFs	$2,940			
	Total Assets Managed by SWFs in High Income Economies	$5,050			
	Total Assets Managed by SWFs in Emerging Economies	$1,837			
	Total Assets Managed by SWFs in Developing Economies	$482			

Source: SWF Institute. Author's Calculation.

Notes: Linaburg Maduell Transparency Index: Higher values refer to more transparency.

Second and related to the above, SWFs are not limited to oil-rich countries of the Persian Gulf. In fact, they are present in every region of the globe, with largest ones located in the Europe, Persian Gulf, and East Asia regions (Figure 1).

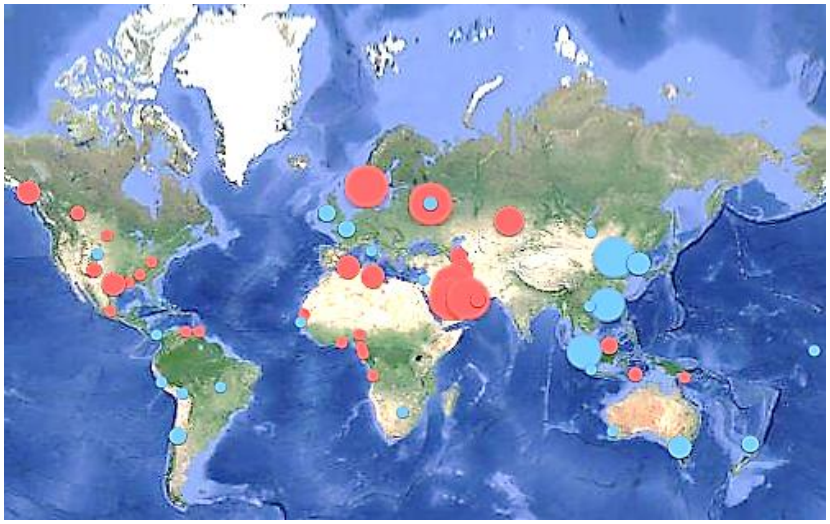

Figure 1: Geographic Distribution of Sovereign Wealth Funds (2015)
Note: Red is Oil & Gas. Blue is Non-Oil & Gas
Source: SWF Institute

Third and again related to above, SWFs are not only a phenomenon associated with developing or emerging economies. The assets managed by SWFs in high income economies (including high income oil exporting countries of the Persian Gulf) constituted about 70 percent of all SWFs assets globally. Also, the two largest SWF in Norway and UAE are responsible for 22 percent of global assets managed by SWFs.

Fourth, SWFs are not a recent phenomenon. While not referred to as Sovereign Wealth Funds, the history of funds established by sovereigns goes back to 19th century, when in 1854 and 1876 The Texas Permanent School Fund and The Texas Permanent University Fund were established for the benefit of public schools and public universities of Texas. Furthermore, more than one-fifth (or 17) of SWFs were established before 1990s, with the United States accounting for Seven of them. It is interesting to also note that the revenue of all but two of these early SWFs were based on commodity

(mainly oil and gas) exports. It is however true that more than two-thirds of all SWFs were established in the 21th century and especially in developing and emerging economies. This growth was mainly driven by rising commodity prices (especially oil and gas) between 2003 and 2008. Fourteen SWFs were established in 2011 and 2012, 10 of which were from the developing world (Table 1).

Fifth, SWFs have a wide range of transparency records. Linaburg-Maduell Transparency Index (LMTI) data on 53 SWFs shows that more than half of these SWFs have LMTI of 8 and above, with 10 being the maximum (Table 2). On the flip side, it is a source of great concern to see that five of the 10 largest SWFs, controlling more than one-third of all SWF assets globally, have a LMTI figures of five or less. "Consequently, there is broad agreement that SWFs should become more transparent and disclose their strategies and holdings… [In response to this pressure] in 2008, the Abu Dhabi Investment Authority sent a letter to regulators in key countries … promising greater disclosure" (Bortolotti, Fotak, & Megginson, 2009: 7). In addition to this lack of transparency of some of the largest SWFs, 75 percent of all SWFs are hosted in the Middle East and East Asia region which lag behind in transparency measures, thus creating concerns about their motivations when investing in Western Europe and the United States. Nevertheless, compared to a decade ago, SWFs have become more transparent and according to Bangall & Edwin

Table 2: Transparency of Sovereign Wealth Funds (2015)

Linaburg-Maduell Transparency Index	Number of SWFs	% of SWFs
1	6	11.3%
2	1	1.9%
3	2	3.8%
4	7	13.2%
5	7	13.2%
6	3	5.7%
8	5	9.4%
9	11	20.8%
10	11	20.8%
Total	53	100%

Source: SWF Institute. Author's Calculation

(2013), most of these improvements took place in the period of 2007-2009 where SWFs entered the center of the global financial industry as alternative sources of funding for troubled financial institutions.
SWFs with the greatest levels of transparency are from nations with well-established financial regulatory agencies, such as Norway, Ireland, Australia, South Korea, and Singapore. On the other hand, SWFs with the lowest degree of transparency are from Algeria, China, the United Arab Emirates, and Saudi Arabia (Figure 2). While one would wish for SWFs to become more transparent, given their highly strategic position and role, the current level of transparency, though not perfect and desirable, is still impressive. Also, Jory, Perry, & Hemphill (2010) point to an interesting fact that "private equity firms and hedge funds do not disclose information publicly. Therefore, why the call for SWFs to be more transparent?" (Jory, Perry, & Hemphill, 2010: 601). Clearly, the quick and obvious answer to this question is related to the political and sovereign nature of these funds which makes target countries concerned of the long-run objectives and motives of some of the cross-country investments carried out by SWFs.

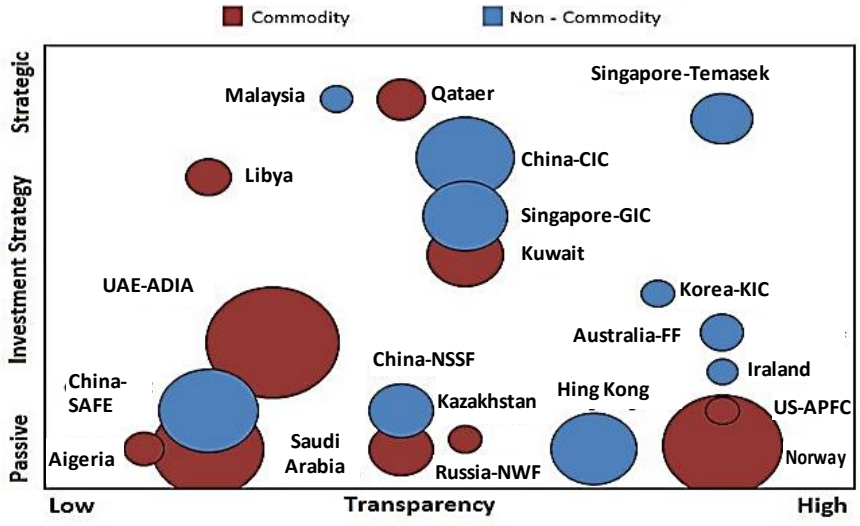

Figure 2: Transparency and Strategies of Selected Sovereign Wealth Funds
Source: SWF Institute

Finally, and as expected, the main objective of the establishment of a vast majority of SWFs is either economic development or macroeconomic stability of their host countries. After carefully

reviewing the mandates published by SWFs, one notices that more than 90 percent of 76 SWFs where one has information on their mandates, state macroeconomic stability (or fiscal and exchange rate stability) and economic development through increasing physical and human capital as the main objectives for which the funds should be employed for (Table 3). Only 10 percent of the SWFs have pensions as part of their mandates. However, "in practice SWFs typically have multiple or gradually changing objectives…As circumstance change, the objective of the funds may also change. This is especially true for countries that export natural resources" (IMF 2007, 46). Usually, at first, a stabilization fund is established to smooth volatile fiscal revenue and capital inflows. However, as the assets grow beyond the needed levels for stabilization purposes, objectives may be revisited, amended, and broadened.

Table 3: Mandate of Sovereign Wealth Funds (2015)

Mandate	Number of SWFs	% of SWFs
Economic Development	31	40.8%
Macroeconomic Stability	29	38.2%
Economic Development & Macroeconomic Stability	9	11.8%
Pension	4	5.3%
Macroeconomic Stability & Pension	2	2.6%
Economic Development & Pension	1	1.3%
Total	**76**	**100%**

Source: SWF Institute. Author's Calculation.

