

A Financial Force to be Reckoned With? An Overview of Sovereign Wealth Funds

Finance Working Paper N° 476/2016

August 2016

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Abstract

Sovereign Wealth Funds (SWFs) represent a new form of investment organizational structure and have grown to over \$5.7 trillion assets under management by February 2016, making them a financial force potentially worth reckoning with in international financial markets. This article starts with a brief introduction of the 35 funds that meet our definition of SWFs, then discusses their evolution from stabilization funds to SWFs and illustrates the differences and similarities between the various types of funds. The most salient and controversial feature of SWFs is that they are state-owned; we survey the existing literature on state ownership and discuss what this predicts about the efficiency and beneficence of government control of SWF assets. We discuss the documented importance of SWF funding sources (oil sales revenues versus excess reserves from export earnings) and survey the normative literature describing how SWFs should allocate funds. We then summarize the empirical literature studying how SWFs actually do allocate funds across asset classes, geographically, and across industries. We document that most SWF equity investments in publicly traded firms involve cross-border purchases of sizeable minority stakes (median around 20%) in target firms. However, the most recent data shows a “shift to domestic investment” pattern and also an industry preference change from the financial to the real estate sector. Next, we assess empirical studies examining the impact of SWF stock investments on target firm financial and operating performance, and find universal support for a positive announcement period stock price increase of 1-3%. This, however, is significantly lower than the 5% abnormal return documented for stock purchases by comparable privately owned financial investors in recent studies, indicating a “sovereign wealth fund discount.” Finally, we point out the unresolved issues and possible extensions in SWF research, and assess how the massive decline in oil export revenues by major SWF sponsor nations such as Abu Dhabi, Russia, Kuwait, and Norway is likely to impact SWF investment levels in coming years.

Keywords: Sovereign wealth funds, International financial markets, Government policy and regulation

JEL Classifications: G32, G15, G38

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Abstract

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A Financial Force to be Reckoned With? An Overview of Sovereign Wealth Funds *

Abstract

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1. What are Sovereign Wealth Funds, and why do We Care?

Sovereign Wealth Funds (SWFs), as a new form of investment organizational structure, have received extensive attention from practitioners, academics, and policymakers in their short history. One important reason that SWFs provoked widespread concern is due to their unique characteristic as state-owned investment vehicles, since government ownership implies potential political interference in target firm affairs and passivity regarding corporate governance. SWFs' lack of liabilities and lack of need for short-term liquidity could also potentially make their investment behavior different from other international institutional investors. The other, equally important reason why SWFs have attracted research interest is the astonishing speed at which they have grown. By the end of 2014, SWFs had over \$5.5 trillion assets under management (AUM) and they were undoubtedly a financial force to be reckoned with in international financial markets. However, when we look at their size in 2015/2016, some new trends emerge. Major oil producers and consistent export-surplus countries, traditionally the principal sponsors of SWFs, face massive problems due to the prolonged oil price slump from the second half of 2014 to present and the slowdown of economic growth in emerging economies, and these facts dramatically impact the level of SWF assets. We observe a significantly lower growth rate, or even a decline, in total SWF AUM values since the beginning of 2015, which raises doubts about the future of SWFs in the new economic environment.

When SWFs change from asset accumulators to asset managers and trust funds, whether they can still remain a growing financial force and maintain their relative fraction of global financial assets seems questionable. In addition, SWFs may change their investment behavior and monitoring role in corporate governance under the new economic environment as a reaction to the reduction of oil export revenues and declining trade surpluses. Funds also face political pressure to support domestic fiscal budgets. Adjusting investment strategies to chase for higher returns while simultaneously satisfying domestic fiscal needs will doubtless pose a major challenge for SWFs. In this article, we use the most up-to-date data to document UM trends through February 2016, and trace the new investment patterns up to year-end 2014. We also describe several recently published articles to present a comprehensive survey of SWFs.

There is no consensus, in either the academic or practitioner literature, on the definition of a “sovereign wealth fund”. However, most researchers agree that SWFs are government-owned investment vehicles which invest domestically or internationally to seek commercial profits (Chwiero, 2014 and Alhashel, 2015).¹ Some definitions are broader than this, as in (Truman, 2008), who defines a sovereign

¹ Most definitions also exclude funds directly managed by central banks or finance ministries, as these often have very different priorities, such as currency stabilization, funding of specific development projects, or the development of specific economic sectors.

wealth fund as “a separate pool of government-owned or government-controlled financial assets that includes some international assets.” (Balding, 2008) shows that an expansive definition encompassing government-run pension funds, development banks, and other investment vehicles would yield a truly impressive total value of “sovereign wealth.”²

In this article, we use the definition of a sovereign wealth fund employed by the Sovereign Investment Laboratory: (1) an investment fund rather than an operating company; (2) that is wholly owned by a sovereign government, but organized separately from the central bank or finance ministry to protect it from excessive political influence; (3) that makes international and domestic investments in a variety of risky assets; (4) that is charged with seeking a commercial return; and (5) which is a wealth fund rather than a pension fund—meaning that the fund is not financed with contributions from pensioners and does not have a stream of liabilities committed to individual citizens.³ While this sounds clear-cut, ambiguities remain. Several funds headquartered in the United Arab Emirates are defined as SWFs, even though these are organized at the Emirati rather than the federal level, because the emirates are the true decision-making administrative units.⁴ Table 1 presents the 34 SWFs that meet these criteria, the countries that sponsor the funds, their year of inception, their principal source of funds, and estimates of the value of assets under management (AUM) as of February 29, 2016. We also include Saudi Arabian Monetary Agency (SAMA) in this listing, since the Saudi government announced in June 2014 that it would establish a large SWF, partly encompassing SAMA’s foreign assets.

****** Insert Table 1 about here ******

There is some controversy regarding which is the largest SWF. Historically, the Abu Dhabi Investment Authority (ADIA) has been awarded that title, but that was mostly because the fund has never reported its assets under management, and commentators assumed that Abu Dhabi’s massive oil export revenues must translate into an equally massive fund, with AUM estimates often exceeding \$800 billion. The Sovereign Wealth Fund Institute (<http://www.swfinstitute.org/sovereign-wealth-fund-rankings/>)

² In ongoing research employing the Thomson Reuters Securities Data Corporation Mergers and Acquisitions database and other databases, we identify over 12,100 investments, worth over \$1.67 trillion, just in listed-firm stocks by state-owned investment companies, stabilization funds, commercial and development banks, pension funds, and state-owned enterprises. If we add state purchases of government and corporate bonds, plus SWF holdings and foreign exchange reserves of roughly \$12 trillion, the total value of state-owned financial assets may already exceed \$25 trillion. David Marsh writes that global public investors owned about \$30 trillion of assets worldwide. See David Marsh, “Sovereign-wealth funds must move out of shadows,” MarketWatch (March 10, 2014, <http://www.marketwatch.com/story/sovereign-wealth-funds-must-move-out-of-shadows-2014-03-10>).

³ For a comparison of SWFs with state-run pension funds, see Blundell-Wignall, Hu, and Yermo (2008). They conclude that SWFs and public pension reserve funds (PPRFs) are similar in some ways, but differ significantly with respect to objectives, investment strategies, sources of financing, and transparency requirements.

⁴ The sub-national UAE funds included in our list are the Abu Dhabi Investment Authority (the world’s second-largest SWF), the Investment Corporation of Dubai, Istithmar World, the Mubadala Development Company, the International Petroleum Investment Corporation (IPIC), and the Ras Al Khaimah Investment Authority.

estimates that ADIA has AUM of about \$773 billion, which places it second in size behind Norway's Government Pension Fund-Global. Although the GPF is the largest SWF on our list, it is worth mentioning that the size of GPF, unlike the previous rapid growing pattern, has actually declined since year-end 2014. The GPF has AUM of \$855.8 billion as of December 31, 2014, but this dropped to \$844.2 billion by the end of 2015 and fell further to \$824.9 billion in February 2016 (<http://www.nbim.no/en/the-fund>). The China Investment Corporation (CIC) ranks in third place with \$746.7 billion AUM. If the Saudi Arabian Monetary Agency (SAMA) is re-classified as a SWF, it would be the fourth largest, with total foreign assets of \$632.3 billion as of February 2016. Similar to the GPF, the SAMA's assets have shrunk more than \$115 billion since 2015, largely because Saudi Arabia has been drawing down foreign assets after oil prices crashed to help close a budget deficit equaling 15% of GDP. As the oldest SWF, having been founded in 1953,⁵ Kuwait Investment Authority (KIA) is now the fourth largest SWF, as defined by the Sovereign Investment Laboratory. Its estimated AUM is around \$592.0 billion as of February 29, 2016 (<http://www.swfinstitute.org/sovereign-wealth-fund-rankings/>). Amazingly, the small city state of Singapore itself sponsors the fifth and eighth largest SWFs, the Government of Singapore Investment Corporation [GIC, estimated AUM of \$344.0 billion (<http://www.swfinstitute.org/sovereign-wealth-fund-rankings/>)], which is charged primarily with international investing, and Temasek Holdings (AUM of \$193.6 billion in February 2016 (<http://www.swfinstitute.org/sovereign-wealth-fund-rankings/>)), which focuses on domestic and regional investments. The United Arab Emirates alone accounts for six of the 34 SWFs on this list, and other Arabian Gulf states account for another four. Only four funds are from western-style democracies (Norway, Australia, New Zealand, and Ireland), though many others are sponsored by countries meeting most definitions of being democratic (Korea, Malaysia, Singapore, Russia).⁶ No fewer than 21 of the 34 funds have been launched since January 2000. The newest SWFs in our database are the Fundo Soberano de Angola (FSDEA) and the Nigeria Sovereign Investment Authority (NSIA). Both of them were established in 2012 to increase transparency and ensure that the nation's resource wealth would

⁵ The Kuwaiti SWF is also unusual among large funds in that it is funded based on a formulaic percentage of the sales of Kuwait National Oil Company. The fund is automatically granted 10% of the oil revenues of the state, and the finance ministry recently approved increasing the allocation to 25%. See Henny Sender, Kuwait Investment Authority: Integrity and caution are no handicap, *Financial Times* (April 24, 2013).

⁶ It is perhaps no surprise that so many oil-funded SWFs are from non-democratic countries, since it is well established that abundant oil reserves (which promote large SWFs) and the evolution of democratic societies are natural enemies. (Tsui, 2009) finds that discovering 100 billion barrels of oil (approximately the initial endowment of Iraq) pushes a country's democracy level almost 20 percentage points below trend after three decades. (Wolf and Pollitt, 2008) and (Wolf, 2009) also show clearly that national oil companies are significantly less efficient and innovative than privately-owned international oil companies—and thus document the scale of value-destruction associated with state ownership/control of petroleum reserves and production.

not be misappropriated. Countries in Africa have a clear pattern to start relatively small SWFs in recent years in order to better manage their oil revenues.

Most SWFs are sponsored by one of two types of channels: the revenue from the sale of natural resources, such as oil, natural gas, and coal; and the accumulated foreign currency reserves from persistent and large net exports. Since the ultimate owners of SWFs are governments, they usually have no explicit short-term liabilities and intend to make long-term investments. (Bertoni and Lugo, 2015), however, document a third, still relatively rare but growing source of SWF financing—the use of debt. They find that non-commodity-based SWFs are more likely to use debt as an alternative way to increase the size of their AUM when they cannot receive stable capital injections from the governments. In addition, SWFs in the countries with underdeveloped bond markets have more incentive to use debt in order to facilitate the development of these markets. Last, SWFs with strategic investment styles tend to use debt because it can provide them more financial flexibility and help them optimize the cost of financing. The use of debt is still an uncommon and under-researched phenomenon in the SWF literature.

As of February 29, 2016, the 23 SWFs that are financed principally from oil revenues have combined AUM of \$3.954 trillion, or 68.7 percent of the \$5.759 trillion total for all funds, while trade-surplus-financed SWFs account for most of the rest. It should be noted that this fairly restrictive definition of SWFs yields a smaller number and total AUM value than do most other classifications. For example, the Sovereign Wealth Fund Institute (SWFI) lists 79 SWFs with AUM of \$7.088 trillion on February 29, 2016. However the definitions of sovereign wealth funds may vary, these fund totals show similar time trends. They had been growing much more rapidly over the past several years than had hedge funds, pension funds, and other private institutional investors. But this fast growing pattern halted and the total AUM value declined during 2015 (this statement is made based on the SWFI's definition of SWFs. With our restrictive definition, the total AUM still increased during 2015, but the growth rate was much lower than previous years). Nearly all oil funded SWFs are affected by the oil price declines. At this point, it is important to assess what a stable, low oil price truly portends for the future of SWFs. In terms of total size, we believe SWFs face a dismal future, unless oil prices rebound sharply and permanently, with their size staying about the same or falling a bit in absolute value due to net withdrawals by cash-strapped governments. SWFs have changed from asset accumulators to cash dispensers for sponsor governments and their AUM will probably decline in relative terms as a fraction of global financial assets.

Although the term “Sovereign Wealth Funds” was coined by Andrew Rozanov in 2005 (Rozanov, 2005)⁷, the funds themselves are not a new invention. The first SWF was founded by the government of

⁷ The slow take-up of “sovereign wealth fund” is illustrated by noting that the *Financial Times* first used the term on May 17, 2007, two years after Rozanov's article was published. Once the phrase reached a critical mass of usage—

Kuwait in 1953. Most of the well-established SWFs evolved from commodity stabilization fund precursors. The main purpose of a stabilization fund is to promote local economic development by minimizing the volatility of revenues due to the fluctuation of commodity prices or production levels, therefore smoothing government finances.⁸ Most such funds are employed by countries whose budgets are highly dependent on natural resources, such as oil, copper, diamonds, or other commodities, and they usually choose domestic investment targets. However, the disadvantages of stabilization funds are apparent. Poor management and political interference have negatively impacted fund efficiency, thereby motivating the evolution from stabilization to SWFs (Balding, 2012). Unlike stabilization funds, which are tightly controlled and managed by the central bank and Finance Ministry, SWFs are intentionally separated—either legally or operationally, or both—from other ministries and agencies in order to shield the funds’ managers from direct political pressure. In term of goals, instead of aiming at promoting local development, SWFs pursue commercial profits, and as a consequence, they attempt to diversify revenue streams by investing mostly abroad. However, we should also note that many of the modern SWFs, implicitly or explicitly, carry at least a partial stabilization mandate as the domestic financial-sector recapitalizations seen in 2008 and 2009, and Russia’s tapping of its SWFs in 2015, all attest.

