Sovereign Wealth Funds:
Their Investment Strategies and Performance

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Abstract: Sovereign wealth funds have emerged as an important investor of global equity, attracting growing attention. Despite frequently voiced concerns that sovereign wealth fund investments serve political objectives and conflict with national interests, little is known about the investment allocation of sovereign wealth funds. We collect new data on over 40,000 equity investments by sovereign wealth funds and find that sovereign wealth funds tend to invest in countries that share similar cultural traits. This cultural bias indicates that sovereign wealth funds prefer to invest in the familiar. While other global investors display similar aptitude to investing in the familiar, the cultural bias for sovereign wealth fund investment is particularly pronounced. Moreover, share prices of firms respond favorably when sovereign wealth funds acquire stakes.

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1. Introduction

Sovereign wealth funds (SWFs) have emerged as an important investor of global equity, on the back of rising commodity prices, attracting growing attention. Foreign investments by SWFs, broadly defined as government-owned investment funds, are currently estimated at about US$ 2 to 3 trillion, and are expected to reach about US$10 trillion over the next decade (IMF 2008). In principle, the fact that SWFs are looking abroad for higher returns and asset diversification should be encouraged, as it should improve the efficiency of global asset allocation and improve risk-return tradeoffs for SWFs and the citizens of the countries on behalf of which they invest. However, some have expressed concerns about the transparency of SWFs, their investment strategies, and the political objectives of their investments (Summers, 2007; Gieve, 2008). One specific concern is that SWFs may target strategic industries, and that such investments conflict with national interests of host countries.[1] There are also concerns about the expanded role of governments (through government-owned funds) in global capital markets (Johnson, 2007).[2] Yet, this debate takes place while not much is known about the investment objectives of SWFs. This is partly because many SWFs do not disclose details on their investments.

This paper adds to our knowledge about the investment objectives of SWFs by collecting a large dataset on the asset allocation of sovereign wealth funds, focusing on their investments in listed companies. In total, we collect data on over 40,000 foreign equity investments by SWFs over the period 1997-2007. We identify the investment biases of SWFs with respect to the

[1] In 2005, for example, a United Arab Emirates-owned company, Dubai Ports World, stirred controversy in the United States by purchasing P&O, a British-owned shipping company, thus giving it control over parts of several U.S. port facilities. A year after the acquisition, the company was forced to divest the US operations out of national security concerns.

[2] In response to these concerns, multilateral organizations such as the IMF and OECD are developing best principles and practices for SWFs and their recipient countries (see IMF 2008, OECD 2008, and International Working Group of Sovereign Wealth Funds, 2008).

market and other global investors, and quantify the immediate valuation effects of SWF investments.

The main findings of our paper are as follows. First, we find that SWFs when investing abroad tend to invest in countries that share the same religion and in different industries than those found at home, suggesting that SWFs tend to seek industry-specific diversification but while doing so bias their investments to familiar cultures. Such preference for investing in the familiar may indicate the exploitation of informational advantages, or simply a tendency to feel affinity with the familiar. While we find that other global investors, such as mutual funds and other institutional investors, exhibit similar biases in their global asset allocation, the cultural bias of SWFs is more pronounced. We also find that share prices of firms respond favorably when SWFs acquire stakes.

The paper is part of an emerging literature on the growing importance of SWFs, and associated concerns. Truman (2007) has raised concerns about the lack of transparency of SWFs, including their size, and has called for more disclosure of their investment holdings and strategies.[3] Truman (2008) ranks major SWFs on counts of their governance, transparency, and accountability. Gilson and Milhaupt (2008) propose the suspension of voting rights of SWFs to mitigate concerns that SWFs as government-controlled funds will influence firm strategy in ways that are not aligned with shareholder maximization and to reduce the risk of a protectionist response on the part of the host government. Fotak et al. (2008) collect data on 75 SWF investments and find that these investments tend to exhibit positive abnormal returns upon announcement, consistent with our findings, but significantly negative long-term abnormal