A closer look at the mandates of SWFs reveals that 27 out of 51 commodity based SWFs have macroeconomic stability as part of their mandates, highlighting the important role of these funds in providing fiscal and exchange rate stability for their host countries in the face of highly volatile commodity prices. Moreover, 29 out of 51 commodity based SWFs have economic development as part of their mandates, again pointing to the important role of these funds in inter-generational transfer of wealth through saving and investing the revenues from the sale of scarce and exhaustible natural resources into developmental project that would benefit both the current and future generations.

To summarize, although the number of SWFs have mushroomed in the 21st century and they have become increasingly important players in the global financial arena in recent years, they have been in existence for over a century. While the Persian Gulf is home to some of the largest SWFs in the world, every region of the globe host several SWFs at varying sizes and transparency levels; and while oil and gas SWFs are the largest of these funds, non-commodity SWFs have managed to grow in size very rapidly. However, the funds managed by SWFs are highly concentrated. Top three and top five SWFs (from amongst the 78) are responsible for more than one-third and one-half of all SWF assets (Table 1) giving them immense power in global financial and capital markets. In short and as alluded to by the former CIO of Korea Investment Corporation (South Korea's SWF) "SWF influence around the world is growing quickly" (Gowen, 2015: 1). It is therefore imperative to have a better understating of how and where SWF invest and analyze any observable patterns and trends of their investments.

3. Transactions of Sovereign Wealth Funds

3.1 Overview

SWFs have become an increasingly important class of institutional investors over the past decade. According to SWF transactions database published by Sovereign Wealth Fund Institute, between 2010 and 2013, 32 SWFs from 23 countries have embarked on more than 9,400 investment transactions in 77 countries, valuing at about $410.2 billion total (Tables 4, 5, and 6).

Norway's Government Pension Fund Global takes the lead by accounting for about 60 and 40 percent of all SWF transaction counts and amounts respectively between 2010 and 2013 (Table 5). This is followed by SWFs hosted in Singapore at 10.8 percent of global counts and 17.4 percent of global amounts (Table 5). While, SWFs based in China and the Persian Gulf region accounted for about 15 percent of all global SWF transactions counts, they were responsible for about one-third of all SWF investments in dollar amounts, pointing to the relatively large sizes of their individual investments (Table 5).

Table 4: Recorded Sovereign Wealth Fund Transactions, by Sovereign Wealth Fund (2010-2013)

Sovereign Wealth Fund	Country	Global Transaction Count	Global Transaction Amount (Million $)	Share of Global Transaction Count (%)	Share of Global Transaction Amount (%)
Government Pension Fund Global	Norway	5,632	$155,371	59.9%	37.9%
Korea Investment Corporation	Korea, Rep.	930	$5,877	9.9%	1.4%
Government of Singapore Investment Corporation	Singapore	711	$37,173	7.6%	9.1%
Abu Dhabi Investment Authority	United Arab Emirates	444	$13,842	4.7%	3.4%
Kuwait Investment Authority	Kuwait	370	$14,485	3.9%	3.5%
Temasek Holdings	Singapore	301	$34,350	3.2%	8.4%
National Social Security Fund	China	266	$11,073	2.8%	2.7%
Texas Permanent School Fund	United States	264	$155	2.8%	0.04%
Alberta Heritage Fund	Canada	121	$1,905	1.3%	0.5%
Abu Dhabi Investment Council	United Arab Emirates	83	$2,663	0.9%	0.6%
China Investment Corporation	China	69	$29,226	0.7%	7.1%
Qatar Investment Authority	Qatar	50	$34,940	0.5%	8.5%
SAMA Foreign Holdings	Saudi Arabia	49	$2,934	0.5%	0.7%
SAFE Investment Company	China	37	$6,963	0.4%	1.7%
Khazanah Nasional	Malaysia	15	$5,267	0.2%	1.3%
International Petroleum Investment Company	United Arab Emirates	11	$14,348	0.1%	3.5%
Mubadala Development Company	United Arab Emirates	9	$5,134	0.1%	1.3%
New Zealand Superannuation Fund	New Zealand	7	$522	0.1%	0.1%
Alaska Permanent Fund	United States	5	$1,339	0.1%	0.3%
Australian Future Fund	Australia	5	$2,381	0.1%	0.6%
Italy Strategic Investment Fund	Italy	5	$3,208	0.1%	0.8%

Sovereign Wealth Fund	Country	Global Transaction Count	Global Transaction Amount (Million $)	Share of Global Transaction Count (%)	Share of Global Transaction Amount (%)
State Oil Fund of Azerbaijan	Azerbaijan	4	$1,099	0.04%	0.3%
National Pensions Reserve Fund	Ireland	3	$15,859	0.03%	3.9%
Oman Investment Fund	Oman	3	$83	0.03%	0.02%
Russian Direct Investment Fund	Russian Federation	3	$234	0.03%	0.1%
Sovereign Fund of Brazil	Brazil	3	$9,341	0.03%	2.3%
Strategic Investment Fund	France	3	$14	0.03%	0.00%
Libyan Investment Authority	Libya	2	$300	0.02%	0.1%
Hong Kong Monetary Authority Investment Portfolio	Hong Kong SAR, China	1	$162	0.01%	0.04%
Investment Corporation of Dubai	United Arab Emirates	1		0.01%	
Mumtalakat Holding Company	Bahrain	1		0.01%	
RAK Investment Authority	United Arab Emirates	1		0.01%	
Total		**9,409**	**$410,245**	**100%**	**100%**

Source: SWF Institute. Author's Calculation.

Table 5: Recorded Sovereign Wealth Fund Transactions, by Country of Origin (2010-2013)

Country of Origin	Global Transaction Count	Global Transaction Amount (Million $)	Share of Global Transaction Count (%)	Share of Global Transaction Amount (%)
Norway	5,632	155,371	59.9%	37.9%
Singapore	1,012	71,523	10.8%	17.4%
Korea, Rep.	930	5,877	9.9%	1.4%
United Arab Emirates	549	35,986	5.8%	8.8%
China	372	47,262	4.0%	11.5%
Kuwait	370	14,485	3.9%	3.5%
United States	269	1,494	2.9%	0.4%
Canada	121	1,905	1.3%	0.5%
Qatar	50	34,940	0.5%	8.5%
Saudi Arabia	49	2,934	0.5%	0.7%

Country of Origin	Global Transaction Count	Global Transaction Amount (Million $)	Share of Global Transaction Count (%)	Share of Global Transaction Amount (%)
Malaysia	15	5,267	0.2%	1.3%
New Zealand	7	522	0.1%	0.1%
Italy	5	3,208	0.1%	0.8%
Australia	5	2,381	0.1%	0.6%
Azerbaijan	4	1,099	0.04%	0.3%
Brazil	3	9,341	0.03%	2.3%
France	3	14	0.03%	0.003%
Ireland	3	15,859	0.03%	3.9%
Oman	3	83	0.03%	0.02%
Russian Federation	3	234	0.03%	0.1%
Libya	2	300	0.02%	0.1%
Bahrain	1		0.01%	
Hong Kong SAR, China	1	162	0.01%	0.04%
Total	**9,409**	**410,245**	**100%**	**100%**

Source: SWF Institute. Author's Calculation.

On the destination or target side, the U.S. and the U.K. were the destination for 46 percent of all SWF transactions which accounted for more than 30 percent of the SWF investment amounts. These points to these countries' attractiveness for SWF investments even after the devastating effects the global financial crisis had on their economies and financial institutions (Table 6). Next on the list, with about 11% of the share of the global amounts is China. However, there is one major difference between the investments completed in the U.S. and U.K. and the ones carried out in China. The vast majority of SWF investments in the U.S. and the U.K. are from abroad (97% for the case U.S. and 100% for the case of the U.K.), raising serious concerns into the increasing role and influence of foreign SWFs in the U.S. and U.K. financial and equity markets, while the Chinese SWFs were responsible for almost half of all SWF investments within China, pointing to their crucial role in the stabilization and development of Chinese economy.