The defining characteristic of SWFs is their state ownership, which makes them different from other large, internationally active institutional investors. Governments often have broader goals than simple wealth maximization at the firm level—for example, the maximization of employment levels and promotion of broad national industrial interests—imposing on enterprises multiple, often conflicting objectives. In addition to social-welfare concerns, politicians might distort priorities through their rent-seeking influence. As state-owned actors, SWFs might suffer from such deviations from the set of objectives normally associated with private-sector investors, and this, in turn, might translate political influence onto their investment targets. In this sense, SWFs investments suffer from the same problems of “multiple principals” and cognitive dissonance described in the “mixed ownership” model of (Boardman and Vining, 1989, 2012) and (Vining *et al.*, 2014). Yet, while many other examples of mixed ownership result in opaque entities, SWFs often apply mixed ownership to publicly traded, and hence transparent, firms allowing for a more data-rich investigation of the impact and efficiency of government investments. Whether this mixed ownership, as (Vining *et al.*, 2014) put it, results in the “best of both worlds”—merging government’s concern for social welfare with private sector efficiency—or in the “worst of both worlds” (crony

and the *FT* began employing the term—usage quickly became universal, to the point where a search of the *Financial Times* website (www.ft.com) on March 19, 2016 yielded 6,516 hits for “sovereign wealth fund”.

⁸ Commodity stabilization funds are discussed and analyzed in (Arrau and Claessens, 1992) while the U.S. equivalent, state “rainy day” funds, are described in (Douglas and Gaddie, 2002).

capitalism) is one of the lessons we can draw by investigating the impact of SWFs on their investment targets.

Another important characteristic of SWFs is the small size of their staffs. The number of SWF employees is on average much smaller than comparable privately-owned mutual funds. This requires most SWFs to employ external managers to actually invest the funds' money and oversee segments of their portfolios, as described in (Clark and Monk, 2009), (Dixon and Monk, 2013), and (Al-Kharusi *et al.*, 2014).⁹ This external mandate has the additional benefit of further insulating SWF assets from political interference. In addition, because of the limited number of employees, it is impossible for most SWFs to assign staff to sit on the board of every investee firm or interact intensively with investee firm managers. As Bortolotti, Fotak, and Megginson (BFM, 2015) point out, SWFs acquire seats in only 53 of 355 cases (14.9%) where director identities of investment targets could be verified, and most of these were domestic companies. Even in those cases, the funds are much more likely to nominate an employee of a subsidiary (state-owned enterprise or investment vehicle) than from the parent fund itself.

On the other hand, (BFM, 2015) claim that SWFs could potentially become the highly effective monitors described in the institutional-investors literature in target firms because they usually make long-term investments and have no short-term liabilities or liquidity requirements. However, due to the limited number of employees and political constraints, whether SWF investments can significantly improve the target firm governance becomes an intriguing empirical question.

In the early days, cross-border SWF investments were viewed as a threat by the recipient-country governments. The major concerns, plausible or otherwise, that have been voiced include: (1) the possibility that their capital could be used to further political objectives and to acquire stakes in strategic industries; (2) the risk of equity price bubbles due to the sheer size and past rapid growth rate of their investments; (3) the risk of an increase in volatility of financial markets; (4) the possibility that SWFs might have a detrimental effect on corporate governance because of political motives or lack of sophistication; (5) the risk of the emergence of a new form of financial protectionism as a reaction to SWFs; (6) the lack of transparency by SWFs; and (7) the fear that SWFs would not act as strictly commercially-minded investors, seeking only the highest possible financial return, but would instead be forced to invest strategically by home-country governments seeking political influence or access to foreign technology. Empirical research has largely shown all but the last two concerns to be groundless, as there have been no major documented

⁹ (Dixon and Monk, 2013) and (Al-Kharusi *et al.*, 2014) also describe why many SWFs in distant (from major financial centers) regions might choose to set up satellite offices in financial centers or establish formal ties with asset managers located therein. Dixon and Monk note that many SWFs have grown disillusioned with paying high fees for mediocre returns; in their delicious phrase (page 42), "they [SWFs] were, and in most cases still are, paying for alpha but only receiving beta returns."

cases of SWFs investing abroad as political agents of home-country governments. Quite the reverse—(BFM, 2015) find that SWFs have proven to be passive and non-confrontational with target firm managers almost to a fault. As foreign, state-owned investment funds, any posture that SWFs take other than being purely passive investors might generate political pressure or a regulatory backlash from recipient-country governments (Dinç and Erel, 2013).¹⁰ Even when SWFs do take majority stakes—which (Miracky *et al.*, 2008) show occurs almost exclusively when SWFs invest in domestic companies—the funds rarely challenge incumbent managers (Mehropouya *et al.*, 2009). (English *et al.*, 2004) and (Woitdke, 2002) find similar behavior by U.S. public-sector pension funds and by California Public Employee Retirement System (CalPers) managers, respectively. With most of the fears being lifted, governments’ attitudes towards SWFs have gradually become more positive. In addition, SWFs provided invaluable liquidity to both global and domestic capital markets during the Financial Crisis of 2008-09. Since then, most governments have actively courted SWF investment, with Britain being the most successful by far.

However, with the widespread acceptance of SWFs, the downside of SWF investments cannot be ignored. As (BFM, 2015) point out, politicized SWFs are subject to the oversight of their parent-country governments. The sponsoring governments may impose political objectives on SWFs and drive them away from profit maximization goals. In the article, BFM find empirical evidence that SWFs which are not insulated from political interferences negatively affect target firm value. They document a significant “SWF discount” on the short-term abnormal return following SWF investments, and show deterioration of long-term target firm operating performance. In addition, the SWF divestment trend over the past two years also draws our attention. For example, Norway’s GPF sold off more than \$8 billion coal related investment, and the Qatar Investment Authority (QIA) and the Abu Dhabi Investment Authority divested their real estate properties in London. Although SWF divestment is not yet on a massive scale, it is, to some extent, a source of anxiety for some investors and governments that previously sought large SWF investments.

2. How SWFs Make Target Selection and Portfolio Allocation Decisions

With over \$5.5 trillion worth of capital to invest, and a mandate to invest a large chunk of that cash internationally, it is unsurprising that many researchers have examined how SWFs allocate their investment dollars. This section surveys the academic and professional research examining how SWFs *should* allocate funds across different asset classes—based on the funding source and sponsor-country economic, financial

¹⁰ Active foreign government involvement in a domestic target is usually met with significant public opposition, and so governments often choose to be passive investors, especially in their foreign holdings. (Prabakhar, 2009), (Masters, 2013), and (Jackson, 2014) all show that involvement of a foreign state-owned entity in a large acquisition of a US company is certain to prompt scrutiny by the Committee on Foreign Investment in the United States (CFIUS).

and political characteristics—and then summarizes the research examining the asset allocations that SWFs actually do make.

2.1. Normative Assessments of How SWFs Should Invest

Many authors have presented normative, theoretical or empirical studies prescribing how SWFs should allocate their funds across asset classes. Twelve such articles are summarized in Table 2. Four of these papers (Martellini and Milhaup, 2010, Sa and Viani, 2011, Schena and Kalter, 2012, and Bodie and Brière, 2014) describe optimal asset allocation models for SWFs based on general financial and economic principles relating to global investor preferences, contingent claims models of sovereign government funding sources and spending obligations, and/or the sponsoring nation’s sensitivity to commodity price variability. The next three articles (Scherer, 2009, Balding and Yao, 2011, and Bertoni and Lugo, 2013) focus on oil-financed SWFs and examine how this funding model should influence the asset allocation decisions of such funds. Two more studies describe the optimal investment policy followed by Norway’s Government Pension Fund Global (GPF) and assess whether the fund’s actual asset allocations are consistent with the optimal design (Ang *et al.*, 2009 and Chambers *et al.*, 2012). Finally, three studies present, first, a policy-oriented description of the “benchmarks” governments should take into account when establishing a SWF (Ang, 2010); second, an assessment of whether SWFs are and should be domestic “investors of last resort” (Raymond, 2012); and, third, a discussion of whether SWFs should promote domestic economic development by financing infrastructure investments in developing countries (Gelb *et al.*, 2014).

****** Insert Table 2 about here ******

2.1.1. Financial and Macroeconomic Influences on Optimal SWF Investment Policies

A second group of studies extends existing quantitative financial models to incorporate SWF specificities. (Martellini and Milhau, 2010) propose a quantitative dynamic asset allocation framework for SWFs, modeling them as large long-term investors that manage fluctuating revenues typically emanating from budget or trade surpluses in the presence of stochastic investment opportunities. They show that the optimal asset allocation strategy should account for stochastic features of the SWF endowment process (where money comes from) and the SWF’s expected liability value (what money will be used for). SWFs should make state-dependent allocations to (1) a performance-seeking portfolio, often heavy with equities; (2) an endowment-hedging portfolio; and (3) a liability-hedging portfolio heavy with bonds to mitigate interest rate and inflation risks.

(Sa and Viani, 2011) develop a dynamic general equilibrium model to analyze the effects of a shift in portfolio preferences of foreign investors on target-country interest rates, asset prices, investment, consumption, real output, exchange rates, and current account balances. They then calibrate this model to examine the increasing tendency of central banks to channel “excess reserves” into SWFs to make

investments seeking commercial returns, and derive two separate diversification paths for switching reserves into SWFs. One keeps the same asset allocation as central banks, but moves fund flows away from dollar-denominated assets; the other keeps the same currency allocation but shifts investments from U.S. bonds to U.S. equities. The dollar depreciates in both cases, but the U.S. net debt position differs. Both cause reduction in the “exorbitant privilege” through which the United States government receives excess returns on its assets over what it pays for its liabilities.

(Schna and Kalter, 2012) take a different tack and ask whether SWFs should continue pursuing the “Endowment Model” of investment, which was popularized by David Swensen, Yale University’s Chief Investment Officer (Lerner, 2007, Ferri, 2012) and has been followed by many U.S. private university endowments. This emphasizes investing in less liquid and relatively higher return assets rather than publicly traded stocks and bonds. The alternative would be to switch to the classic foundation model of investment in listed securities that Norway’s GPFG has pursued so successfully. The authors acknowledge the endowment model’s attractiveness, but conclude that the foundation model may be better for large institutional investors operating in today’s environment of low risk-free returns, increased volatility, and higher return covariance across markets. Schna and Kalter particularly stress the need for SWFs to consider how the “three Ls” of liabilities, liquidity, and definition of long-term impact the fund’s specific needs and goals.

Finally, (Bodie and Brière, 2014) develop a new approach to sovereign wealth and risk management, based on contingent claims analysis (CCA). They show that it is essential to analyze a sovereign’s balance sheet, since the government must solve an asset-liability management (ALM) problem between income and expenditures. They present applications for SWFs and propose an analytical framework for optimal ALM based on analysis of the sovereign’s balance sheet and extending CCA theory to sovereign wealth. Bodie and Brière suggest using the broadest possible definition of the “sovereign entity” and specifically accounting for a nation’s financial, human, and resource wealth—and for the risks of the nation’s assets and liabilities. They conclude by applying their model to Chile’s SWF.

2.1.2. How Oil Revenue-Funding Impacts a SWF’s Optimal Asset Allocation Policies

As noted in section 1 above, the major SWFs are all funded in one of two ways, either through revenues from exports of oil (or other commodities, including natural gas) for the Middle Eastern SWFs and Norway’s GPFG, or through fiscal transfers from governments of mostly Asian countries that run persistent current account surpluses. Commodity-based funds are more common, both in terms of number of SWFs and aggregate size. Two papers explicitly analyze how this impacts optimal fund asset allocation. (Scherer, 2009) extends existing portfolio choice theories to SWFs in a strategic asset allocation model. In the model, changing the existing analyses from a single to a multi-period framework allows for three-fund separation; all model terms further depend on the investor’s time horizon. The resulting optimal SWF

portfolio should be split into a speculative component as well as a hedging component aimed at offsetting oil price shocks and short-term risk-free rate shocks. Oil-rich countries should hold bonds and SWFs should determine and act on long-run covariance matrices that differ from the correlation inputs that a one-period investor would use. Scherer also notes that SWFs seem ill-prepared for an oil price drop that would shrink the value of national cash inflows and increase the importance of the contribution SWF asset returns make to national income.

(Balding and Yao, 2011) suggest a better asset allocation policy for oil dependent SWFs than the one currently being followed. They account for the fact that most SWFs depend heavily on oil revenues to increase their funding base by developing a dynamic portfolio risk-adjusted return maximizing model across many assets, accounting for continual depletion of natural resources. Balding and Yao find that, given the high volatility and continuous depletion of oil as a portion of national wealth, SWFs should invest in low volatility, liquid, fixed income instruments and indexed assets. Even then, they find returns are only maximized when oil drops to about 50% of national wealth.

(Bertoni and Lugo, 2013) use a mean-variance framework to develop a model of the optimal strategic asset allocation for stabilization SWFs funded by oil revenues. They derive three sets of parsimonious tests to compare the actual allocation of Norway's GPF to its theoretical optimum. They find that the optimal allocation for an oil-funded SWF will deviate significantly from that of a general wealth-maximizing investor, and confirm that the static and dynamic deviations of the GPF's portfolio from the market equity portfolio are consistent with their theoretical predictions.