[3] Such calls for increased disclosure go beyond a more general call for improved governance rules, following recent corporate debacles in the US and elsewhere, that led to new regulation such as the Sarbanes-Oxley Act of 2002 in the United States. See Chhaochharia and Grinstein (2007) for an assessment of the impact of the Sarbanes-Oxley rules on governance and firm valuation.

returns. A number of other papers have since confirmed these findings. For example, Kotter and Lel (2008) using data on 163 SWF investments find that these investments tend to exhibit positive abnormal returns, and that the degree of transparency of the fund is an important determinant of these abnormal returns. While our paper provides additional evidence on the valuation effect of SWF investments that is consistent with this related work, the main contribution of our paper is to identify biases in the global asset allocation of SWFs. To the best of our knowledge, we are the first to do so.

This paper builds on the literature on international portfolio allocation, including research on the home bias of investment and the determinants of foreign asset allocation (e.g., Falkenstein, 1996; Kang and Stulz, 1997; Grinblatt and Keloharju, 2000; Dahlquist and Robertsson, 2001; Froot et al., 2001; Warnock and Warnock, 2004; Aggarwal et al., 2005; and Gelos and Wei, 2005). Over the past decades, most countries have lifted investment restrictions, which has fostered trading in assets abroad.[4] Despite potential benefits from international portfolio diversification[5], investors typically still invest a large fraction of their wealth in domestic assets, even when there are no official investment restrictions.[6] This home bias of financial assets has been well documented in the literature.[7] Similarly, investors often prefer to

[4] Several governments with large SWFs have recently encouraged their funds to diversify internationally, lifting restrictions on investing in foreign equity. A notable example is China. The move from fixed income to domestic and foreign equity, together with the increase in fund size on the back of rising oil and other commodity prices, has been the key driver of the increased importance of SWFs in global equity investments.

[5] For instance, Harvey (1995) shows that from a U.S. perspective, large benefits can be attained from investing in emerging markets. See also Obstfeld (1994). Others argue that the gains from international diversification can largely be achieved indirectly at home through investments in stocks of multinational firms (Rowland and Tesar, 2004) or country funds and depositary receipts (Errunza et al., 1999).

[6] Investment restrictions impose a tax to invest in or hold foreign assets (see Black, 1974, and Stulz, 1981).

[7] See, for instance, French and Poterba (1991), Lewis (1996), Baxter and Jermann (1997), and Li (2004). Coval and Moskowitz (1999, 2001) show local investors tend to invest mostly in companies that are located nearby.

invest in familiar investment opportunities as opposed to foreign or unfamiliar investments (Huberman, 2001; Grinblatt and Keloharju, 2001).[8]

Country characteristics such as culture and physical distance have been found to determine not only global asset allocation, but also investor protection and corporate governance. For example, Portes and Rey (2005) find that global equity flows are in large part determined by geographical distance, while Stulz and Williamson (2003) find that religion explains differences in investor protection better than other country factors. In what is probably closest in spirit to our work, Guiso, Sapienza, and Zingales (2007) show that historical and cultural variables, particularly religion, affect people's trust in people from other countries, and that these differences in trust affect people's financial decisions, including portfolio and foreign direct investments. Based on this literature, one would expect cultural differences to influence the global asset allocation of SWFs.

The positive valuation effect of SWF investments is consistent with prior evidence on the potential value-enhancing monitoring role of large institutional investors. However, the literature has thus far failed to identify systematic effects of institutional ownership on firm value (Karpoff, 2001; Giannetti and Laeven, 2008; Ferreira and Matos, 2008). Some find that institutional investors are successful at monitoring and increase firm valuation (Smith, 1996; Del Guercio and Hawkins, 1999), while others find that institutional shareholders reduce firm performance either because they do not have adequate monitoring skills or because their objectives conflict with value maximization (Karpoff et al., 1996; Carleton et al., 1998; Gillan and Starks, 2000; Woidtke, 2002). Theory also offers conflicting predictions about the monitoring efforts we can expect SWFs to perform, and thus the impact of SWF investment on