Table 6: Recorded Sovereign Wealth Fund Transactions, Top 10 Target Countries (2010-2013)

Target Country	Global Transaction Amount (Million $)	Share of Global Transaction Amount (%)
United Kingdom	78,703	19.20%
United States	45,563	11.10%
China	43,384	10.60%
France	27,303	6.70%
Germany	20,556	5.00%
Switzerland	20,485	5.00%
Brazil	20,412	5.00%
Ireland	18,141	4.40%
Japan	13,871	3.40%
Australia	13,596	3.30%

Source: SWF Institute. Author's Calculation.

3.2 Domestic vs. Cross-Border SWF Investments

The vast majority of SWF investments between 2010 and 2013 have been across national borders making the abovementioned concern for the case of non-resident SWF investments in the U.S. and the U.K. global in scope. In fact, between 2010 and 2013, about 93 and 84 percent of all SWF transaction counts and amounts respectively, took place across national borders (Figure 2). Furthermore, the median cross-border transactions were larger than domestic ones ($4.9 million vs. $3.6 million). One reason as to why cross-border investments constitute the lion's share of SWFs investments is that in order for SWFs to invest domestically, they would typically have to convert some of their hard currency assets back into domestic currency, undoing the policies that led to reserve accumulation in the first place. Furthermore, such investments usually increase domestic demand and add to inflationary pressures.[1]

1. See IMF (2007, 47).

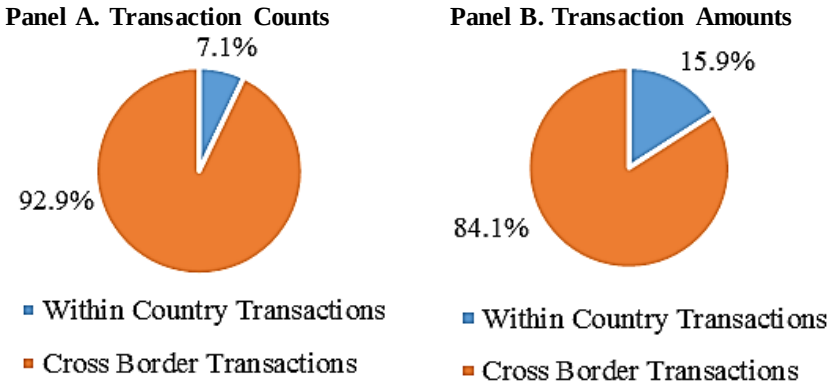

Figure 2: Recorded Sovereign Wealth Fund Transactions, by Being Cross Border or Not (2010-2013)
Source: SWF Institute. Author's Calculations.

Cross-border investments, however, seem to be more popular among commodity based SWFs. Table 7 shows that more than 97 percent of all transactions of commodity based SWF were cross-border, while this figure stood at about 64 percent for non-commodity based SWFs. A quick review of Table 1 shows that commodity based SWFs are generally from oil and/or gas rich countries with often smaller population and economies. Also, these economies usually have smaller domestic industrial and manufacturing bases, therefore having less absorptive capacities, thus forcing their SWFs to mainly invest outside of their countries. In comparison, countries with non-commodity based SWFs, are generally larger in size (both population and economy) with significantly larger financial, industrial, and manufacturing bases, therefore providing more domestic investment opportunities for their SWFs.

Table 7: Recorded Sovereign Wealth Fund Transactions, by Source of Funding and Being Cross Border or Not (2010-2013)

	Commodity based SWFs (Million $)	Share in Transactions by Commodity based SWFs (%)	Non-Commodity based SWFs (Million $)	Share in Transactions by Non-Commodity based SWFs (%)
Domestic Transactions	$6,998	2.8%	$58,316	36.1%
Cross-Border Transactions	$241,597	97.2%	$103,335	63.9%
Total	**248,595**	**100%**	**161,650**	**100%**

Source: SWF Institute. Author's Calculations.

3.3 Country Income Classifications and SWF Investments

Similar to many other aspects of the global finance and economy, the world of SWF investments is also a world that is heavily dominated by high-income economies. We saw earlier that such economies top the list in both origin and target countries of recorded SWF transactions between 2010 and 2013. High-income economies were responsible for about 85 percent of all SWF investment amounts in this period, followed by emerging and developing economies at 14.7 and 0.3 percent respectively (Table 8).

Table 8: Recorded Sovereign Wealth Fund Transactions, by Level of Economic Development of Origin and Target Country (2010-2013)

	Transactions done by High-income Economies (Million $ & % of Total)	Transactions done by Emerging Economies (Million $ & % of Total)	Transactions done by Developing Economies (Million $ & % of Total)
Target Country: High-income Economies	$288,722 (70.4%)	$29,282 (7.1%)	$466 (0.1%)
Target Country: Emerging Economies	$55,611 (13.6%)	$32,729 (8.0%)	$933 (0.2%)
Target Country: Developing Economies	$2,410 (0.6%)	$93 (0.02%)	$0 (0%)
Total	**346,743**	**62,104**	**1,399**

Source: SWF Institute. Author's Calculations.

More than 83 percent of SWF investments performed by high-income economies (or 70 percent of all global SWF investments) were targeted towards high-income economies pointing to a "north-north" flow of SWF investment funds, which is similar to most other cases of international financial flow. Adding the 7.2 percent of global SWF investments flowing from emerging and developing economies to high-income economies makes the already capital-rich high-income economies the target of 77 percent of all global SWF investments, while capital-thirsty developing countries attracted only less than 1 percent of such investments (Table 9). This is mainly because of two reasons. First, similar to any other investment decision "high levels of investor protection, strong economic performance, and well developed local capital markets all serve to attract higher levels of inbound SWF

investment" (Megginson, You, & Han, 2013: 567). This is the case for most of the high-income economies, especially that of the U.S. and the U.K. Second, "SWFs are more likely to invest in countries … if the bilateral trade between the acquirer and target countries is higher" (Ibid: 567), which again is the case for most of the high-income economies.[1]

Therefore, while the role of SWFs from emerging and developing economies have been on the rise, the market for SWF transactions are heavily dominated by SWFs from in high-income economies. While this fact is mainly driven by Government Pension Fund Global of Norway accounting for 60 and 38 percent of 2010-2013 SWF transaction counts and amounts respectively, other SWFs from high income countries, such as Korea Investment Corporation (South Korea), Government of Singapore Investment Corporation (Singapore), Abu Dhabi Investment Authority (U.A.E.), Kuwait Investment Authority (Kuwait), and Temasek Holdings (Singapore) are all among the top six most active SWFs in the world.

While a "north-north" and "south-north" flow of SWF funds are clearly visible in the SWF transactions between 2010 and 2013, a longer trend analysis of SWF activities highlights the fact that some SWFs have turned their attention towards emerging markets. This is mainly because of the increasing confidence in the emerging markets after the global financial crisis. "For example, Singapore's Temasek reportedly plans to focus on emerging markets in Asia, Brazil, and the Russian Federation and reduce emphasis on OECD countries (from one-third to one-fifth of assets)" (Kunzel et al., 2011: 11). Also, Norway's SWF has increased its presence in emerging Asia and plans to add Asian properties to its global real estate portfolio.

From all SWF investments in high-income economies about two-third were carried out by commodity based SWFs. However, less than half (41 and 36 percent) of all SWF investments in emerging markets and developing economies respectively were carried out by commodity based SWFs (Table 9). In other words, while more than 85 percent of commodity based SWF investments were targeted towards high-income economies, these economies attracted 66 percent of non-

1. Also see Rossi & Volpin (2004) and Ferreira, Massa, & Matos (2010).

commodity SWF investments between 2010 and 2013. This relative attractiveness of high-income markets for commodity based SWFs is mainly due to the volatile commodity prices coupled with more liquid and developed financial systems in high-income economies. High commodity prices in the periods immediately in the aftermath of the global financial crisis increased the windfalls for commodity based SWFs.[1] With limited absorptive capacity and institutional and financial infrastructures in emerging and developing economies, these sudden windfalls were largely invested in high-income economies. Furthermore, facing volatile commodity prices, commodity based SWFs often prefer to investment in highly liquid, transparent, and accessible markets of high-income economies.