2.1.3. *The Norway Model of Asset Allocation*

Norway's GPF, with over \$850 billion assets under management, is the largest SWF and the second largest pension fund in the world (after Japan's Government Employees Pension Fund). The GPF has long pursued an asset allocation policy akin to the classic foundation model of investing in publicly traded stocks and bonds, as opposed to the more recently developed endowment model of allocating fund resources much more towards illiquid/unlisted stocks and bonds, real estate, private equity, and alternative and absolute return investments. In addition to the aforementioned (Bertoni and Lugo, 2013), who develop a generalized model but test it on GPF's portfolio, two studies focus explicitly on the optimal and actual asset allocations of the GPF. (Ang *et al.*, 2009) present a report commissioned by the Norwegian government evaluating the role of active management by the Norges Bank Investment Management (NBIM) group over 1998 through early 2009. They show that active management has played a very small role in NBIM's superior long-term investment performance. Instead, a significant fraction of performance is explained by exposure to systematic factors which performed well in the past, but fared poorly during the global financial crisis of 2008-09. Approximately 70% of all active returns on the overall fund can be explained by exposure to systematic factors—and the authors believe that the fund *should* adopt a top-

down, intentional approach to strategic and dynamic factor exposures. They conclude that the fund should provide volatility insurance to other investors and harvest volatility premiums as compensation. The key features of the GPFG that should influence deviation from market weightings are the fund's absence of any need for liquidity, its long-term investment horizon, and its freedom from explicit fund liabilities.

The Chambers, Dimson, and Ilmanen (CDI) article in the *Journal of Portfolio Management* (2012) has proven highly influential, since it analyses whether the “Norway Model” of investment has proven superior to the “Endowment Model” of investment followed by U.S. private university endowments. As discussed above, the Endowment Model emphasizes investing in alternative assets and private equity through external managers, whereas the Norway Model is virtually its antithesis—and instead mirrors the classic foundation investment approach of investing in publicly traded stocks and bonds, with a small allocation to real estate and other illiquid assets. The authors discuss the management, investment policies, and transparency of the Norwegian Government Pension Fund Global (GPFG) and assess whether the fund has successfully achieved its objectives. They also assess how the fund's strategy derives from the Norwegian government's directives and examine the fund's long-term investment performance. They conclude that the GPFG is one of the best-managed large pension funds operating today, and argue that the Norway Model is a much more appropriate investment strategy for SWFs. In their detailed analysis of the GPFG's performance, CDI point out that the fund resembles an index fund far more than one that is actively managed, and it relies on beta returns—reflecting exposure to systematic risk factors—rather than alpha returns resulting from superior stock picking (Dixon and Monk, 2013). They point out that six factors should and do drive the GPFG's investment strategy: (1) The fund has a long term horizon and little need for liquidity; (2) this long-term horizon makes the fund more tolerant of return volatility and short-term capital flows than most institutional investors; (3) the fund's size makes exploiting liquidity and volatility risk premiums impractical; (4) capacity issues, such as a small staff, favor benchmarks that are at least loosely linked to market capitalization; (5) the fund may most effectively earn liquidity and other premiums by serving as an opportunistic liquidity provider purchasing unpopular assets in illiquid markets; and (6) as long as oil remains a significant underground resource, the fund has less need for inflation hedging than most investors. It is worth noting that many SWFs, especially the larger ones, share all or most of these same features.

2.1.4. *Other Assessments of Optimal SWF Investment Policy*

What other aspects of SWF establishment, funding, and asset allocation have researchers considered normatively? (Ang, 2010) presents a policy-oriented description of the four “benchmarks” a nation should take into account when creating a SWF and defining the role it should play in overall national policy. These are the benchmarks (B/Ms) of legitimacy, integrated policy, performance and long-run equilibrium. He states the essence of a SWF is as a vehicle for transferring wealth into the future, and

concludes that the legitimacy B/M is the most important, since this ensures the fund's capital is not immediately spent. The integrated policy B/M accounts for the broader policy environment in which a SWF operates, and the performance B/M implies a fund's managers should be held accountable for maximizing risk-adjusted returns. The long-run equilibrium B/M ensures well-functioning capital markets, free cross-border capital flows, and good corporate governance.

(Raymond, 2012) assesses whether SWFs are and/or should be domestic investors of last resort (ILR) during financial crises. She documents that such SWF interventions occurred frequently after the 2008-09 financial crisis, and discusses SWFs' role as insurance funds against major crises. The author finds that Gulf SWFs' interventions exerted a stabilizing short-term effect on local stock markets during the global financial crisis, though the long-term impact has been much less obvious. She notes that SWFs, contrary to central banks, can easily provide long- to medium-term financing to banking systems, and concludes that SWFs may also be used to supplement government spending during crises or to negate speculative financial attacks. In sum, Raymond concludes by answering her own question whether SWFs should be investors of last resort in domestic markets with a definitive "perhaps."

Finally, (Gelb *et al.*, 2014) assess whether SWFs should be used to fund the infrastructure financing gap in developing countries. They propose a system of checks and balances to ensure SWFs do not undermine macroeconomic management or make politicized investments. They conclude that a well-governed SWF can improve the quality of a nation's public investment program, but the critical issue will always be limiting the SWF's investments to those proper for a wealth fund and not to supplant infrastructure investment that should come from other state agencies.

2.2. *Asset Allocations and Portfolio Selections Observed in Practice*

While one set of academic studies examines how SWFs *should* invest, another stream of research documents and analyzes how funds actually *do* invest. We summarize thirteen such papers in Table 3. Four of these papers (Chhaochharia and Laeven, 2010, Dyck and Morse, 2011, Avendano, 2012, and Karolyi and Liao, 2015) document the actual portfolio decisions of SWFs using large samples of investment observations, examine what factors might be driving these decisions, and ask whether SWFs differ significantly from other large international investors with respect to how and in which types of companies they invest. The largest samples used in any type of SWF empirical studies are observed here. The next five articles (Candelon *et al.*, 2011, Avendaño and Santiso, 2012, Knill *et al.*, 2012b, Ciarlone and Miceli, 2014, and Murtinu and Scalera, 2016) assess whether political and macroeconomic factors significantly influence observed SWF investment decisions. (Heaney *et al.*, 2011) examine how SWFs select specific companies into which to invest and which factors influence that decision. Finally, two studies (Bernstein *et al.*, 2013 and Johan *et al.*, 2013) measure how much SWFs invest in private equity (PE) worldwide, and assess why these funds seem to allocate less to PE than do other internationally active institutional investors.

****** Insert Table 3 about here ******

2.2.1. Documenting SWF Portfolios and Assessing Factors Influencing Investment Decisions

The studies surveyed here employ large samples to document actual SWF portfolios and assess which factors significantly influence fund investment decisions. (Chhaochharia and Laeven, 2010) use a sample of 29,634 equity investments made by 27 SWFs and 38,880 stock investments made by public pension funds in firms from 56 countries over 1996-2008 to test whether SWFs show systematic investment biases compared to other large global investors. They find that SWFs show strong biases and specifically that: (1) SWFs tend to invest in countries that share a common culture, particularly religion; (2) this bias is more pronounced in SWFs than in other internationally active institutional investors; (3) this cultural bias disappears with repeated investments; (4) SWFs display industry biases, investing a disproportionately large fraction of their portfolios in oil company stocks; and (5) they tend to invest mostly in large capitalization stocks. These biases are more pronounced for SWFs that are more activist, less transparent, and from less democratic countries. SWFs tend to chase past returns and hold conservative portfolios that are poorly diversified both geographically and across industries and they prefer to invest in countries with strong legal institutions.

(Dyck and Morse, 2011) similarly use a large sample to document SWF portfolio holdings and analyze the objectives underlying these observed investments. Their sample captures holdings in 2008 by 20 SWFs in over 26,000 companies, with an aggregate value of \$2.04 trillion. They find that SWF asset allocations are balanced across risky asset classes, are substantially home-region biased, and are very biased towards the financial, transportation, energy, and telecommunications industries—particularly finance (SWFs owned 4.8% of the world’s listed financial company stocks in 2008). SWFs invest actively (with control rights) in both public and private sectors, but mainly exercise control in their home regions. Dyck and Morse also test whether SWF investments are motivated by home-country portfolio diversification or industrial planning objectives and find that measures capturing portfolio diversification and industrial planning objectives explain 14.4% of SWF portfolio variation; industrial motives account for 45% of this.

(Karolyi and Liao, 2015) employ a large number of cross-border equity investment observations to determine if state-controlled investors have a differential valuation impact on acquisition targets than do private, corporate acquirers. They study 4,026 cross-border acquisitions over 1998-2008, worth \$434 billion, that were led by government-controlled acquirers, and compare these to 127,786 similar acquisitions worth \$9.04 trillion made by private acquirers and 733 deals worth \$158 billion made by SWFs and other state-owned funds. They test whether state-controlled acquirers and SWFs select targets in different industries or with different firm characteristics than do private acquirers. They find surprisingly small, though often significant, differences between state-controlled acquirers’ and private acquirers’ investment patterns and preferences, but find somewhat larger differences with SWFs and other state funds.

SWFs and other state funds pursue larger targets with higher growth options, and are more deterred by high insider or institutional share ownership. Karolyi and Liao conclude there is little reason for target-country policy-makers to discriminate against state-owned versus private acquirers.

(Avendano, 2012) uses a sample of over 14,000 individual holdings of 22 SWFs in almost 8,000 target firms in 65 countries over 2006-09 to study how differences in funding source (commodity and non-commodity), investment guidelines (OECD and non-OECD), and investment destination (foreign and domestic) impact SWF investment decisions. He finds SWFs prefer to invest in larger and internationally active firms, but OECD-based and non-OECD-based funds differ in their preferences about target-firm leverage, degree of internationalization, and profitability. SWFs prefer larger, more levered firms in foreign versus domestic investments, and Avendano finds some evidence that SWF ownership positively impacts the target firm's value. Home-country natural resource endowments help explain whether SWFs prefer to make foreign investments in these industries.

With over \$5.5 trillion of assets under management, it is natural that most SWF research has focused on industrial and national influences on their investments, but (Heaney *et al.*, 2011) focus on the investments made by a single (albeit very important) fund, Singapore's Temasek, with a focus on firm selection criteria. They document and analyze investments made by Temasek Holdings in 150 publicly listed Singaporean companies over the period 2000-04, and find that Temasek prefers to invest in companies that are relatively large, with low systematic risk, that have few director block-holders, and use stock-based incentive compensation schemes.

2.2.2. *Do Political and Macroeconomic Factors Influence SWF Asset Allocation Policies?*

One of the great fears surrounding SWF cross-border investments is that these will be made for non-commercial reasons and that political or macroeconomic forces will instead prove decisive. Five studies assess whether these fears are justified. (Candelon *et al.*, 2011) employ a sample of 1,123 equity investments (849 foreign, 274 domestic) by SWFs in 73 countries over 1989-2011 to examine whether and how macroeconomic factors influence SWFs' foreign and domestic equity investments. They also test whether decisions are based exclusively on profit-maximizing motives. They find that macroeconomic factors are important influences on SWFs' investing decisions and that SWFs largely invest to diversify away from industries at home, but do so mostly in countries with economic and institutional stability. SWFs use different criteria to decide on investments in OECD vs non-OECD countries, and tend to re-invest in a country once an initial investment has been made.

(Ciarlone and Miceli, 2014) also study how macroeconomic factors affect SWF asset allocation. With a proprietary dataset of 1,903 acquisition deals made by 29 SWFs during the period 1995-2010, they find that SWFs tend to invest in the countries with more developed financial markets, more stable macroeconomic environments, and better protection for investors. Unlike most of the institutional investors

which divest from the countries being hit by crisis, SWFs show a “contrarian” behavior by increasing their acquisitions in the crisis trapped countries. Therefore, the authors claim that SWFs play a role to stabilize the target country financial markets during the period of crisis.

(Avendaño and Santiso, 2012) examine whether SWF investments are politically biased by comparing almost 14,000 shareholdings of 17 SWFs to 11,600 shareholdings of the 25 largest mutual funds during the fourth quarter of 2008. They ask whether SWF holdings show greater political influence than stakes held by privately owned mutual funds. The authors find that SWF investment decisions do not differ greatly from those of privately owned mutual funds, and conclude that the fear that sovereigns with political motivations will use their financial power to secure large stakes in Western companies is unfounded. They argue that double standards for SWFs and private institutional investors should be avoided.

(Knill *et al.*, 2012b) use a sample of over 900 acquisitions of public and private target firm stock by SWFs over 1984-2009 to test whether bilateral political relations significantly influence SWF investment decisions. They find that political relations are an important factor in where SWFs invest, but matter less in determining the size of the investment. SWFs are more likely to invest in countries with which they have *weaker* political relations, contrary to the predictions of the foreign direct investment literature, suggesting that SWFs use—at least partially—non-financial motives in investment decisions.

(Murtinu and Scalera, 2016) study how fund opacity and political ties between the SWF’s and target’s country affect the use of intermediate investment vehicles. They build a sample with 716 investments (474 cross-border investments) made by 22 SWFs from 13 countries over the period 1997-2013 and find that low transparency SWFs have a greater incentive to use investment vehicles to avoid potential hostility from the target country government. However, the stronger bilateral political ties can partially alleviate the concerns of target country governments towards SWF investments, and thus lower the likelihood for SWFs to invest through corporate vehicles.

2.2.3. *Do SWFs Invest In and Through Private Equity?*

Many commentators, noting the political difficulties SWFs often encounter when purchasing large share blocs in publicly traded companies, have suggested that SWFs should invest indirectly instead, by channeling their assets through private equity funds. Two studies assess whether SWFs in fact do this. (Bernstein *et al.*, 2013) use a sample of 2,662 direct private equity (PE) investments worth \$198 billion made by 29 SWFs over 1984-2007 to analyze whether there exist differences in investment strategy and performance across funds regarding PE investing. They find SWFs seem to engage in trend chasing, since they are more likely to invest in PE at home when domestic equity prices are higher, and invest abroad when foreign prices are higher—but that SWFs invest at lower overall price-to-earnings ratios domestically. SWFs where politicians are involved are much more likely to invest at home than are SWFs with external

managers, but greater domestic investment is a symptom of poor investment decision-making, since the funds are prone to home bias or have decisions distorted by political or agency considerations.