[8] From the firm's perspective, there is also recent work on the determinants of international capital raising activities (Henderson, Jegadeesh, and Weisbach, 2006; Gozzi, Levine, and Schmukler, 2008; Kim and Weisbach, 2008).

firm performance. Some theories predict that large investors such as SWFs tend to more actively monitor firms, enhancing firm value (Shleifer and Vishny, 1986). Other theories predict that investors with objectives that are in conflict with maximization of shareholder value will not actively monitor the firm (Chen et al., 2007), or could potentially even expropriate resources from the firm at the expense of minority shareholders (La Porta et al., 2002). In a similar vein, as government-controlled entities, SWF investors could have conflicting interests with management or other shareholders, with negative implications for firm valuation.[9]

The paper proceeds as follows. Section 2 presents a theoretical framework for our analysis of investment allocation of SWFs. Section 3 introduces our newly collected dataset on foreign equity investments of SWFs and provides descriptive statistics. Section 4 presents a detailed empirical analysis of the geographic allocation of SWFs' equity portfolios and its determinants. Section 5 presents our empirical analysis of the immediate valuation effects of SWF equity investments. Section 6 concludes.

2. Theory

Chan, Covrig, and Ng (2005), in their version of the Cooper and Kaplanis (1986) model, present a theoretical framework that is excellent for our analysis of foreign biases in the investment allocation of SWFs. Assume that a representative investor in country *i* maximizes the expected return of his portfolio investments for a given level of variance:

$$\max(w_i' R - w_i' c_i)\,, \tag{1}$$

subject to

[9] For example, SWFs could steer the firm to support certain political objectives that are in conflict with shareholder maximization. Also, SWFs as shareholders could extract proprietary information from the firm and employ this elsewhere in the interest of the home country but at the expense of the value of the firm.

$$w_i' V w_i = \sigma^2 \tag{2}$$

$$w_i' I = 1, \tag{3}$$

where w_i is a column vector containing portfolio weights, with w_{ij} the proportion of individual *i*'s total wealth invested in risky securities of country *j*, *R* is a column vector of pre-tax expected returns, c_i is a column vector of deadweight costs, with c_{ij} the deadweight cost to investor *i* of investing in country *j*, *V* is the variance-covariance matrix of gross returns of the risky securities, σ^2 is the given constant variance, and *I* is a unity column vector.

Setting the derivative of the Lagrangean of the above maximization problem with respect to w_i to zero, it follows that the optimal portfolio for investor *i* is:

$$w_i = (V^{-1} / \rho)(R - c_i - \lambda_i I) \tag{4}$$

where

$$\lambda_i = [I' V^{-1}(R - c_i) - \rho] / I' V^{-1} I$$

and ρ and λ_i are the Lagrange multipliers on equations (2) and (3), respectively.

Aggregating the individual portfolio holdings gives the market clearing condition for the world capital market equilibrium:

$$\Sigma \pi_i w_i = w^*, \tag{5}$$

where π_i is the proportion of world wealth owned by country *i*, w^* is a column vector of world market capitalization shares, with w_i^* country *i*'s share in world market capitalization. Defining *z* as the global minimum-variance portfolio, $z = V^{-1} I / (I' V^{-1} I)$, and combining equations (4) and (5), we obtain:

$$\rho V (w_i - w^*) = (\Sigma \pi_i c_i - c_i) - z'(\Sigma \pi_i c_i - c_i) I \tag{6}$$

With non-zero deadweight costs, the portfolio holdings of each investor will deviate from the world market portfolio. To examine the deviation, consider the simple case where *V* is a diagonal matrix with all variances equal to a constant *v*. In this case, the portfolio weight of investor *i* in country *j* will deviate from the world market portfolio according to:

$$\rho v(w_{ij} - w_j^*) = -c_{ij} + \Sigma\pi_k c_{kj} + z'c_i - z'\Sigma\pi_i c_i\,, \quad i \neq j \tag{7}$$

where $z'c_i$ can be interpreted as the weighted average marginal deadweight cost for investor *i*, $\Sigma\pi_k c_{kj}$ as the weighted average marginal deadweight cost for investors investing in country *j*, and $z'\Sigma\pi_i c_i$ as the world-weighted average marginal deadweight cost.