Table 9: Recorded Sovereign Wealth Fund Transactions, by the Source of Funding of SWFs and the Level of Economic Development of Target County (2010-2013)

	Target Country: High-Income Economies (Million $)	Share in Transactions done in High-Income Economies (%)	Target Country: Emerging Economies (Million $)	Share in Transactions done in Emerging Economies (%)	Target Country: Developing Economies (Million $)	Share in Transactions done in Developing Economies (%)
Commodity based SWFs	$211,384	66.4%	$36,318	40.7%	$893	35.7%
Non-Commodity based SWFs	$107,085	33.6%	$52,955	59.3%	$1,610	64.3%
Total	**$318,469**	**100.0%**	**$89,273**	**100.0%**	**$2,503**	**100.0%**

Source: SWF Institute. Author's Calculations.

3.4 Sectors and SWF Investments

In addition to some countries clearly being a more popular destination for SWF investments, some sectors are also preferred by these funds to invest in than others. Financials, real estate, and energy attracting 27, 13, and 11 percent of all global SWF investments respectively

1. According to Continuous Commodity Index (CCI), while the recent global financial crisis resulted in a 48% plunge in commodities prices in late 2008, they staged a quick and powerful recovery, rising 112% from the depths of the crisis to a mid-2011. However, the picture for commodity prices have changed since 2014 with serious ramifications for commodity based SWFs which is yet to be analyzed.

were the three most popular sectors for these funds between 2010 and 2013 (Table 10). Financials are most popular mainly because investment in the financial sector is much more liquid than other sectors and the crash in the financial sector provided a ripe buying opportunity. The Real estate sector was also popular in 2010-2013 for the same reasons of liquidity and the buying opportunity after the financial crises. Rapid increases in energy prices in the aftermath of the financial crises and the forecast for even much higher price in the second decade of 21st century[1] made the energy sector an attractive industry for SWFs to invest in. These investments were channeled to increase the production capacity of fossil fuels while also making new investments in renewable energy.[2]

Table 10: Recorded Sovereign Wealth Fund Transactions, by Sectors (2010-2013)

Target Sector	Transaction Count	Transaction Amount (Million $)	Share of Global Transaction Amount (%)	Average Size of Transaction (Million $)
Financials	1,687	110,770	27.0%	65.7
Real Estate	313	53,258	13.0%	170.2
Energy	595	47,479	11.6%	79.8
Materials	969	35,220	8.6%	36.3
Industrials	1,535	30,498	7.4%	19.9
Consumer Discretionary	1,352	28,243	6.9%	20.9
Healthcare	610	20,570	5.0%	33.7
Infrastructure	40	19,140	4.7%	478.5
Information Technology	1,065	18,545	4.5%	17.4
Consumer Staples	618	16,686	4.1%	27.0
Telecommunications	205	15,810	3.9%	77.1
Utilities	375	10,586	2.6%	28.2
Media and Entertainment	45	3,441	0.8%	76.5
Total	**9,409**	**410,245**	**100.0%**	**43.6**

Source: SWF Institute. Author's Calculations.

1. For example, see Cooper (2011: 9).
2. The same sectoral preferences have been observed for SWF investments in periods before 2010. For example, see Barbary et al. (2010).

In terms of the average size of investment, the infrastructure sector with more than 10 times the size of an average SWF investment, was understandably by far the most capital intensive sector. Nonetheless, this sector only accounted for about 5 percent of all SWF investments globally (Table 10). This is somewhat surprising as infrastructural project are usually associated with long-term investment horizons which, in theory, can make such investments a particularly good fit for the long-term development and stability objectives of many SWFs.

Two important reasons can be highlighted here. First, for reasons related to providing macroeconomic stability, SWFs are mainly interested in more liquid class of assets that could be readily and immediately employed during time of macroeconomic instability. Thus, financials followed by real estate are the most attractive sectors for SWF investments even after the global financial crisis. In fact, in the aftermath of the recent global financial crisis, SWFs became more attracted to the financial sector due to the buying opportunity the crisis provided. This has exposed SWFs to higher than historical levels of risk, which raises serious questions about the stability of these funds and their ability to provide macroeconomic stability for their host countries.

Second, the mandate of economic development is not heeded seriously by SWFs as less than 1 percent of all SWF investments (or only five recorded transactions) have been targeted to domestic infrastructure projects. At first sight, the fit between the long-term objectives of SWFs and the long-term investment horizon of infrastructure projects appear to align, making such investments feasible and in fact attractive for SWFs. Nonetheless, SWFs have been shying away from infrastructure investments and especially so in developing and emerging countries where the infrastructure gap is huge and the need for such investments is substantial. Considering the fundamental role of infrastructure investment in the long-run performance and development of an economy, these low levels of domestic infrastructure investments by SWFs are a major source of concern.

In addition to the above, the infrastructure sector in high-income economies managed to attract 93 percent of all SWF infrastructural investments around the globe between 2010 and 2013 (Figure 3). This

is because of one main reason. Investments in this sector are often very large in size and are associated with longer maturity horizons. Therefore, there needs to be specialized financial, legal, and other institutional apparatuses in place that not only would make such investments possible and profitable but also make them less susceptible to risks stemming from corruption that are more characteristic of larger and longer-term projects. In other words, "public investment poses significant management and governance challenges, including low capacity, weak governance and regulatory frameworks and lack of coordination among public entities. Furthermore, multiple institutions can have overlapping investment mandates, leading to fragmented programs and inefficient use of public funds" (Gelb et al., 2014: 8). Therefore, coordinating the efforts of multiple entities carrying out large infrastructural projects is a necessary condition to make such investments beneficial to long-run growth of the economy. Clearly, governance, legal, institutional, and monitoring apparatuses in high-income economies are by far more equipped to handle large and long-term infrastructural investments than those in majority of the developing and emerging economies. As a result, while developing and emerging economies' infrastructural needs significantly surpass that of high-income economies, nonetheless 93 percent of SWFs' global infrastructural investments, which is miniscule to start with, are targeted towards high-income economies.

It is important to note, however, that SWFs investments in the financial sector was not limited to financial institutions headquartered in high-income economies. In fact, about 57.3 percent of global SWF investments in the financial sector targeted financial institutions in high-income economies. Financial institutions in emerging markets attracted a relatively comparable share of 42.4 percent, while developing economies' financial sector accounted for less than 0.3 percent of global SWF investments in this sector (Figure 3). The energy sector figures are also comparable across income levels. Specifically, high-income economies attract two-third of global SWF investments in this sector followed by emerging and developing economies at 30 and 3 percent respectively. For all other sectors, high-income economies attracted between 80 percent (in the case of

telecommunications) to 97 percent (in the case of Media and entertainment) of SWF investments in any given sector.

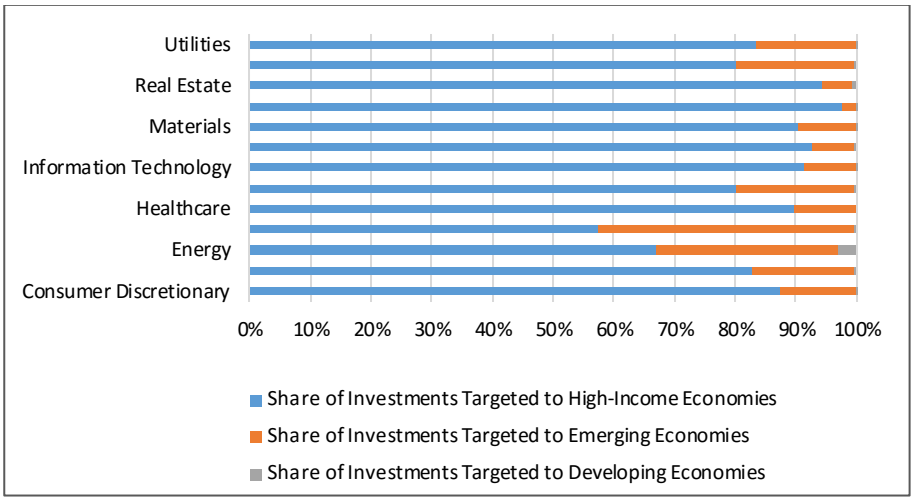

Figure 3: Recorded Sovereign Wealth Fund Transactions, by Sector and Level of Economic Development of Target Economies (2010-2013)
Source: SWF Institute. Author's Calculations.

These trends point to the growing attractiveness of emerging economies' financial and energy sectors. Regarding the energy sector, high energy prices of mid-2008 and 2010-2011 coupled with inherent volatility in energy markets promoted emerging economies with ambitious economic goals, such as China, to take serious steps towards energy independence.