(Johan *et al.*, 2013) examine investments made by 50 SWFs in 903 public and private global firms to see whether these funds are less likely to invest in private equity (PE) than are other large institutional investors. They find that SWFs are less likely to invest in PE than are other investors, but the economic significance of this is surprisingly low. The authors find some evidence that SWFs invest internationally with political motivations in mind, perhaps to gain politically from corporate governance conflicts or to avoid the intense scrutiny and criticisms of the public faced by Dubai World Ports and other investors caught up in controversial cross-border acquisitions (Dinç and Erel, 2013).

2.3. Geographical and Industrial Distribution of SWF Investments

In this section, we use the empirical data from the Sovereign Investment Laboratory (SIL) database to present SWF investment patterns across countries and industries. Due to the low transparency of SWFs, it is not feasible to identify all types of investments; debt holdings, both corporate and government-issued, are particularly difficult to track. In the following discussion, we mainly focus on SWF equity investments in publicly traded firms, because only this information is usually disclosed publicly. Table 4 presents summary statistics on the investments by 29 SWFs documented in the SIL database over the period 2000 to 2014. A total of 1,379 transactions include investments in listed stock, real estate, and private equity. The total investment value of all SWFs in this period is \$632 billion. The Qatar Investment Authority (QIA) has the largest aggregate investment value of \$123.5 billion, with investments mainly concentrated in the real estate sector. In second place is China Investment Corporation (CIC), with \$111.3 billion investment in 116 deals. But this total is highly impacted by a handful of very large domestic investments aimed at recapitalizing several state-owned banks in preparation to their partial privatization. In addition, the \$20 billion investment made in the China Development Bank in 2007 is the largest deal in our database. The two Singaporean SWFs, GIC and Temasek, are ranked third and fourth, respectively, by value of investments. In total, they made 602 deals worth almost \$170 billion—which puts Singapore ahead of all other countries. We track nine UAE-based funds, with more than \$130 billion invested in 218 deals.

****** Insert Table 4 about here ******

Columns 5 and 6 of Table 4, referencing the fraction of deals that were cross-border (foreign) rather than domestic, clearly support the common perception that SWFs target the vast bulk of their investments outside of their home markets (Megginson *et al.*, 2013). Foreign investments represent 84.1% of all SWF investments by number and 74.9% by value over 2000-2014. Many commentators have noted that SWFs tend to make more foreign than domestic investments and that domestic investments differ quite dramatically from the international investments these same funds typically make. Though this seems quite logical at first glance, such a pattern is actually well outside the norm of institutional investment long

observed in western economies, which invariably show a decided “home equity bias” disproportionately favoring the stocks of companies headquartered in the same country (Hau and Rey, 2001 and Bekaert and Wang, 2009). This literature shows that, apart from specialist investment vehicles, such as “emerging market” or “global growth” funds, the typical U.S. or European pension fund or mutual fund invests two to four times as much in their home equity markets as a portfolio diversification, risk-adjusted return maximizing strategy indicates they should. Although the motivations underlying SWFs’ domestic versus international investment choices have not yet been fully examined empirically, the funds invest the majority of their capital internationally, for two principal reasons. First, as wealth funds they are attempting to invest for the long term in financial assets with different macroeconomic and political exposures than their domestic economies, and the best way to achieve this is to invest in global equities—especially those of developed economies. Second, since many SWFs are very large funds based in relatively small economies, they are forced to invest abroad in order not to engender asset price bubbles that would result from channeling investments into domestic stocks, bonds, and real estate.

Figure 2 and 3 shows the geographical distribution of SWF investments. Developed economies, such as Europe and North America, maintain a strong attraction for SWFs. In Figure 2, we can observe an apparent trend of SWFs targeting their geographical allocation towards OECD countries. However, starting from 2014, the regional distribution of investments shows different patterns. Due to the drop in oil prices and the slowdown of global economic growth, SWFs reduced their investment proportions in developed economies and turned their attention to domestic markets. As a consequence, the proportion of domestic investments increased by 3 percent and the proportional investments in OECD countries decreased by 10 percent compared to 2013. Europe has been the largest target region for SWF investments since 2011. However, due to the shift to domestic investments in 2014, the SWF investment value in Europe declined by more than 10 percent compared to 2013, and Europe was ranked as the second largest target region with an investment of \$16.5 billion from SWFs in 2014. In the US, SWFs increased their investment from \$7.5 billion in 2013 to \$14.7 billion in 2014, but they changed their asset allocation preference from the financial to the real estate sector. It is also worth mentioning that the SWF investments in both Asia-Pacific and Middle East and North Africa (MENA) region were increased significantly. However, the investments in the two areas show some different characteristics. In the Asia-Pacific region, most of the deals are cross-border investments and China is the major beneficiary country. In the MENA region, the investment increase is mainly contributed by their local SWFs. They gave support to their domestic economy and helped alleviate the financial difficulties.

****** Insert Figures 2 and 3 about here ******

Finally, Figure 4 summarizes the industrial allocation of SWF investments over 2006-2014. The most obvious trend in this figure is the shift to real estate investments. This pattern is particularly evident

in 2014. The 32 publicly reported investments in real estate account for 24% of all deals by number, but the combined investment value (\$31.5 billion) represents 46% of the total investment value in 2014. This shift to real estate investments can be explained by the low interest rates all over the world, pushing SWFs to look for alternative asset classes. It is also worth mentioning that the large real estate investments by SWFs are mainly concentrated in commercial property in the UK and US, while emerging economies have received significantly less attention in the past two years. Investments in the financial sector continuously shrank over the past four years and reached their lowest historical point in 2014. We observe a total of 14 deals in the financial sector in 2014, worth \$6.9 billion, only 10.5% of the total investment value. Other industries attracting significant SWF investment are oil and gas producers, transportation, chemicals, and other industrials.

****** Insert Figure 4 about here ******

2.4. *Recent Trends in SWF investments*

In this section, we highlight other key trends that have emerged regarding SWF investment patterns recently. These trends include the following: (1) Joint ventures and co-investing have increased in importance and attractiveness. This allows SWFs to directly invest in high-quality, big-ticket deals with western investment funds and developers at less risk than going-it-alone and with lower fees than fully outsourcing investments; (2) with the reduced interest in finance sector, there is growing interest in allocating funds to private equity. This has long seemed to be a logical target as it finesses political problems with state-owned funds investing directly, while still accessing the best deal flow. Besides that, SWFs also target foreign banks in emerging economies, hoping to benefit from their recovery and development; (3) all large funds are bringing asset management in-house by building up internal analyst teams and bulking up with domestic or expatriate specialists. Some, especially GPF, are much farther along than others, though even ADIA now manages one-third of new investments in-house; (4) the Norway Model (the classic foundation model) of investment, or variants thereon, are fast becoming the industry standard. This involves investing in mostly public equities (60-65%), traded fixed income (30-35%) and increasingly real estate (1-5%) and some alternative assets such as private equity. This involves mostly index-oriented, low cost investing rather than large direct stake purchases. Norway's managerial structure and internal governance are also becoming the model to emulate, especially for newly created funds; and (5) there has been major growth—albeit from a small base—in SWF funding and investment in sub-Saharan Africa. This is now the world's fastest growing continent and several countries there are launching new funds to protect resource endowments, all based to one degree or another on the Norway model.

3. The Impact of SWF Investments on Target Firms

3.1.1. *How State Ownership Itself Should Impact Firm Values*

A large literature examines empirically whether state ownership of domestic corporate equity is associated with increased or reduced firm value, and most of these studies conclude that government stockholdings tend to correlate with lower firm market values (Boubakri and Cosset, 1998, Chen *et al.*, 2012, and Lin and Bo, 2012). The findings of this literature offer more support for the “political view” that state ownership is engineered to redistribute corporate wealth to connected groups and individuals (Megginson *et al.*, 1994, Sapienza, 2004, Dinç, 2005, Avsar *et al.*, 2013, and Iannotta *et al.*, 2013) than the competing “social view,” which attributes socially benign intentions to state investors.

3.1.2. *Evidence on Different Types of State Owners*

There is as yet surprisingly little research examining whether all types of state owners have the same impact on target firm value, even though logic suggests a nation’s finance ministry will have different motivations, capabilities, and effects than state-controlled investment vehicles or state owned enterprises. Extant research examining the differential effect of various state actors has focused mostly on Chinese publicly traded companies. (Chen *et al.*, 2008), (Lin and Su, 2008), (Chen *et al.*, 2009), (Houston *et al.*, 2010), (Jiang *et al.*, 2010), and (Berkman *et al.*, 2012) all examine whether share ownership (or transfers from state to private ownership) by state ministries, state asset management bureaus, and state-owned enterprises are associated with differential impacts on target firms. These studies generally conclude that SOEs connected with the national government, or which have substantial private ownership, are associated with higher valuations than are shareholdings of and ownership transfers to asset management bureaus, local and regional governments, and SOEs affiliated with local and regional governments.

We are aware of only five non-Chinese empirical studies examining the valuation impacts of different types of state ownership or that compare the effects of comparable state and private investors. (Woitdke, 2002) shows that stock ownership by private, unaffiliated US pension funds enhances target firm values, whereas investment by public and affiliated pension funds do not. (Gianetti and Laeven, 2009) find that size and independence of Swedish pension funds seems to matter more than does a simple state-versus-private dichotomy, as only large, unaffiliated public and private funds are associated with value creation. (Karolyi and Liao, 2015) reach a similar conclusion in their study of cross-border stock acquisitions by state-owned entities and corporate acquirers; both are associated with nearly identical announcement period and long term target stock returns, though state-owned investment funds are associated with significantly less positive target firm stock returns. (Lin *et al.*, 2011) differentiate between four types of stockholders in their study documenting that a large control-cash flow wedge has a less substantial valuation impact for state controlled firms than for those controlled by families or for widely held companies. The fifth paper, by (Oum *et al.*, 2006) examines the impact of multiple (six) types of majority-state ownership and mixed state and private ownership on the operating and financial performance of major airports in North America, Asia, and western Europe. They find that airports run by majority-private entities are the most efficient,

whereas those run by multiple levels of governments and mixed majority-state/minority-private entities are least efficient.

To summarize, while empirical evidence strongly suggests that private ownership should generally be considered superior to state ownership, little existing research can guide our predictions of how different types of state owners might impact target firm value differentially. Some classes of government entities are more likely to be involved in the management and monitoring of their acquisition targets than are others. In particular, government entities such as SOEs are often more closely involved in the management of investment targets than are pure state actors, such as the central government or local/regional governments. To date, however, only the papers described below have studied the effect of SWF investment on target firms, and only two of these (Karolyi and Liao, 2015 and Bortolotti *et al.*, 2015) compare the impact of SWF investments to those of comparable privately owned investors.

3.2. *The Impact of SWFs on Target Firm Financial Performance and Value*

In this section, we survey fourteen academic articles which study the impact of SWF investments on target firms' financial and operating performance, corporate governance, valuation, credit risk, and stock return volatility. The empirical data, methodologies, and findings of the twelve articles are summarized in Table 5. We logically divide our discussion into three subsections: market reaction; operating performance and governance; and valuation, credit risk, and stock return volatility.

****** Insert Table 5 about here ******

3.2.1. *Event Studies of the Short and Long-Term Stock Price Effects of Investment in Listed Targets*

In the first part, we discuss the target firms' short and long-term market performance following the SWF investments. The evidence for the short-run market reaction is highly consistent. Six papers (Dewenter *et al.*, 2010, Kotter and Lel, 2011, Sojli and Tham, 2011, Bortolotti *et al.*, 2015, Hua, 2015, and Karolyi and Liao, 2015) all use standard event study methods and find that the short-term reaction to an announced SWF equity investment in a listed company yields significant positive announcement-period excess returns of 1-3%. However, the findings for the long-term reaction are less conclusive. (Dewenter *et al.*, 2010) document significantly negative median 1-year cumulative market-adjusted excess returns (-4.5%), but significantly positive median 3-year (+7.3%) and 5-year (+31.2%) returns for target firm stocks after SWF investments. They attribute their findings to the outcome of a trade-off between SWF monitoring and lobbying benefits and tunneling and expropriation costs. (Karolyi and Liao, 2015) confirm that the 1-year excess returns after SWF investment are significantly negative. However, different from (Dewenter *et al.*, 2010), they find that the excess returns stay negative even if the time window is extended to 2 or 3 years. Both (Kotter and Lel, 2011) and (Hua, 2015) show that the abnormal stock returns after SWF investments are not statistically significant from zero in the long run. (Kotter and Lel, 2011) believe that shareholder activism is not common among SWFs. However, (Hua, 2015) explains her results from a different

perspective, suggesting the insignificant long run reaction is the consequence of the interaction of two opposing factors—the low target firm stock liquidity caused by the intractable information of SWFs and the benefit from SWF monitoring and certification. Lastly, (Sojli and Tham, 2011) find that the large investments by SWFs where they plan to take active roles in target firm management yield significantly positive long-term stock returns. (Dewenter *et al.*, 2010) also mention that the market reaction is related to the size of the stakes purchased by SWFs. They find a non-monotonic relationship between the two variables. The abnormal returns first rise with the ownership of SWFs and then decline when the SWF ownership reaches a certain extent. (Kotter and Lel, 2011) examine which types of the target firms attract SWF investments. They find SWFs tend to choose large, financially constrained, and poorly performed firms. And the market reaction is more positive for the SWFs with higher transparency. Their result is also supported by (Hua, 2015).