Looking at the data from a different angle, one notices that more than half of all SWF investments completed in the emerging economies were directed at their financial sector while the same was true for only about 20 percent of investment targeted towards high-income economies. However, this was mainly driven by the investments of Chinese SWFs in the financial sector of their country to shore up their banks in the aftermath of the global financial crises.

It is also important to note that financial and energy sectors were two of the most popular sectors for SWF investments across all three income groups (Figure 4). More than half of SWF investments targeting developing countries were in the energy sector (Figure 4) pointing to the growing role of developing countries in the global energy market.

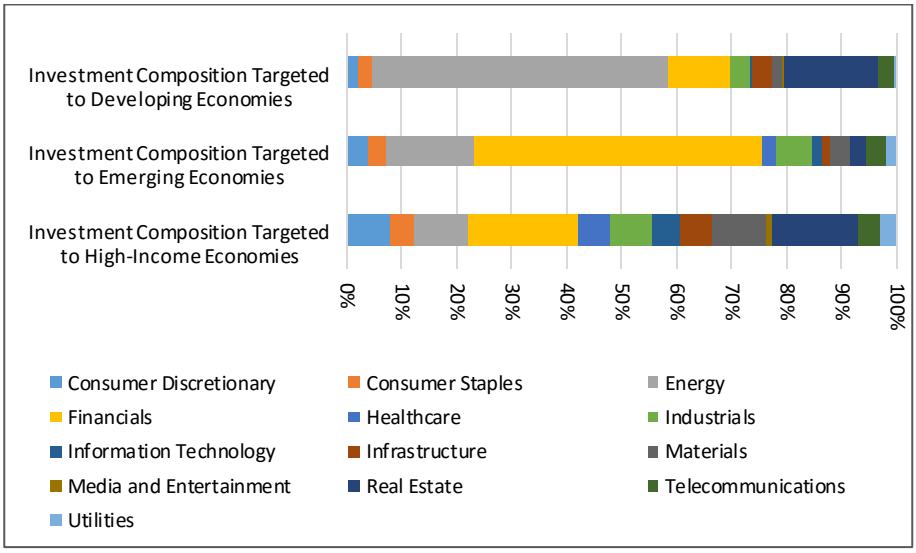

Figure 4: Recorded Sovereign Wealth Fund Transactions, by Sector and Level of Economic Development of Target Economies (2010-2013)
Source: SWF Institute. Author's Calculations.

A recent trend is the growing attractiveness of renewable energy for developing economies. Highly volatile fossil fuel prices have prompted many developing and emerging economies such as Indonesia, China, Kenya, South Africa, Turkey, Uruguay, Panama, Jordan, and the Philippines to increase investments in renewable energy sectors[1] and SWFs have become ever keener in financing more of such projects. For example, Masdar Capital was funded by Mubadala, a U.A.E. SWF, which seeks to build a portfolio of renewable energy and clean technology companies. China Investment Corporation (CIC), a Chinese SWF, is also investing heavily in green growth. Recently, CIC has invested in wind ($1.6 billion in AES and $60 million in Huaneng Renewables) and solar ($709.7 million in GCL). Also, CIC recently agreed to purchase a minority stake in the asset manager EIG Global Energy Partners.[2] Some other examples of SWFs' involvements in clean and renewable energies are:

a. *Kuwait's Kuwait Investment Authority (KIA)* taking an 11 percent stake in Heliocentris Energy Solutions in May 2011.

1. See FS, UNEP, & BNEF (2015) and IRENA (2012).
2. For more see Kaminker & Stewart (2012).

Heliocentris aims to replace diesel generators with "zero-emission" products, such as fuel cells.[1]

b. *Malaysia's Khazanah* investing $150 million over three years in a venture to develop at least eight municipal waste-to-energy projects in China with Beijing China Sciences General Energy & Environment Co. In addition, Khazanah acquired a 24 percent stake in Camco International Ltd (Camco), a leading global developer of emission reduction and clean energy projects, with operations in the U.S.A., U.K., China, and Russia, which is listed on the AIM of the London Stock Exchange.[2]

c. *Qatar's Qatar Investment Authority (QIA)* increasing its stake to 8.4 percent in Iberdrola SA, boosting its investment to $3 billion. Iberdrola is the world's biggest owner of wind farms and Spain's largest electricity provider.[3]

d. *Norway's Government Pension Fund (GPF*) investment of $3.1 billion in clean tech companies in emerging economies like China, India and Brazil. GPF has also become a main investor in World Bank's Green Bonds.[4]

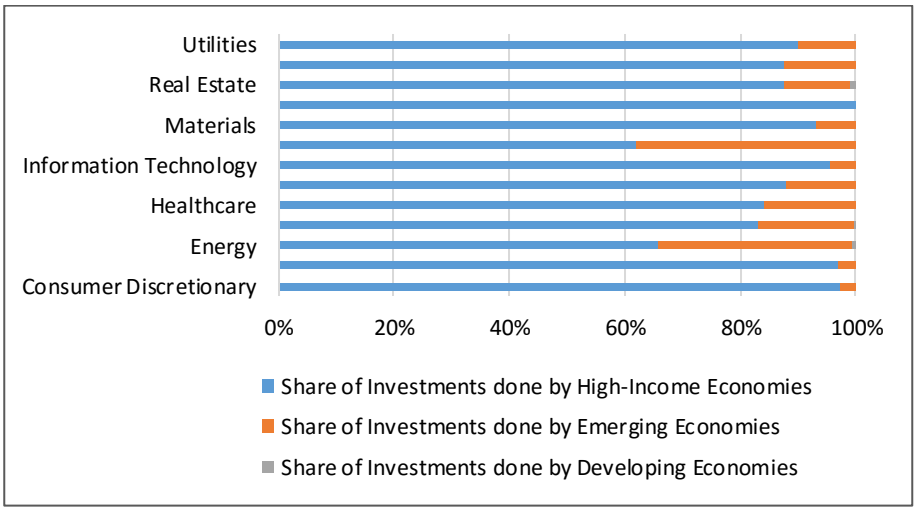

Figure 5: Recorded Sovereign Wealth Fund Transactions, by Sector and Level of Economic Development of Origin Economies (2010-2013)
Source: SWF Institute. Author's Calculations.

1. Ibid.
2. Ibid.
3. Ibid.
4. Ibid.

If one looks at the origin countries where the SWF investments are being originated from, one notices that except for the case of energy and infrastructure where SWFs from emerging economies are responsible for more than one-third of global SWF investments in these sectors, the vast majority of investment in all other sectors are originated from SWFs hosted in high-income economies (Figure 5). Again, this highlights the increasing attractiveness of energy and infrastructure sectors for SWFs based in emerging economies.

3.5 The Question of Size

The size of investments is another important and contentious topic of discussions related to SWF investments. As shown earlier, a total of more than $410 billion was invested by SWFs during the 2010-2013 period. The size of individual investments varied significantly ranging from as lows as $20,000[1] to as large as $12.75 billion[2] (Table 11). While the median of 9,400-plus SWF investments between 2010 and 2013 was about $5 million, the average stood at about $44 million, pointing to a small number of large transactions skewing the average. Overall 90% of SWF transactions in the period 2010-2013 were less than $52 million and less than 0.1 percent of them (73 transactions) were larger than $1 billion.

Table 11: The Distribution of Size of Recorded Sovereign Wealth Fund Transactions (Million $. 2010-2013)

Minimum	Maximum	Mean	25th Percentile	50th Percentile	75th Percentile	90th Percentile	95th Percentile	99th Percentile
$0.02	$12,748.5	$43.93	$1.89	$4.92	$14.7	$51.6	$139.85	$856.57

Source: SWF Institute. Author's Calculations.

1. There are three such small transactions: a) In 2010, Norway's Government Pension Fund Global purchased $20,000 worth of U.K.'s Punch Taverns stocks; b) In 2013, China's National Council for Social Security Fund purchased $20,000 worth of China's Shanxi Taigang Stainless Steel Co Ltd stock; and finally C) In 2013, Norway's Government Pension Fund Global purchased $20,000 worth of India's Sadbhav Engineering Ltd stock.

2. In July 2011, at the direction of the Minister for Finance, Ireland's National Pensions Reserve Fund invested 10 billion Euro (or $12.75 billion) in Ireland's banking system: 8.8 billion Euro in Allied Irish Banks and 1.2 billion Euro in Bank of Ireland.
See https://www.responsible-investor.com/images/uploads/reports/NPRF.pdf for more information on these transactions.

According to Table 13, close to 80 percent of SWFs transaction that are larger than $1 billion, were cross-border investment. Norway's Government Pension Fund Global accounted for 20 of the 73 such large transactions all of which were targeted outside of the Norway (Table 12). Singapore, China, and U.A.E. followed Norway in frequency of $1 billion-plus transactions having 14, 10, and 9 such recorder transactions between 2010 and 2013 (Table 12).

Table 12: Sovereign Wealth Fund Transactions Larger than $1 billion, by Country (2010-2013)

Origin Country	Number of Domestic Transactions > $1 billion	Number of Cross Border Transactions > $1 billion	Total Number of Transactions > $1 billion
Australia	1	0	1
Brazil	2	0	2
China	5	5	10
Ireland	3	0	3
Italy	2	0	2
Kuwait	0	3	3
Malaysia	0	1	1
Norway	0	20	20
Qatar	0	8	8
Singapore	0	14	14
United Arab Emirates	2	7	9
Total	**15**	**58**	**73**

Source: SWF Institute. Author's Calculations.

China had the largest number of domestic SWF investments that exceed the $1 billion mark (5 in total) followed by Ireland (3 in total). It is interesting to note that the financial sector was the single sector for Chinese and Irish large domestic SWF investments as these countries attempted to provide liquidity for their banks in the aftermath of the recent financial crisis (Table 13). In fact, of the 15 domestic SWF investments larger than one billion dollars, nine were targeted towards the financials, three towards the energy sector, and the remaining three towards infrastructure, materials and real estate (Table 13). Similar to the overall SWF investments patterns observed above, financials, energy, and the real estate sectors are still the most popular sectors for the $1 billion-plus SWF transactions (Table 13).

Table 13: Recorder Sovereign Wealth Fund Transactions Larger than $1 billion, by Sector (2010-2013)

Target Sector	Number of Domestic Transactions	Number of Cross-Border Transactions	Total
Consumer Discretionary	0	3	3
Consumer Staples	0	1	1
Energy	3	9	12
Financials	9	17	26
Healthcare	0	3	3
Industrials	0	1	1
Infrastructure	1	4	5
Materials	1	4	5
Media and Entertainment	0	1	1
Real Estate	1	8	9
Telecommunications	0	6	6
Utilities	0	1	1
Total	**15**	**58**	**73**

Source: SWF Institute. Author's Calculations.

The data shows that larger transactions were generally associated with SWFs hosted in emerging and developing economies (with the notable exception of SWFs of Ireland, Italy, and Australia), while a typical investment performed by SWFs from Norway, the U.S., France, South Korea, and Canada were smaller in value. For example, it was shown earlier that Norway was the country with the largest value of investments between 2010 and 2013 ($155,370 million). Norway was also responsible for the largest number of investments completed (5,632). Therefore, an average investment performed by Norway between 2010 and 2013 was about $27.6 million which is considerably small when compared to the average investment sizes of Irish, Brazilian and Qatari SWFs of $5,286.4, $3,113.8, $698.8 million respectively (Table 14). This is worrisome because less frequent and larger transaction are more prone to corruption than more frequent and smaller transactions, and especially so in emerging and developing countries where regulatory and legal institutions are weaker, more corrupt, and less efficient.

Table 14: Recorded Sovereign Wealth Fund Transactions, Average Size 2010-2013.

Origin Country	Total Value of SWF Transactions between 2010 and 2013 ($ million)	Total Number of SWF Transactions between 2010 and 2013	Average Value of Each Transaction ($ million)
Ireland	15,859.3	3	5,286.4
Brazil	9,341.4	3	3,113.8
Qatar	34,940.2	50	698.8
Italy	3,207.7	5	641.5
Australia	2,380.9	5	476.2
Malaysia	5,266.7	15	351.1
Azerbaijan	1,098.6	4	274.6
Hong Kong SAR, China	162.4	1	162.4
Libya	300.0	2	150.0
China	47,262.0	372	127.0
Russian Federation	233.8	3	77.9
New Zealand	522.0	7	74.6
Singapore	71,523.0	1,012	70.7
United Arab Emirates	35,986.4	549	65.5
Saudi Arabia	2,933.5	49	59.9
Kuwait	14,484.6	370	39.1
Oman	83.0	3	27.7
Norway	155,370.5	5,632	27.6
Canada	1,904.8	121	15.7
Korea, Rep.	5,877.5	930	6.3
United States	1,493.5	269	5.6
France	13.8	3	4.6
Bahrain	0.0	1	0.0

Source: SWF Institute. Author's Calculations.

A few counter-intuitive facts related to the average size of the SWF investments are noteworthy. First, while the bulk of SWF transactions were cross-border investments, on average, the size of a typical domestic SWF investment was more than twice the size of a cross-border investment (Table 15). Second, while commodity-based SWFs accounted for more than 61 percent of all SWF investments amounts around the world (Table 7), the size of a typical investment carried out by a non-commodity based SWF was about twice that of commodity based SWFs (Table 15). Third, while high-income economies

attracted more than 77 percent of all SWF investments globally in 2010-2013 (Table 7), on average, the size of a typical SWF investment in emerging and developing economies was 1.3 times more than that of a typical SWF investment in high-income economies.

Table 15: Recorded Sovereign Wealth Fund Transactions, Average Sizes across Three Categories (Million $, 2010-2013)

	# of Observations	Average Size of Investment (Million $)
Domestic Transactions	668	$97.8
Cross Border Transactions	8,741	$39.4
Non-Commodity Based SWFs	2,360	$68.5
Commodity Based SWFs	7,049	$35.3
Target Country: Emerging and Developing	1,713	$53.6
Target Country: High-Income	7,696	$41.4

Source: SWF Institute. Author's Calculations.

Note: All the differences in the means are statistically meaningful.

4. SWF Investments and Development Policy: A Short Note

As alluded to briefly above, the majority of SWFs have the following two objectives as part of their mandates: long-run economic development and inter-generational transfer of wealth generated through sales of exhaustible commodities. Investments in physical capital and infrastructure are the most effective and efficient channels through which both of these mandates could be materialized. While, the robust and strong link between infrastructure investment and long-run economic growth has already been established in the literature, as shown earlier, SWF investments in the infrastructure sector is minuscule (less than 5 percent of all SWF investments) when compared to other sectors (Table 10). This is in the face of the fact that globally "$57 trillion in infrastructure investment will be required between now and 2030, simply to keep up with projected global GDP growth" (Dobbs et al. 2013, 1). This figure, while astronomical, still does not include the funds needed to "address major backlogs and deficiencies in infrastructure maintenance and renewal or meet the broader development goals of emerging economies [and the changing

environment in the face of global warming]" (Ibid: 1). Even then, as shown earlier in Figure 3, the vast majority of SWF infrastructure investments (or 93 percent of them) are directed towards high-income economies and SWFs largely avoid emerging and developing countries for large-scale and long-run infrastructure investments. As mentioned earlier, the main reason behind this observed pattern is the lower level of various institutional capacities in emerging and developing countries, therefore, making such large-scale and long-run investments difficult to manage and also safeguard from corruption and favoritisms.

Therefore, the only way for emerging and developing countries to become more attractive for SWF development financing is strengthening their legal and financial institutions and increasing their capacity to manage the multidimensional risks associated with such large-scale and long-term investments. Domestic SWF infrastructural investments are of particular interest here because in theory they would align most closely with the long-run development objectives of the country. However, only 5 such transaction can be identified between 2010 and 2013: one in Australia in 2012, two in China in 2011 and 2013, one in Oman in 2013, and one in Qatar in 2013. In a 2014 joint study completed by several divisions of the World Bank Group, the authors put forth a holistic framework that emerging and developing countries could follow to make domestic SWF development financing a reality. The authors of this report argue that "the overall objective is to create a system of checks and balances to help ensure that the SWF does not undermine macroeconomic management or become a vehicle for politically driven "investments" that add nothing to national wealth … [in doing so] the main priorities concern the criteria for selecting investments, partnerships, external and internal governance arrangements [corporate governance], transparency and reporting, and consistency with macroeconomic policy" (Gelb et al., 2014: 24-25).

In regards to consistency with macroeconomic policy, domestic infrastructural investments must be seen as a portion of the overall investment level of the domestic economy and not as independent and standalone projects. Considering them as part of the larger investment and thus macroeconomic framework of the economy, will reduce the likelihood of bubbles and therefore devastating booms and busts.