(Karolyi and Liao, 2015) and (BFM, 2015) explicitly test whether the average stock price reaction to news of a SWF investment is significantly different than the average reaction following announcements of investments in listed firms made by otherwise similar privately-owned institutional and corporate investors. (Karolyi and Liao, 2015) use the cross-border acquisition transactions over 1998-2008 to study the target firm announcement period returns. They divide their data into three groups based on the different types of acquirers—government controlled acquirers, private acquirers, and SWF/other state-owned fund acquirers. They find that the private acquirer group has the highest announcement period return (5.0%) which is almost twice the return for the government controlled acquirer group (2.8%). The SWF/other state-owned fund acquirer group has the lowest announcement period return (0.8%) which is far below the other two groups. (BFM, 2015) document a “Sovereign Wealth Fund discount” in their study. They compare the valuation impact of SWF investments with those of comparable private investments and find that the market reaction to SWF investment (0.9% announcement period abnormal return including the investment by Norway’s GPF, and 2.45% without Norway) over a three-day event window (-1,+1) is significantly lower than that of comparable private-sector investments (5.02% announcement period abnormal return). They attribute this SWF discount to the inconsistency between political objectives and profit maximization.

3.2.2. *Impact of SWF Investment on the Operating Performance and Governance of Target Firms*

A second group of papers focused on the impact of SWF investment on the target firm operating performance and corporate governance. (Fernandes, 2014) studies the impact of SWF investments on the value and operating performance of firms in which SWFs invest and finds both a significant increase in firm value as well as significant improvements in operating performance, as measured by returns on equity, returns on assets and operating returns. The author further identifies the source of value provided by SWFs as originating from stronger monitoring, better access to capital, and improved access to foreign product markets. The findings of stronger monitoring are consistent with the results of (Dewenter *et al.*, 2010), who

believe that SWF investment may increase the target firm value by providing valuable monitoring or lobbying services. They examine the behavior of target firms and find that over half of the targets experienced one or more event indicating SWF monitoring or influence. They further discuss the role of SWFs in managerial turnover, but also in the creation of valuable network effects. (Sojli and Tham, 2011) similarly attribute the improved performance of SWF investment target in the United States to, amongst other things, improvements in governance. As an extension of (Dewenter *et al.*, 2010), (Del Giudice *et al.*, 2014) study whether the network created by SWF investments can positively affect operating performance and create benefits to the better connected target firms. With a network analysis, they find that the highly central firms in the SWF-target network tend to have better operating performance due to better access to information. They also point out that a politician run SWF, a direct and domestic investment, and a larger investment size are all related to better target firm operating performance.

(Rose, 2013) describes in detail how SWFs tend to be disengaged from corporate governance matters in US firms, as a reaction to regulatory and media opposition to their investments. Yet, as he discusses, this passivity has a dark side and it could have a negative impact on firm value by replacing other, potentially more engaged, shareholders. In contrast to the other studies which document the improvement of operating performance, (BFM, 2015) find evidence of declining return on assets, sales growth, and market-to-book ratios over the three years following SWF investments.

3.2.3. *Impact of SWF Investment on Target Valuation, Credit Risk, and Stock Return Volatility*

Six studies examine how SWF equity investments impact the valuation, credit risk, and/or financial return volatility of target firms post-investment. Since these studies employ differing methodologies and samples, and examine different performance metrics, it is harder to draw general conclusions regarding their findings, except to say that two of these studies (Fernandes, 2014 and Bertoni and Lugo, 2014) find that SWF investments generally increase target firm value and/or reduce the target's credit risk, while (Knill *et al.*, 2012a) find that both the risk and return of target firms' stocks decline following SWF investments. (Murtinu and Scaleria, 2015) find that target firm value is higher if SWFs make cross-border investments in non-strategic industries. (Borisova *et al.*, 2015) document that SWF investment in target firms' stock is associated with an increase in those firms' bond yield spreads—and thus their cost of debt financing, while (Gagliardi *et al.*, 2014) show a positive short-run and medium-run market reaction for target firm bondholders.

(Fernandes, 2014) examines a sample of 8,000 SWF share holdings in 58 countries over 2002-07 to test whether SWFs investments create value for target firms. He find that SWF investments are associated with a value (Tobin's q) premium of more than 15%, and that SWFs also positively impact target firm return on assets, return on equity, and net profit margin. It should be pointed out that no other SWF empirical

study finds a positive valuation impact anywhere near that large, although most do find that announcements of SWF stock purchases are associated with significantly positive returns in the 1-3% range.

(Bertoni and Lugo, 2014) study the effect of SWF stock purchases on the credit risk of target firms. The authors compute and analyze changes in credit default swap (CDS) spreads for a sample of 391 direct SWF investments over 2003-10. They find the target company's CDS spreads decrease significantly after SWF investment and that the results are stronger when the SWF originates from a politically stable non-democratic country. The authors interpret the results as suggesting that creditors expect SWFs to protect target companies from bankruptcy.

(Knill *et al.*, 2012a) use a sample of 231 SWF acquisitions of listed firm stock over 1984-2009 to examine whether these investments significantly impact the return-to-risk performance of target firms, and find that target firm raw returns do indeed decline following SWF investment. Though risk also declines, they document a net reduction in the compensation offered to investors for the risk they assume over five years after investment, suggesting that SWFs may not provide the same monitoring benefits for targets offered by other institutional investors.

(Murtinu and Scalera, 2015) study how SWF investments affect the market value of target firms over a 50-day window. They build a sample with 270 investments by 23 SWFs from 15 countries over the period 1997-2013 and find that: (1) compared to domestic investments, SWF cross-border investments generate a larger, more positive effect on target firms' market value; (2) SWF investments in strategic industries have a negative effect of greater magnitude on the market value of target firms than comparable investments in non-strategic industries; (3) the level of SWF politicization is negatively related to the market value of target firms.

(Borisova *et al.*, 2015, BFHM) examine the impact that state ownership has on a company's cost of debt using a sample of 6,671 credit spreads from 1,723 bonds issued by 244 companies from 43 countries over 1991-2010 (including 1,060 firm-year observations with SWF ownership). The authors hypothesize that, on one hand, state ownership provides domestic companies an implicit guarantee on the debt of the firm and therefore might reduce the cost of debt. On the other hand, state ownership may have a negative effect on a firm's cost of debt due to the inconsistent goals between the government and regular for-profit investors. BFHM shows that, during normal times, state ownership is associated with an increase in the cost of debt. However, during the financial crisis, the benefit of an implicit government guarantee is more pronounced and state ownership is associated with lower spreads. Further, SWF ownership is linked to a higher cost of debt compared to ownership by central banks, the national treasury, and state-owned non-financial enterprises in both normal times and during the financial crisis.

Along the same lines as BFHM, (Gagliardi *et al.*, 2014) study the impact of SWF investments on the value of target firm bondholders. With a sample of 113 investment deals over the period 1998-2011,

they document a positive short-run abnormal return (+0.32%) for bondholders over a 3-day window and also a positive medium-run abnormal return (+2.67%) for bondholders over a 47-day window. The abnormal returns of non-strategic and non-financial target firms are significantly higher than in strategic and financial targets. Finally, bondholders of targets with poor credit rating or negative outlook experience a larger, positive valuation effect following SWF investments.

4. Conclusion and Extensions

We conclude by discussing where we think SWF research is heading and what critical questions need to be addressed by the next group of researchers in the future. SWFs are at a crucial transitional period. As we discussed earlier, the two principal SWF financing channels are revenue from the sale of natural resources and foreign exchange reserves from net exports. However, crude oil prices have been started falling since June 2014, and by early 2015 oil prices were below \$50 per barrel. Then prices rebounded slightly for several months, then dropped sharply again from almost \$60 per barrel in May 2015 to \$27 per barrel in February 2016. The prolonged slump in oil prices seriously hurts revenues from energy sales. In addition, due to the slowdown of economic growth in emerging markets, we can predict that the injection of foreign exchange reserves in exporting countries will be significantly reduced. Under this circumstance, it is interesting to check how SWFs adjust their asset allocation strategies to minimize the impact of the revenue reduction. Furthermore, it is also important to look at the channels that parent-country governments use to explicitly/implicitly force SWFs to support their domestic financial budgets, and to study how political pressure from domestic governments will affect SWF investment strategies.

Far too little is known about the details of SWF investments, with the notable exception of the activities of Norway's Government Pension Fund Global. Extant research has offered insights—and even those, incomplete—into investments in publicly traded firms and some glimpses into disclosed real estate and unlisted equity investments. The substantial fraction of SWF investments in bond markets has so far defied analysis and remains opaque. While little is known about the returns achieved by SWFs in their international equity and debt investments, even less is known about their domestic asset returns. This is partly because of inherently restricted information disclosure and partly because SWFs are often used to rescue local firms and industries during financial crises and recessions. SWFs can be employed as tools of domestic development far more easily than they can be used thusly in cross-border deals.

The lack of information and opaque nature of SWFs is, of itself, deserving of study. We strongly suspect that the secrecy surrounding most SWFs has actually been self-defeating, stoking the flames of those who view foreign government investors with suspicion. Yet, there are perhaps valid reasons (domestic political short-term pressures but also the need to protect investment strategies) for opacity; it would be

interesting to see what the optimal level of disclosure is and whether such heterogeneity among funds has rational justifications.

Despite the lack of truly comprehensive data, extant research has gained some insights into the performance of SWF investment portfolios. Most of this evidence indicates that the claimed returns of all but the most transparent funds are probably over-stated, perhaps wildly so. Yet this research relies on incomplete and certainly biased data—as it is the most transparent funds based in western countries that are most likely to provide sufficient disclosure, but those funds are also, on an average, the most sophisticated investors amongst their peer group.

Extant research on the impact of SWFs on target firm value has mostly relied on analysis of announcement-period abnormal returns—and found positive abnormal returns over short-term windows. However, a large literature documents the market reaction to investments by western mutual funds, pension funds, and other types of institutional investors and also finds positive abnormal returns. Yet, despite the abnormal performance of investment targets documented in this literature, most of the (to start with, scant) research on SWF performance has failed to compare the performance of SWF investment targets to that of a comparable, private-sector benchmark. (BFM, 2015) have offered a first attempt at constructing a benchmark of comparable private-sector investments and, while confirming that SWF investments are associated with positive abnormal returns, they have also shown that such returns are smaller than those to private-sector investment announcements. This “SWF discount” has thus been documented, yet it has not been fully explained. Is the market reaction a rational response to the expectation of political interference by SWFs or is it perhaps a reaction to the stigma associated with the sovereign nature of these investors?

A related unanswered question is one of long-term impact. Empirical corporate finance research has come to rely on short-term market reactions, under an assumption of market efficiency, to make inferences about the long-term value impact of corporate events—in this case, to make inferences about the long-term value impact of SWF investments in publicly traded firms. Yet is it reasonable to expect markets to efficiently and accurately assess the value impact of investments which are kept intentionally opaque by a group of funds who are, in the first place, little understood? Or is there perhaps more insight to be gained by long-term analysis of operating performance of investment targets, despite the added noise and econometric challenges inherent in long-term analyses?

In some sense, extant research has failed to provide answers to some of the most fundamental, and most important, questions surrounding SWFs. Foremost is the question whether SWFs can truly become vehicles financing economic development, to the benefit of the populations of the sponsoring countries. Of course, the evidence so far, suggesting that SWF capital flows are mostly directed to the financial industry in developed, western countries seems to reinforce the view of SWFs perpetuating Lucas’ paradox and diverting resources that could perhaps be employed for domestic investments in countries often lacking

infrastructure. Yet, such a view hinges on scant evidence: it is hard to draw any conclusion on the impact of SWF investments when their allocations, as previously discussed, are only partially known.

There are other related, specific, unanswered questions. Have SWFs strengthened the influence of government on their domestic economies—by virtue of direct asset acquisitions—or have they actually weakened such impact, by insulating those same assets from political interference? Have SWFs helped or hindered domestic financial and industrial development? While data constraints are one of the reasons for lack of clear answers, a contributing factor has been a ‘western bias’ in most of the related research – as western economists have been more interested in analyzing how SWFs impact target firms and target-firm economies, rather than questioning the rationale for SWF existence in the first place.

Finally, a critical issue is whether countries should set up SWFs in the first place—and, even more, whether there are certain countries for which a SWF is more appropriate. Should countries with large, and perhaps temporary, excess cash flows allocate a portion of these funds to a SWF? Should countries excessively dependent on a single commodity use a SWF to diversify their economic exposure? Should countries with aging populations use SWFs as a tool for inter-generational wealth transfer? We hope our research colleagues will vigorously pursue these issues going forward.

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Figure 1. Worldwide Sales of State-owned Enterprises and Assets (Privatizations and Sales) and Purchases of Privately-owned Stock by Governments (Nationalizations and Investments), 1988-2011, US\$ Billions.



Source: *The Economist*, Setting out the Store (January 11, 2014).
<http://www.economist.com/news/briefing/21593458-advanced-countries-have-been-slow-sell-or-make-better-use-their-assets-they-are-missing>

Table 1. Sovereign Wealth Funds in the Sovereign Investment Laboratory SWF Transaction Database

This table lists the 34 funds that meet the Sovereign Investment Laboratory definition of a sovereign wealth fund (SWF), plus the Saudi Arabian Monetary Agency's foreign assets, and offers information regarding country of origin; fund name; the year in which the fund was established; the principal source of funding for the fund; and estimated total assets under management in US\$ billions as of February 29, 2016. Unless indicated as being Sovereign Investment Laboratory estimates, data are mainly obtained from the Sovereign Wealth Fund Institute.