In regards to criteria of selecting investments, while financial returns of a domestic infrastructural investments is an important consideration, such investment must be also evaluated based on their social as well as economic returns (such as direct and indirect impacts on labor markets and stimulation of private investments). In this scenario, projects with highest overall financial and social returns must take precedence over projects that are simply associated with higher financial return.

In regards to partnerships, it has been argued that public-private partnerships (PPP) are one of the more effective ways to finance and carry out infrastructural projects.[1] Besides crowding in private financing and technical expertise, PPP arrangements can help reduce corruption and delays in the completion of the large-scale projects both of which are often associated with considerable losses of national funds.

In regards to external and internal governance arrangements or corporate governance, it is crucial for SWFs to have independent boards that are not under the influence of the political machinery of the state and furthermore have professional staffing, regular independent external and internal audits, and transparency in reporting.

A particular form of infrastructure investment that emerging and developing countries can benefit significantly from is investment in social infrastructure such as educational and health facilities which are the two main ingredients in human capital. According to a recent 2016 report compiled by McKinsey & Company, "Public entities around the world need more than $8 trillion to fund social infrastructure projects through 2020... More than 40% of that $8 trillion is required to build social infrastructure in developing economies" (Mckinsey, 2016: 1). Considering the already established indisputable and positive link in the literature between human capital and long-run economic development as well as the many positive externalities associated with higher levels of human capital, SWF investments in these areas can have significant impact on the long-run development prospects of an

1. For more on PPP see Sabol & Puentes (2014) and http://ppp.worldbank.org/public-private-partnership/.

economy, specially so in the case of developing and emerging economist.[1] Given, that government finances are often stretched and non-sufficient (and especially so after the recent global financial crises), PPP arrangements and/or SWFs can play crucial roles in this front. Such investments become ever more crucial when one also considers their positive impacts on more equitable growth outcomes. Such outcomes can strongly justify and demand for a more active involvement of SWFs with mandates of economic development and intergenerational transfer of commodity wealth.

One region that can benefit significantly from SWF infrastructure investment is Sub-Saharan Africa, which is suffering from severe infrastructure deficit. For example according to a World Bank report "The 48 countries of Sub-Saharan Africa (with a combined population of 800 million) generate roughly the same amount of power as Spain (with a population of 45 million)" (World Bank, 2013: 1). The same report puts the estimated costs of infrastructure investment at $75 billion a year: $38 billion of investment per year to address the continent's infrastructure deficit and $37 billion per year in operations and maintenance (Ibid: 2). Clearly, African as well as non-African SWFs can play a significant role in this area.

At first glance and considering the many economic and non-economics obstacles hindering Africa's development, such investment may not be too attractive. However, considering the growing long-term optimism about this continent which is home to the world's youngest population and significant amounts of natural resources, not only such long-term infrastructural investments by SWFs may be justified, they must, in fact, be encouraged. In other words, as China and other emerging economies becoming more and more high-tech and service oriented, a number of the African economies are on the road of slowly turning into low-tech manufacturing powerhouses of the global economy. Clearly, this transition is not feasible without massive investments in infrastructures. As a result, long-term SWF infrastructural investments are posited to be associated with higher than expected returns. However, not much is being done in this front for two main reasons. First, African SWFs are small and mainly focus

1. For example, see Schubert (2011) and Otero et al. (2014).

on stabilization objectives, therefore not able to allocate sufficient funds toward infrastructural investments. Second, inadequate human capital, financial, legal and institutional capacities, makes this continent less attractive for non-African SWFs who have the financial power to invest in large-scale infrastructural projects.[1] However, despite the latter, China's investment in this continent (not necessarily from Chinese SWFs) has been on the rise as China is betting on Africa's long-run economic potential and its young population while everywhere else in the world is getting evermore grayer.[2]

5. Conclusion

While SWFs have been in existence for more than a century, only recently their roles in the global equity and financial markets have bolded substantially. This study, through analyzing more than 9,400 investment transactions performed between 2010 and 2013, by 32 SWFs, from 23 countries, and targeted towards 77 countries, highlights some of the main discernable patterns in SWF investments. First, the lion's share of SWF investments were cross-border transactions that originated from and targeted towards high-income economies (most significantly towards the U.S.A. and the U.K.). At the same time SWFs from emerging economies (mainly from China) were also becoming important players in the global capital markets. For example, accounting for about 12% of global SWF investments between 2010 and 2013, Chinese SWFs have become major players in the global financial arena. However, while the bulk of SWF investments between 2010 and 2013 were cross-border investment and completed by commodity based SWFs, the size of a typical domestic investment as well as non-commodity based SWF investments were larger than a typical cross-border investment and investments performed by commodity based SWFs. Related to these findings is that domestic investments were relatively more popular among non-commodity based SWFs in comparison to commodity based SWFs, with again China driving the show on this front.

Second, the most popular sectors were the financials and the real

1. See Triki & Faye (2011).
2. See French (2014).

estate mainly because of their more liquid nature as well as the energy sector for its strategic importance. "SWFs also tend to invest in firms whose stock price has underperformed local market indices, on a risk adjusted basis, over the previous year" (Bortolotti, Fotak, & Megginson, 2009: 18). While such investments have helped the recovery of the financial systems and real estate markets in many countries, they could also potentially lead to future instabilities if not carefully managed.

Third, most SWFs have economic development and macroeconomic stability of their origin countries as part of their mandates and maximizing returns and minimizing risks as their objective. In this sense and as argued by Klein & Zur (2009), Ferreira & Matos (20007), and Brav et al. (2008), SWFs behave in many similar ways to other internationally active investment funds. In other words, the primary objective of these funds is to maximize financial return and minimize risks and losses, while also often taking on the additional objective of the long-term development and stability of their countries. "An important element in determining SWF's effectiveness is its operational independence in making investment decisions…that are consistent with their policy objectives and that cover their asset choices as well as their risk-management practices" (Lipsky, 2010: xi).

However, deviations from these mandates are commonplace for various reasons. One such main reason is the influence of political machinery. "The quasi-public nature of these funds means that they are exposed to political influences, often with more short-term goals" (Bernstein, Lerner, & Schoar, 2013: 220) which sets SWFs apart from other investment funds. This also complicates the picture for SWFs, from being simply driven by return-maximizing motives to them also being influenced by political agendas. Bernstein, Lerner, & Schoar (2013) show that "sovereign wealth funds with greater involvement of political leaders in fund management are associated with investment strategies that seem to favor short-term economic policy goals in their respective countries at the expense of longer-term maximization of returns…The opposite patterns hold for funds that rely on external managers [and less involvement of political leaders]" (Bernstein, Lerner, & Schoar, 2013: 220).

At the first glance, such government-directed investments seem to

introduce inefficiencies in the investment process of SWFs, by diverting SWF funds towards inefficient firms and industries for politically motivated reasons. However, there is some evidence that financial markets in emerging and developing economies are often less developed and might leave profitable investment opportunities unexploited, therefore justifying the involvement of government in investment decisions of SWFs.[1] Nevertheless, the evidence from 2,662 transactions done by 29 SWFs between 1984 and 2007 suggests that "political pressures seem to force SWFs to use their funds to support underperforming local industries rather than build a savings buffer for the long-run" (Bernstein, Lerner, & Schoar, 2013: 232), leading to wasteful allocation of these scarce national resources.

In addition, legally, SWFs are usually not bounded to follow their mandates at all times. In fact changes in the "domestic economic and financial environments [of their host countries] may causes some SWFs to temporarily deviate from their original mandates" (ibid: 11) that can change their appetite for liquidity, investment horizons, and risks. For example, after the global financial crisis "several countries have used SWF resources to support domestic banks or corporations through the banking system. Some SWFs have provided liquidity to the banking system by depositing their assets in domestic banks and others have helped with bank recapitalization.

SWF assets have also been earmarked in some countries to support deposit insurance schemes and some SWFs have purchased domestic stocks to boost markets and investor confidence" (ibid: 9) all of which were roles that were beyond their mandate but were "imposed" upon them because of the domestic banking and financial needs of the time. As a result, while SWFs may contribute to financial stability at times of crisis, at the same time, they can create distortions in equity and financial markets thus causing potential turmoil and uncertainty in these markets, making it impossible to reach a final conclusion on their net impact.