Country	Fund Name	Inception Year	Source of Funds	Total Assets US\$ Billion
Norway	Government Pension Fund – Global	1990	Commodity (Oil)	\$824.9
UAE-Abu Dhabi	Abu Dhabi Investment Authority	1976	Commodity (Oil)	773.0
China	China Investment Corporation	2007	Trade Surplus	746.7
Saudi Arabia	Saudi Arabian Monetary Agency Foreign Assets	1963	Commodity (Oil)	632.3
Kuwait	Kuwait Investment Authority	1953	Commodity (Oil)	592.0
Singapore	Government of Singapore Investment Corporation	1981	Trade Surplus	344.0
Qatar	Qatar Investment Authority	1974	Commodity (Oil)	256.0
China	National Social Security Fund	2000	Trade Surplus	236.0
Singapore	Temasek Holdings	1974	Trade Surplus	193.6
UAE-Dubai	Investment Corporation of Dubai	2006	Commodity (Oil)	183.0
Russia	National Wealth Fund and Reserve Fund	2006	Commodity (Oil)	139.2
UAE-Abu Dhabi	Abu Dhabi Investment Council [†]	2005	Commodity (Oil)	110.0
Australia	Australian Future Fund	2006	Non-Commodity	95.0
Republic of Korea	Korea Investment Corporation	2006	Government-Linked Comps	91.8
Kazakhstan	Kazakhstan National Fund	1983	Commodity (Oil)	77.0
UAE-Dubai	International Petroleum Investment Company	1984	Commodity (Oil)	66.3
UAE-Abu Dhabi	Mubadala Development Company PJSC	1993	Commodity (Oil)	66.3
Libya	Libyan Investment Authority	2003	Commodity (Oil)	66.0
Malaysia	Khazanah Nasional Berhad	2000	Government-Linked Firms	41.6
Brunei	Brunei Investment Agency	1983	Commodity (Oil)	40.0
Azerbaijan	State Oil Fund of Azerbaijan	1999	Commodity (Oil)	37.3
Oman	State General Reserve Fund	1980	Commodity (Oil & Gas)	34.0
Ireland	Ireland Strategic Investment Fund	2014	Non-Commodity	23.5
New Zealand	New Zealand Superannuation Fund	2001	Non-Commodity	20.2
East Timor	Timor-Leste Petroleum Fund	2005	Commodity (Oil & Gas)	16.9
UAE	Emirates Investment Authority	2007	Commodity (Oil)	15.0
UAE-Dubai	Istithmar World [†]	2003	Commodity (Oil)	11.5
Bahrain	Mumtalakat Holding Company	2006	Government-Linked Firms	11.1
Oman	Oman Investment Fund	2006	Commodity (Oil & Gas)	6.0
Angola	Fundo Soberano de Angola	2012	Commodity (Oil)	5.0
Nigeria	Nigerian Sovereign Investment Authority	2012	Commodity (Oil)	1.4
UAE-Ras Al Khaimah	Ras Al Khaimah Investment Authority	2005	Commodity (Oil & Gas)	1.2
Kiribati	Revenue Equalization Reserve Fund	1956	Commodity (Phosphates)	0.6
Vietnam	State Capital Investment Corporation	2005	Government-Linked Firms	0.5
São Tomé & Príncipe	National Oil Account [†]	2004	Commodity (Oil)	0.00063
Total, 23 oil-based funds (US\$ billion)		\$3,954.3		
Total, 12 non-oil based funds (US\$ billion)		\$1,804.6		
Total, all 35 funds (US\$ billion)		\$5,758.9		

[†] Sovereign Investment Laboratory estimate of assets under management (AUM).

Table 2: Summary of Empirical, Theoretical and Normative Studies of How Sovereign Wealth Fund *Should* Select Asset Classes in Which to Invest

 This table summarizes the findings, predictions and/or prescriptions of several recent empirical, theoretical and normative studies of how SWFs *should* allocate funds to different asset classes.

Study	Research question and methodology	Summary of empirical or theoretical findings and conclusions
Gelb, Tordo, and Halland (OECD 2014)	Assess whether SWFs should be used to fund the infrastructure financing gap in developing countries. Propose a system of checks and balances to ensure SWFs do not undermine macroeconomic management or make politicized investments.	Conclude that a well-governed SWF can improve the quality of a nation's public investment program, but the critical issue will always be limiting the SWF's investments to those proper for a wealth fund and not to supplant infrastructure investment that should come from other state agencies.
Bodie and Brière (<i>Journal of Investment Management</i> 2014)	Set out a new approach to sovereign wealth and risk management, based on contingent claims analysis (CCA). Note that state must solve an asset-liability management (ALM) problem between income and expenditures, and present applications for SWFs.	Propose analytical framework for optimal ALM based on analysis of sovereign balance sheet and extending CCA theory to sovereign wealth. Suggest using broadest possible definition of "sovereign entity" and specifically accounting for nation's financial, human, and resource wealth--and for risks of assets and liabilities. Apply model to Chile's SWF.
Schena and Kalter (<i>JIBS</i> 2013)	Ask whether it is time to rethink the "Endowment Model" of sovereign investment to focus on less liquid and relatively higher return assets, as do many university endowment funds.	Acknowledge endowment model's attractiveness, but stress the need for SWFs to consider how the "three Ls" of liabilities, liquidity, and definition of long-term impact the fund's specific needs and goals.
Chambers, Dimson, and Ilmanen (<i>Journal of Portfolio Management</i> 2012)	Discuss the management, investment policies, and transparency of the Norwegian Government Pension Fund Global (GPF) and assess whether the fund has successfully achieved objectives. Assess how fund's strategy derives from Norwegian government's directives and examine fund's long-term investment performance.	Conclude that the GPF is one of the best-managed large pension fund operating today, and that "the Norway Model" of investing only in listed debt and equity securities worldwide using in-house staff is both successful and is the antithesis of the "Yale Model" of investing in alternative assets and private equity through external managers.
Bertoni and Lugo (WP 2012)	Using a mean-variance framework, develop a model of the optimal strategic asset allocation for stabilization SWFs (funded by oil revenues). Then derive three sets of parsimonious tests to compare actual SAA of Norway's GPF to its theoretical optimum.	Find that optimal SAA for an oil-funded SWF will deviate significantly from that of a general wealth-maximizing investor, and confirm that the static and dynamic deviations of the GPF's SAA from the market equity portfolio are consistent with their theoretical predictions.
Sá and Viani (WP 2011)	Develop dynamic general equilibrium model to analyze the effects on target-country real and financial variables of a shift in portfolio preferences of foreign investors, and then calibrate model to examine increasing tendency of central banks to channel 'excess reserves' into SWFs for investments seeking commercial returns.	Derive two separate diversification paths for switching reserves into SWFs. One keeps same asset allocation as central banks, other keeps the same currency allocation. USD depreciates in both cases, but US net debt position differs. Both cause reduction in "exorbitant privilege" wherein US receives excess returns on its assets over what it pays for liabilities.
Balding and Yao (WP 2011)	Account for the fact that most SWFs depend heavily on oil revenues to increase their funding base by developing a dynamic portfolio risk-adjusted return maximizing model across many assets, accounting for continual depletion of natural resources.	Find that, given the high volatility and continuous depletion of oil as a portion of national wealth, SWFs should invest in low volatility liquid fixed income and indexed assets to balance their portfolios. Even then, find returns only maximized when oil drops to about 50% of national wealth.
Ang (WP 2010)	Presents policy-oriented description of the four "benchmarks" a nation should take into account when creating a SWF and defining the role it should play in overall national policy. These are the	The legitimacy B/M is the most important, and ensures fund's capital is not immediately spent. Integrated policy B/M accounts for broader policy environment in which SWF operates. Performance B/M implies fund's

	benchmarks (B/Ms) of legitimacy, integrated policy, performance and long-run equilibrium. States the essence of a SWF is as a vehicle for transferring sovereign wealth into the future.	managers should be held accountable for maximizing risk-adjusted returns. Long-run equilibrium B/M ensures well-functioning capital markets, free cross-border capital flows and good corporate governance.
Raymond (<i>Economie Internationale</i> 2012)	Analyzes whether SWFs are and/or should be domestic investors of last resort (ILR) during financial crises. Shows that such SWF interventions occurred frequently after the 2008-09 Global Financial Crisis, and discusses SWFs' role as insurance funds against major crises.	Find that Gulf SWFs' interventions exerted a stabilizing short-term effect on local stock markets, though long-term impact much less obvious. Note that SWFs, contrary to central banks, can easily provide medium to long term financing to banking systems. SWFs may also be used for government spending during crises or to negate speculative financial attacks.
Martellini and Milhau (<i>EDHEC-Risk</i> 2010)	Propose quantitative dynamic asset allocation framework for SWFs, modeled as large long-term investors that manage fluctuating revenues typically emanating from budget or trade surpluses in the presence of stochastic investment opportunities. Suggest what optimal asset allocation should be.	Optimal asset allocation strategy should account for stochastic features of SWF endowment process (where money comes from) and the SWF's expected liability value (what money will be used for). Should make state-dependent allocations to (1) a performance-seeking portfolio, often heavy with equities; (2) an endowment-hedging portfolio; and (3) a liability-hedging portfolio heavy with bonds to mitigate interest rate and inflation risks.
Scherer (<i>Financial Market Portfolio Management</i> 2009)	Extends existing portfolio choice theories to SWFs in a strategic asset allocation model. Changing the existing analyses from single to multi-period framework allows for three-fund separation.	Optimal SWF portfolio should be split into speculative demand as well as demand against oil price shocks and short-term risk-free rate. All model terms also depend on investor's time horizon. Oil-rich countries should hold bonds and SWFs should determine and act on long-run covariance matrices that differ from correlation inputs that one-period investors use.
Ang, Goetzmann, and Schaefer (<i>NBIM</i> 2009)	Evaluate the role of active management by the Norges Bank Investment Management (NBIM) of the Norwegian GPFM over the period from inception in 1998 through early 2009. Also present review of efficient market hypothesis and apply lessons to evaluating GPFM's performance.	Find that active management has played a very small role in NBIM's superior long-term investment performance. Instead, a significant fraction of performance is explained by exposure to systematic factors that fared poorly during Crisis. They believe that exposure to such systematic factors is appropriate for a long term investor that can harvest illiquidity and other factor risk premiums over time.

Table 3: Summary of Empirical Studies of Sovereign Wealth Funds’ Geographic and Industrial Investment Patterns

 This table summarizes the findings of several recent empirical studies examining how SWFs allocate funds to different countries and different industries.

Study	Sample description, study period, and methodology	Summary of empirical findings and conclusions
Murtinu and Scalera (<i>JIM</i> 2016)	With a sample of 716 investments made by 22 SWFs from 13 countries over the period 1997-2013, they study whether the use of investment vehicle is influenced by SWF opacity and the presence of political ties between the SWF’s and the target country.	Find that SWF opacity positively impacts the use of vehicles, regardless the type of vehicle used. Bilateral political ties negatively impact only the use of corporate vehicles and increase the likelihood that SWFs invest through vehicles not located in the target country.
Ciarlone and Miceli (<i>WP</i> 2014)	Use a specifically built proprietary dataset encompassing 1,903 equity acquisitions made by 29 SWFs over the period 1995-2010 to study the determinants of SWF investment choices at macro level, with special emphasis on the possible reaction to a financial crisis in a potential target economy.	Find that SWFs prefer to invest in countries with higher degree of economic development, larger and more liquid financial markets, better protection to investors, and more stable macroeconomic environments. SWFs seem to engage in a “contrarian” behavior by increasing their acquisitions in countries hit by crises. They play a stabilizing role on local markets during periods of financial turmoil.
Bernstein, Lerner, and Schoar (<i>JEP</i> 2013)	Use sample of 2,662 direct private equity (PE) investments worth \$198 bn made by 29 SWFs over 1984-2007 to analyze whether there exist differences in investment strategy and performance across funds regarding PE investing.	Find that SWFs seem to engage in trend chasing, since they are more likely to invest in PE at home when domestic equity prices are higher, and invest abroad when foreign prices are higher—but SWFs invest at lower overall P/E ratios domestically. SWFs where politicians are involved are much more likely to invest at home than are SWFs with external managers.
Johan, Knill, and Mauck (<i>JIBS</i> 2013)	Examines empirically investments of 50 SWFs in 903 public and private global firms to see whether these funds are less likely to invest in private equity (PE) than other large institutional investors.	Find that SWFs are less likely to invest in PE than are other investors, but economic significance surprisingly low. Find some evidence that SWFs invest internationally with political motivations in mind, perhaps to gain politically from corporate governance conflicts.
Avendaño (<i>WP</i> 2012)	Using sample of over 14,000 individual holdings of 22 SWFs in almost 8,000 target firms in 65 countries over 2006-09, studies how differences in funding source (commodity/non-commodity), investment guidelines (OECD/non-OECD), and investment destination (foreign/domestic) impact SWF investment decisions.	Finds that SWFs prefer to invest in larger and internationally active firms, but OECD-based and non-OECD-based funds differ in their preferences about target-firm leverage, degree of internationalization, and profitability. SWFs prefer larger, more levered firms in foreign vs domestic investments, and find some evidence SWF ownerships positively impacts target’s value. Home-country natural resource endowments help explain whether SWFs prefer to make foreign investments in these industries.
Knill, Lee, and Mauck (<i>Journal of Corporate Finance</i> 2012)	Use sample of over 900 acquisitions of public and private target firm stock by SWFs over 1984-2009 to test whether bilateral political relations significantly influence SWF investment decisions. Use Cragg Model to test whether political factors impact both decisions whether SWFs will invest and how much.	Find that political relations are an important factor in where SWFs invest, but matter less in determining how much. SWFs are more likely to invest in countries with which they have <i>weaker</i> political relations, contrary to the predictions of the FDI literature, suggesting that SWFs use—at least partially—non-financial motives in investment decisions.
Avendaño and Santiso (<i>Book</i> , 2011)	Examine whether SWF investments are politically biased by comparing almost 14,000 shareholdings of 17 SWFs to 11,600 shareholdings of the 25 largest mutual funds during 4Q2008. Ask	Find that SWF investment decisions do not differ greatly from those of privately owned mutual funds, and conclude that the fear that sovereigns with political motivations will use their financial power to secure large stakes in

	whether SWF holdings show greater political influence than those by privately owned mutual funds.	Western companies is unfounded. Argue that double standards for SWFs and private institutional investors should be avoided.
Karolyi and Liao (JCF 2015)	Study 4,026 cross-border acquisitions over 1998-2008, worth \$434 bn, that were led by government-controlled acquirers, and compare to 127,786 similar acquisitions worth \$9.04 tr made by private acquirers and 733 deals worth \$158 bn made by SWFs and other state-owned funds. Test whether state-controlled acquirers and SWFs/other funds selected targets in different industries or with different firms characteristics than did private acquirers.	Find surprisingly small, though often significant, differences between state-controlled acquirers' and private acquirers' investment patterns and preferences, but find somewhat larger differences with SWFs/other state funds. SWFs/other state funds pursue larger targets with higher growth options, and are more deterred by high insider or institutional share ownership. Conclude there is little reason for target-country policy-makers to discriminate against state-owned vs private acquirers.
Dyck and Morse (WP 2011)	Use sample of share holdings in 2008 by 20 SWFs in over 26,000 companies worth \$2.04 tr to document SWF portfolio holdings and analyze objectives underlying observed investments. Also test whether SWF investments motivated by home-country portfolio diversification or industrial planning objectives.	Find SWF allocations are balanced across risky asset classes, very home-region biased, and biased towards the financial, transportation, energy, and telecommunications industries (especially finance). Measures capturing portfolio diversification and industrial planning objectives explain 14.4% of SWF portfolio variation; industrial motives account for 45% of this.
Candelon, Kerkour, and LeCourt (WP 2011)	Using sample of 1123 equity investments (849 foreign, 274 domestic) by SWFs in 73 countries over 1989-2011, examine whether and how macroeconomic factors influence SWFs' foreign and domestic equity investments. Also test whether decisions are based exclusively on profit-maximizing motives.	Find macroeconomic factors are important influences on SWFs' investing decisions. SWFs largely invest to diversify away from industries at home, but do so mostly in countries with economic and institutional stability. Use different criteria to decide on investments in OECD vs non-OECD countries, and tend to re-invest in a country once initial investment made.
Heaney, Li, and Valencia (Austral Jrnal Mgt 2011)	Document and analyze investments made by Temasek Holdings (TH) in 150 publicly listed Singaporean companies over the period 2000-04.	Find that TH prefers to invest in companies that are relatively large, with lower systematic risk, that have few director block-holders, and use stock-based incentive compensation schemes.
Fernandes (WP 2011)	Uses sample of 8,000 SWF share holdings in 58 countries over 2002-07 to examine how SWFs select target firms, and test whether and how SWFs investments create value for target firms.	Documents that SWFs prefer large and profitable firms, they have a strong bias for highly visible companies with high analyst coverage. They prefer companies in countries with good governance standards and efficient institutions, but their holdings are unrelated to target firm's level of R&D.
Chhaochharia and Laeven (WP 2010)	Use a sample of 29,634 equity investments made by 27 SWFs and 38,880 stock investments made by public pension funds in firms from 56 countries over 1996-2008 to test whether SWFs show systematic investment biases compared to other large global investors.	Find SWFs do show strong biases vs other investors. They tend to chase past returns and hold conservative portfolios that are poorly diversified both geographically and across industries (SWF portfolios are heavily overweight oil companies). Biases are more pronounced for SWFs that are more activist, less transparent, and from less democratic countries. SWFs prefer to invest in countries with strong legal institutions.

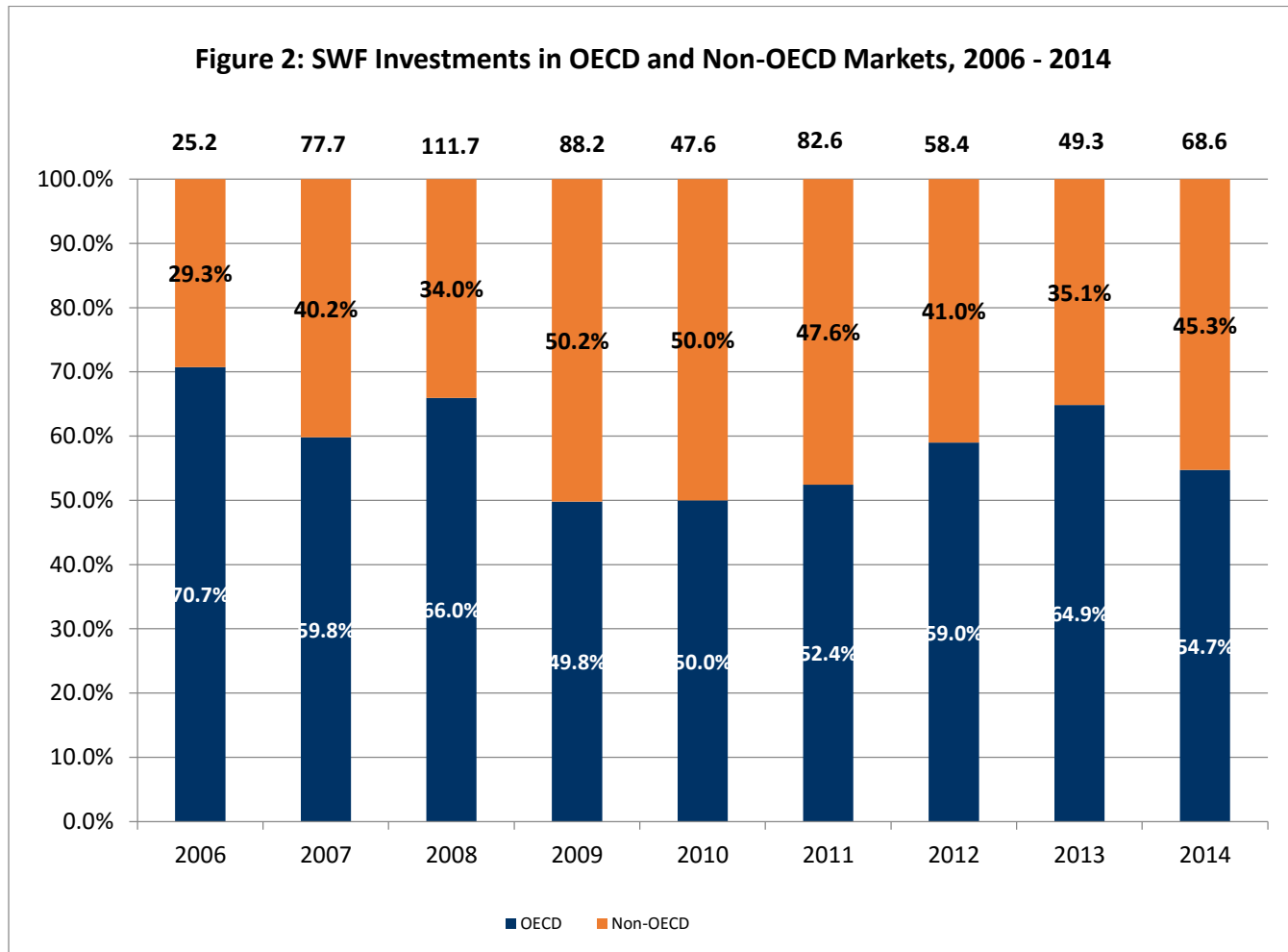
Table 4. Investment Statistics for the Sovereign Wealth Funds in the Sovereign Investment Laboratory’s SWF Database

This table describes the number and total value of investments made by the SWFs in the SIL database from 2000-2014, as well as the fraction of those deals (by number and value) that are foreign rather than domestic, the average percentage stake purchased, the largest single investment for each SWF, and the average and median size investment documented for each fund.

Country	Fund Name	# of Deals	Value of Deals, \$Mn	Fraction of Foreign deals		Average Stake purchased (%)	Largest deal, \$Mn	Average deal size, \$Mn	Median deal size, \$Mn
				By # deals	By \$ value				
Qatar	Qatar Investment Authority	153	\$123,480.38	84.97%	79.39%	40.82%	\$13,260.00	\$807.06	\$245.00
China	China Investment Corporation	116	111,320.74	58.62%	49.96%	15.27	20,000.00	959.66	248.50
Singapore	GIC Pte Ltd	326	94,107.57	98.16%	99.46%	30.93	10,339.20	288.67	97.00
Singapore	Temasek Holdings Pte Ltd	276	75,588.83	85.51%	90.71%	18.75	5,671.73	273.87	51.23
UAE-Abu Dhabi	International Petroleum Investment Company	44	38,079.68	81.82%	71.08%	32.61	8,000.00	865.45	230.00
UAE-Abu Dhabi	Mubadala Development Company PJSC	56	36,742.67	71.43%	69.37%	33.95	4,000.00	656.12	380.00
UAE-Abu Dhabi	Abu Dhabi Investment Authority	77	26,026.74	97.40%	99.88%	33.71	7,500.00	338.01	140.60
Kuwait	Kuwait Investment Authority	55	24,563.42	89.09%	82.48%	37.49	3,000.00	446.61	250.00
UAE-Abu Dhabi	Abu Dhabi Investment Council	22	14,043.53	72.73%	32.71%	48.28	8,000.00	638.34	154.78
Ireland	National Pension Reserve Fund	4	13,239.35	25.00%	0.09%	97.37	7,264.00	3,309.84	2,981.42
Malaysia	Khazanah Nasional Bhd	56	12,375.39	64.29%	82.21%	44.39	2,786.65	220.99	61.84
Norway	Government Pension Fund - Global	20	10,651.80	100.00%	100.00%	58.19	1,500.00	532.59	490.25
China	National Social Security Fund	10	9,505.61	20.00%	2.68%	5.98	2,200.00	950.56	819.57
UAE-Dhabi	Investment Corporation of Dubai	5	6,572.48	100.00%	100.00%	31.6	3,396.80	1,314.50	1,182.80
Australia	Future Fund	17	6,431.52	58.82%	46.64%	34.67	2,081.00	378.32	224.00
UAE	Emirates Investment Authority	1	5,658.85	100.00%	100.00%	53	5,658.85	5,658.85	5,658.85
Libya	Libyan Investment Authority	35	5,470.19	94.29%	72.58%	38.99	1,200.00	156.29	99.84
South Korea	Korea Investment Corporation	16	3,653.95	100.00%	100.00%	29.21	2,000.00	228.37	102.00
UAE-Dhabi	Dubai International Financial Centre	11	2,867.05	54.55%	98.15%	38.75	1,825.18	260.64	22.96
Oman	Oman Investment Fund	21	2,458.99	71.43%	88.45%	28.04	719.51	117.09	50.00

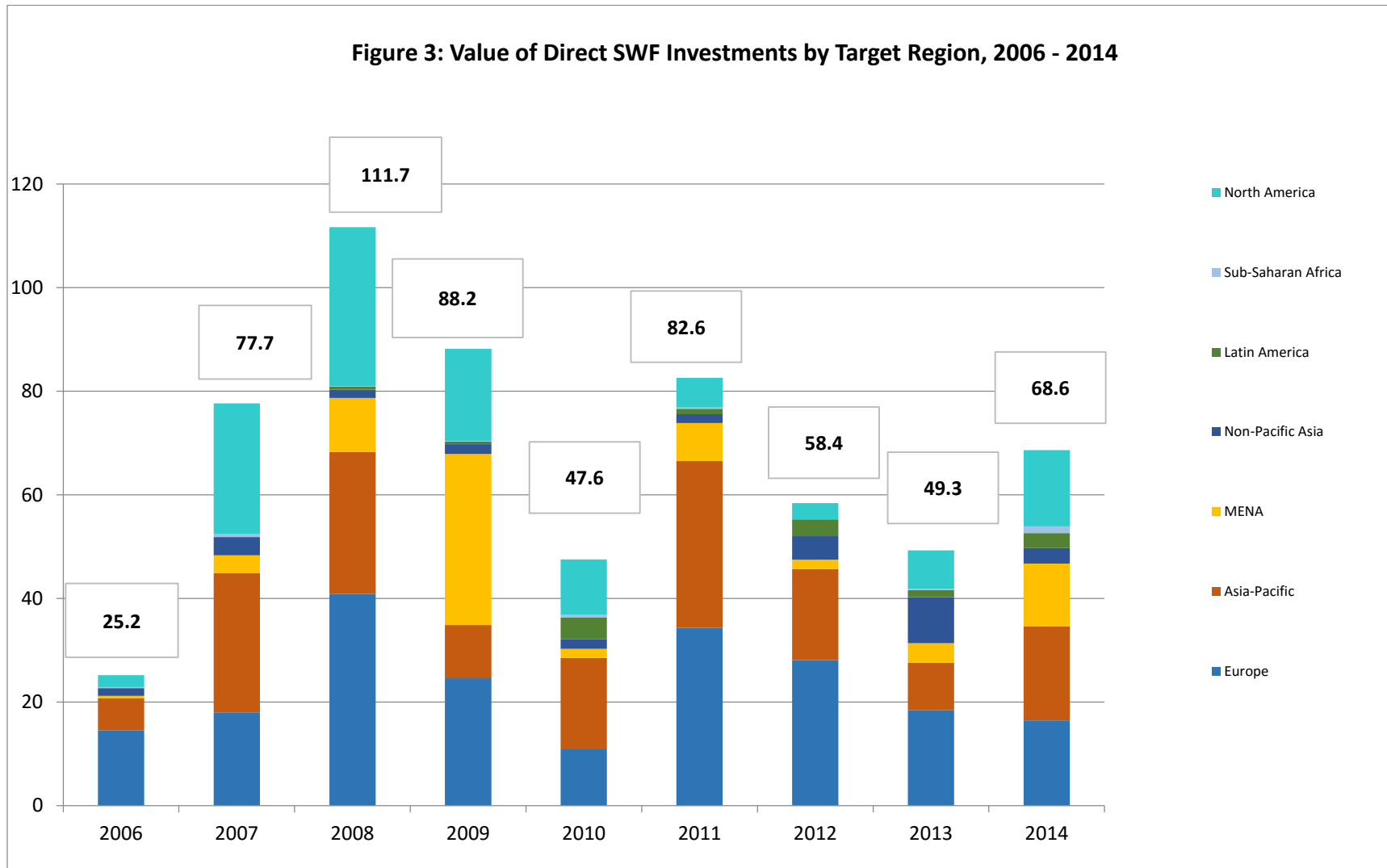
Azerbaijan	State Oil Fund of the Republic of Azerbaijan	8	2,016.71	100.00%	100.00%	83.82	500.00	252.09	232.19
Russia	National Wealth Fund	1	1,940.00	0.00%	0.00%	n/a	1,940.00	1,940.00	1,940.00
New Zealand	New Zealand Superannuation Fund	12	1,868.05	50.00%	36.50%	28.15	626.44	155.67	93.00
Oman	State General Reserve Fund	20	1,786.20	95.00%	94.40%	41.46	900.00	89.31	26.42
Brunei	Brunei Investment Agency	12	1,043.99	91.67%	99.62%	50.45	300.80	87.00	68.94
UAE-Dhabi	Istithmar	1	250.00	0.00%	0.00%	50	250.00	250.00	250.00
Bahrain	Bahrain Mumtalakat Holding Company	1	170.18	0.00%	0.00%	6.67	170.18	170.18	170.18
Vietnam	State Capital Investment Corporation	2	25.03	0.00%	0.00%	17	25.00	12.51	12.51
UAE-Ras Al Khaimah	RAK Investment Authority	1	11.64	100.00%	100.00%	n/a	11.64	11.64	11.64
	Total, All Funds	1379	\$631,950.54	84.12%	74.94%	32.05%	\$20,000.00	\$458.27	\$120.17