At the end, it must be remembered that while the role of SWFs have been on the rise over the past decade, their assets only account for less than 5 percent of the global assets under management.

1. For example, see Stiglitz (1993) and Atkinson & Stiglitz (1980).

However, it seems that their semi-political nature and connection to sovereign states as well as their recent role in shoring up financial systems in high-income economies as well as China after the most recent global financial crisis are some of the main reasons that SWFs have entered the forefront of academic, policy, and journalistic debates and concerns in the past decade. While, the current low commodity prices in addition to the sluggish performance of the European and Chinese economies may slow down the growth of SWFs and hamper their rise in the global financial arena, SWFs are here to stay and will continue to remain relevant, begging the need for more research and analysis on this front. This work, has taken a step in this direction by reducing some of the opaqueness associated with SWFs and their investment patterns.

References

Anderloni, L., & Vandone, D. (2012). Sovereign Wealth Fund Investments in the Banking Industry. *Working Paper, 2012-24*, Retrieved from http://wp.demm.unimi.it/files/wp/2012/DEMM-2012_024wp.pdf.

Atkinson, A., & Stiglitz, J. (1980). *Lectures on Public Economics*. London: McGraw Hill.

Barbary, V., Bortolotti, B., Veljko, F., & Miracky, W. (2010). Sovereign Wealth Fund Investment Behavior. *Semi-Annual Report*, Retrieved from http://www.feem.it/userfiles/attach/2010102015964Monitor-FEEM_SWF_ReportH1-2010.pdf.

Beck, R., & Fidora, M. (2008). The Impact of Sovereign Wealth Funds on Global Financial Markets. *Intereconomics, 43*(6), 349-358.

Bernstein, S., Josh, L., & Schoar, A. (2013). The Investment Strategies of Sovereign Wealth Funds. *Journal of Economic Perspectives, 27*(2), 219-238.

Borst, N. (2015). The Rise of Asian Sovereign Wealth Funds. Retrieved from http://www.frbsf.org/banking/files/FRBSF-Asia-Focus-Rise-of-Asian-Sovereign-Wealth-Funds-March-2015.pdf.

Bortolotti, B., Fotak, V., & Megginson, W. (2009). Sovereign Wealth Funds Investment Patterns and Performance. Retrieved from http://admin.darden.virginia.edu/emUpload/uploaded2009/SWF-invest-patterns-perform-nov288.pdf.

Brav, A., Jiang, W., Partnoy, F., & Thomas, R. (2008). Hedge Fund Activism, Corporate Governance, and Firm Performance. *Journal of Finance, 63*(4), 1729-1775.

Cooper, M. (2011). *Excessive Speculation and Oil Price Shock Recessions: A Case of Wall Street Déjà vu All Over Again*. Retrieved from http://www.consumerfed.org/pdfs/SpeculationReportOctober13.pdf.

Dobbs, R., Pohl, H., Yi Li, D., Mischke, J., Garemo, N., Hexter, J., Matzinger, S., Palter, R., & Nanavatty, R. (2013). *Infrastructure Productivity: How to Save $1 Trillion a Year*. Retrieved from https://goo.gl/rGx9Dw.

Ferreira, M., & Matos, P. (2008). The Colors of Investors' Money: The Role of Institutional Investors around the World? *Journal of Financial Economics, 88*(3), 499-533.

Ferreira, M., Massa, M., & Matos, P. (2010). Shareholders at the Gate? Institutional Investors and the Cross-Border Mergers and Acquisitions. *Review of Financial Studies, 23*(2), 601-644.

French, H. (2014). *China's Second Continent: How a Million Migrants Are Building a New Empire in Africa*. New York: Knopf Publishing.

FS, UNEP, & BNEF. (2015). Global Trends in Renewable Energy Investment. Retrieved from https://www.actu-environnement.com/media/pdf/news-26477-rapport-pnue-enr.pdf.

Gelb, A., Tordo, S., Halland, H., Arfaa, N., & Smith, G. (2014). Sovereign Wealth Funds and Long-Term Development Finance. *World Bank Policy Research Working Paper, 6776*, Retrieved from http://documents.worldbank.org/curated/en/788391468155724377/pdf/WPS6776.pdf.

Gowen, B. (2015). *Sovereign Wealth Funds (SWFs) Are Poised to Change the Business of Asset Management*. Retrieved from https://annual.cfainstitute.org/2015/05/02/sovereign-wealth-funds-swfs-are-poised-to-change-the-business-of-asset-management/.

IMF. (2007). Global Financial Stability Report. Retrieved from https://www.imf.org/External/Pubs/FT/GFSR/2007/02/pdf/chap1.pdf.

IMF. (2015). Global Financial Stability Report. Retrieved from https://www.imf.org/External/Pubs/FT/GFSR/2015/01/pdf/text.pdf.

IRENA. (2012). Financial Mechanisms and Investment Frameworks for Renewables in Developing Countries. Retrieved from http://irena.org/Finance_RE_Developing_Countries.pdf.

Jory, S., Perry, M., & Hemphill, T. (2010). The Role of Sovereign Wealth Funds in Global Financial Intermediation. *Thunderbird Int'l Bus Rev*, *52*, 589-604.

Kaminker, C., & Stewart, F. (2012). The Role of Institutional Investor in Financing Clean Energy. *OECD Working Papers on Finance, Insurance, and Private Pensions, 23*, Retrieved from http://www.oecd.org/environment/WP_23_TheRoleOfInstitutionalInvestorsInFinancingCleanEnergy.pdf.

Klein, A., & Zur, E. (2009). Entrepreneurial Shareholder Activism: Hedge Funds and Other Private Investors. *Journal of Finance, 64*(1), 182-229.

Kunzel, P., Lu, Y., Petrova, I., & Pihlman, J. (2011). Investment Objectives of Sovereign Wealth Funds: A Shifting Paradigm. *IMF Working Paper, WP/11/19*, Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.190.5115&rep=rep1&type=pdf.

Lipsky, J. (2010). *Economics of Sovereign Wealth Funds: Issue for Policy Makers*. Washington, DC: IMF.

McKinsey & Company. (2016). Social Infrastructure. Retrieved from http://www.mckinsey.com/industries/capital-projects-and-infrastructure/how-we-help-clients/social-infrastructure.

Meggison, W., You, M., & Han, L. (2013). Determinant of Sovereign Wealth Fund Cross-Border Investment. *The Financial Review*, *48*, 539-572.

Otero, A.B., Watson, J., Felli, F., Wright, S., Wood, D., & Scione, L. (2014). The Unexplored Business within Social Infrastructure. *Briefing Paper, 1*, Retrieved from https://www.researchgate.net/profile/Fausto_Felli/publication/265057939_BRIEFING_PAPER_1_The_unexplored_business_within_social_infrastructure/links/53fdaf510cf2364ccc08ece9.pdf.

Rossi, S., & Volpin, P. (2004). Cross-country Determinants of Mergers and Acquisitions. *Journal of Financial Economics*, *74*(2), 277-304.

Sabol, P., & Puentes, R. (2014). Private Capital, Public Good: Drivers of Successful Infrastructure Public-Private Partnerships. Washington, DC: *a Report by Brookings Institution*, Retrieved from https://www.brookings.edu/wp-content/uploads/2016/07/BMPP_PrivateCapitalPublicGood.pdf.

Schubert, W. (2011). Sovereign Wealth Funds and Dedicated Infrastructure Investment. *Journal of Applied Business and Economics*, *12*(6), 32-39.

Stiglitz, J. (1993). The Role of the State in Financial Markets. *In Proceedings of the World Bank Annual Conference on Economic Development, Washington* (19-56), Retrieved from http://documents.worldbank.org/curated/en/239281468741290885/pdf/multi-page.pdf.

Triki, T., & Faye, I. (2011). Africa's Quest for Development: Can Sovereign Wealth Funds Help? African Development Bank Group. *Working Paper, 142*, Retrieved from https://goo.gl/1719y6.

Truman, E. (2008). *A Blueprint for Sovereign Wealth Fund Best Practices* (Policy Brief PB08-3). Retrieved from https://piie.com/publications/pb/pb08-3.pdf.

World Bank. (2013). Fact Sheet: Infrastructure in Sub-Saharan Africa. Retrieved from http://go.worldbank.org/SWDECPM5S0.