Figure 2: SWF Investments in OECD and Non-OECD Markets, 2006 - 2014



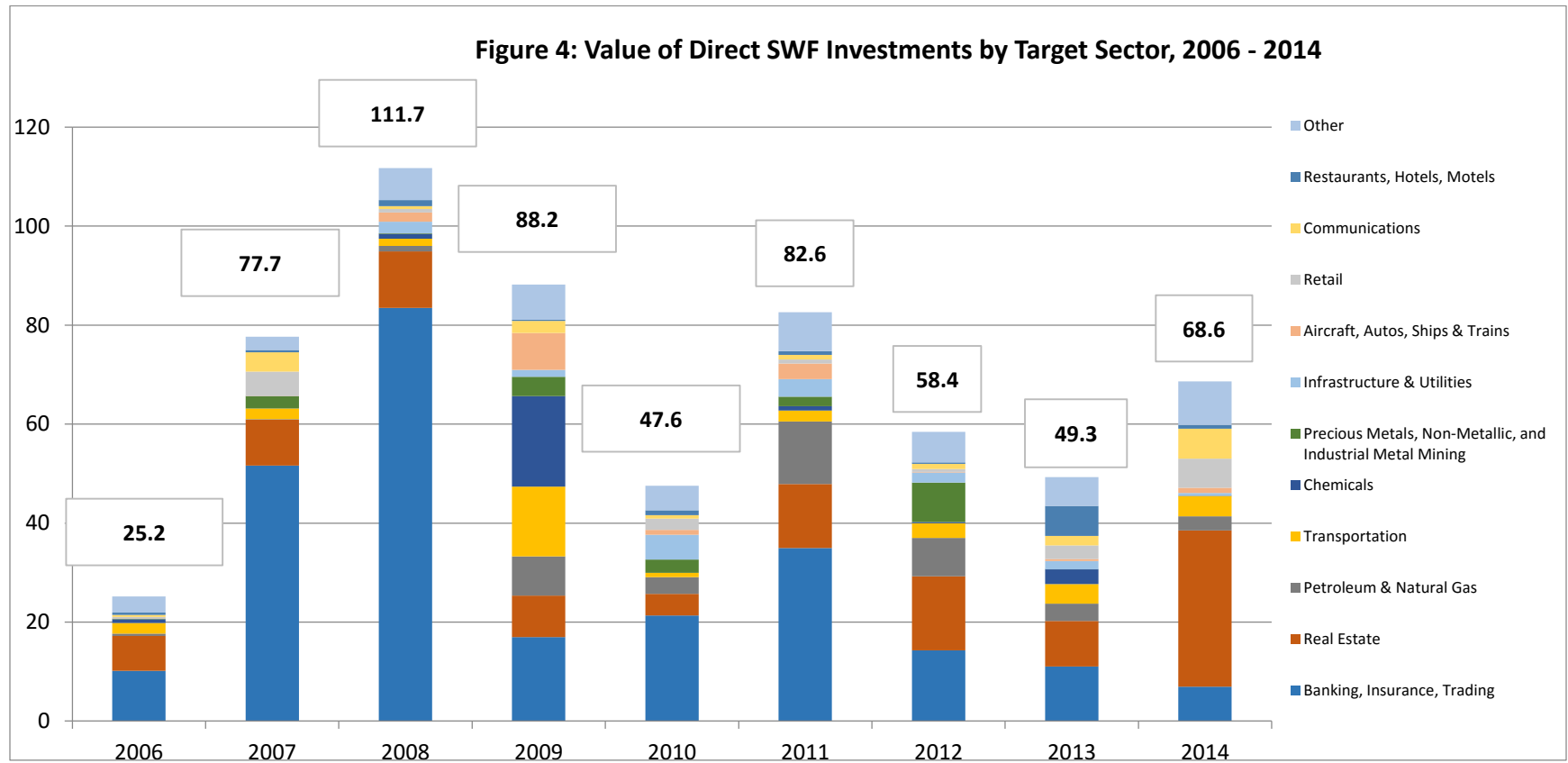
Source: Sovereign Investment Laboratory, 2015

Figure 3: Value of Direct SWF Foreign Investment by Target Region, 2006-2014



Source: Sovereign Investment Laboratory, 2015.

Figure 4. Value of Direct SWF Foreign Investment by Target Sector, 2006-2014



Source: Sovereign Investment Laboratory, 2015. *Sovereign Wealth Fund Annual Report 2014*

Table 5: Summary of Empirical Studies Examining Impact of Sovereign Wealth Fund Equity Investments on Target Firm Financial Performance

This table summarizes several recent empirical studies examining how SWF stock purchases impact the short and long-term stock return and financial performance of investee companies.

Study	Sample description, study period, and methodology	Summary of empirical findings and conclusions
Bortolotti, Fotak, and Megginson (<i>RFS</i> 2015)	Construct a dataset of 1,018 investments by SWFs (or by SWF-owned investment subsidiaries) in publicly traded firms completed over the 1980-November 2012 period. We generate a “benchmark” control sample of stock purchases by financial investors from the same home countries as our sample of SWFs, targeted at firms headquartered in the same countries as SWF investment targets, and executed over the same time period	They find that announcements of SWF investments are associated with significant mean abnormal returns of 0.9% over (-1,+1), including investments by Norway’s GPF, and 2.45% without Norway. However, these are significantly lower than the 5.02% mean abnormal returns generated by the private benchmark investors, implying the existence of a sovereign wealth fund “discount” due to their government ownership.
Hua (<i>WP</i> 2015)	Use a sample of 450 SWF investment transactions among 340 unique firms from 1987 to 2012 to investigate the effect of SWF investment on medium and long term performance of targets firms through a liquidity channel.	They find that SWFs tend to invest in firms which have poor financial performance and underperform the market. The target firms’ performance in medium and long run is not significantly changed after SWF investments. They attribute the results to a liquidity channel which is caused by the intractable information of SWFs.
Murtinu and Scalera (<i>RISS</i> 2015)	Assemble their dataset with 270 investments made by 23 SWFs from 15 countries over the period 1997-2013 to investigate whether stock prices of SWF-backed target companies are influenced by investment geography (domestic versus cross-border) and target industry (strategic versus non-strategic industries). An IV regression is run to control for the endogeneity of the location and target industry choices.	They find that on a 50-day window around the SWF investment, cross-border investments have an average higher increase in stock price than domestic SWF investments. While, on the same time window, SWF investments in strategic industries show a higher drop in stock price than SFW investments in non-strategic industries. In addition, they also show that the higher is the politicization of the fund, the larger is the stock price drop.
Borisova, Fotak, Holland, and Megginson (<i>WP</i> 2014)	Using a sample of 6,671 credit spreads from 1,723 bonds issued by 244 firms from 43 countries over 1991-2010, examine the impact that state ownership (including 1,060 firm-years with SWF investment) of a firm’s stock has on that company’s cost of debt, as measured by the yield spread above treasuries. Examine for full sample period and after 2008 Financial Crisis.	In the full 1990-2010 sample, they find that state ownership (0/1) is associated with significantly higher (40 bp) cost of debt, and this is even larger during pre-crisis period, 1990-2007. From 2008 on, basic cost of debt rises sharply, and state ownership becomes associated with significantly lower (18bp) cost of corporate debt. SWFs specifically are associated with a higher cost of debt both before (46.7 bp) and after (26.1 bp) the Crisis begins.
Fernandes (<i>JACF</i> 2014)	Use sample of 8,000 SWF share holdings in 58 countries over 2002-07 to test whether and how SWFs investments create value for target firms.	Find that SWF investments are associated with a value (Tobin’s q) premium of more than 15%, and that SWFs also positively impact target firm return on assets, return on equity, and net profit margin.
Bertoni and Lugo (<i>JCF</i> 2014)	Study the impact of SWF investments on the credit risk of their target companies by examining the evolution of credit default swap spreads (CDS) after 391 SWF investments over 2003-10.	Find target company’s credit risk decreases significantly after SWF investment. Suggests market perceives SWFs as investors that may protect target companies from bankruptcy risk.

Del Giudice, Marinelli, and Vitali (<i>Journal of Financial Management, Markets and Institutions</i> , 2014)	Employ network analysis to investigate whether the connection between target firms created by SWFs positively influence the operating performance of these target firms. Their sample includes 507 SWF acquisition deals in the time span between 2000 and 2011.	Find that highly central firms in the target firm network enjoy higher operating performance. In addition, the target firm operating performance is higher if the stake acquired is larger, the investment is direct and domestic, or the SWF is run by a politician. There is a concave relationship between the number of SWFs investing in the firm and the target firm operating performance.
Gagliardi, Gianfrate, and Vincenzi (<i>WP</i> 2014)	Construct a sample of 113 SWF investments over the period 1998-2011 to analyze the market reaction to SWF investments from the target firm bondholders' perspective.	Find that target firm bondholders experience significantly positive abnormal returns both in the short run (+0.32%) and in the medium run (+2.67%). Excess returns are higher when the target is a non-financial or a non-strategic firm. Positive bond price performance is positively related to cash flows and earnings of the targets, and negatively related to their credit rating and outlook.
Knill, Lee, and Mauck (<i>Journal of Financial Intermediation</i> 2012)	Use sample of 231 SWF acquisitions of listed firm stock over 1984-2009 to examine whether this investment significantly impacts the return-to-risk performance of target firms.	Find that target firm raw returns decline following SWF investment. Though risk also declines, find a net reduction in the compensation for risk assumed over 5 years after investment, suggesting SWFs may not provide monitoring benefits for targets offered by other institutional investors.
Kotter and Lel (<i>Journal of Financial Economics</i> 2011)	Use sample of 417 SWF investments into listed firms over 1980-February 2009 to examine the effect of SWF investment on the short and long term valuation and performance of target firms. Also study which types of target firms attract SWF investment.	Find that SWFs prefer large, poorly performing companies facing financial difficulties, and news of their investments yields significantly positive initial returns (+2.25%) that are higher for more transparent funds. Mean long-term stock returns after investment are insignificantly positive (3-yr significant); median returns insignificantly negative. Conclude SWFs are generally passive shareholders.
Sojli and Tham (<i>Book</i> 2011)	Examine the short and long-term performance impact of 66 SWF investments in US listed companies by comparing SWFs deals documented with 13D and 13G filings over 1997-2008 to a similar sample of investments made by US institutional investors.	Find that these large investments by SWFs where they plan to take active roles in target firm management yield significantly positive short and long-term stock returns and financial performance. Find the increase in target's Tobin's q post-deal results from the provision of government contracts.
Karolyi and Liao (<i>JCF</i> 2015)	Study 4,026 cross-border acquisitions over 1998-2008, worth \$434 bn, that were led by government-controlled acquirers, and compare to 127,786 similar acquisitions worth \$9.04 tr made by private acquirers and 733 deals worth \$158 bn made by SWFs and other state-owned funds. Test whether investments by state-controlled acquirers and SWFs/other funds yield different short and long-run target firm stock returns than do acquisitions by private companies.	Find that announcement period (-5,+5) return for acquisitions by private companies (5.0%) is significantly higher than that for state-controlled acquirers (2.8%), and that the (-5,+5) return around SWF/other funds investment announcements (0.8%) is materially and significantly smaller than either. Also find the 3-yr mean and median buy-and-hold excess returns for SWFs/other funds (-50.3%; -62.8%) are significantly lower than for private acquirers (-9.4%; -40.3%) and state-controlled acquirers (-7.6%; -30.6%), though L-T excess returns post-deal are significantly negative for all groups over all time frames (1, 2, and 3 years).
Bertoni and Lugo (<i>JCF</i> 2014)	Analyze the certification effect of SWF stock purchases on the credit risk of target firms by computing an adjusted measure of credit default swap (CDS) spread decrease (ADS) for 1-yr and 5-yr	Document a significant decline in target firm credit risk following SWF investments, especially for the 1-yr maturity CDS, even when investment is purely secondary (no new capital injected into target). Results consistent

	CDS for a sample of 391 direct SWF investments between 2003 and 2010.	with market interpreting SWF investment as providing target with implicit insurance against short-term liquidity shocks.
Dewenter, Han, and Malatesta (<i>Journal of Financial Economics</i> 2010)	Analyze the short and long-term impact of SWF investments on target firm values using a sample of 227 stock purchases and 47 SWF stock sales over January 1987-April 2008. Try to determine whether there is a trade-off between SWF monitoring and lobbying benefits and tunneling and expropriation costs.	Find significant announcement period (-1,+1) excess returns for SWF stock purchases (+1.52%) and divestments (-1.37%). Document significantly negative median 1-yr cumulative market-adjusted excess returns (-4.5%), but significantly positive median 3-yr (+7.3%) and 5-yr (+31.2%) returns for target firm stocks after SWF investments. Also find SWFs are active monitors, with over half of target firms experiencing one or more events indicating SWF monitoring or influence.

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