It follows that the share invested by investor *i* in country *j* is affected by the difference between the deadweight cost for investor *i* investing in country *j*, c_{ij}, and the weighted average deadweight cost for world investors investing in country *j*, $\Sigma\pi_k c_{kj}$. If c_{ij} is significantly larger than $\Sigma\pi_k c_{kj}$, investor *i* underweights country *j*. Alternatively, if c_{ij} is significantly smaller than $\Sigma\pi_k c_{kj}$, investor *i* exhibits a positive foreign bias to investing in country *j* and overweights country *j*'s securities.

Equation (7) can empirically be estimated as follows:

$$f_{ij} = \alpha_i + \alpha_j + x_{ij}'\beta + \varepsilon_{ij}\,, \tag{8}$$

where $f_{ij} = (w_{ij} - w_j^*)$, $\alpha_i = (z'c_i - z'\Sigma\pi_i c_i)/\rho v$, $\alpha_j = \Sigma\pi_k c_{kj}/\rho v$, $x_{ij}'\beta = -c_{ij}/\rho v$, and ε_{ij} is an error term, with x_{ij} a vector of explanatory variables that determine the overall deadweight cost (or benefit) to investor *i* of investing in country *j*. In the literature, such explanatory variables traditionally relate to transaction costs or taxes (e.g., Black, 1974; Cooper and Kaplanis, 1986). More recently, other variables related to institutional development, investor protection, and

familiarity have also been considered (e.g., Chan, Covrig, and Ng, 2005). While traditional variables such as taxes and transaction costs present deadweight costs to investors, resulting in a negative foreign bias, informational advantages arising from similarity in institutions or culture across countries could actually present a net benefit to investors of investing in a particular country. Familiarity arising from common languages or religions is a case in point.

3. Data and Descriptive Statistics

3.1 Data

Our sample consists of 41,472 equity investments of 8 large SWFs from around the world. The heterogeneous group of SWFs include stabilization funds (whose primary objective is to provide insurance against commodity price shocks), savings funds for future generations, reserve investment corporations, development funds, and contingent pension reserve funds. We follow the criteria established by the International Working Group of Sovereign Wealth Funds (2008), and define SWFs as special purpose investment funds or arrangements, owned by the general government, set up to meet a variety of macroeconomic and financial objectives, including investments in foreign financial assets.[10] SWFs are commonly established out of balance of payments surpluses, official foreign currency operations, proceeds from privatizations, fiscal surpluses and/or receipts resulting from commodity exports.

We start with the list of SWFs that are members of the International Working Group of Sovereign Wealth Funds (2008). This list includes SWFs as defined earlier from a variety of countries. For example, for Norway, this list includes the Government Pension Fund-Global

[10] This definition excludes, inter alia, foreign currency reserve assets held by monetary authorities for traditional balance of payments or monetary policy purposes, operations of state-owned enterprises, and traditional government-employee pension funds.

(formerly the Government Petroleum Fund), which invests in foreign equity, but does not include the Government Pension Fund-Norway (formerly the National Insurance Scheme Fund), which invests solely in Norwegian companies.[11]

While the typical investment strategy of the SWFs in our sample is to invest in a global, diversified portfolio to maximize long-term returns subject to an acceptable risk level, some are subject to additional investment objectives that may affect their allocation and returns. For example, the Government Pension Fund of Norway is subject to a set of ethical guidelines that prevent the fund from investing in the arms industry and in companies with activities that harm the environment.

For each SWF, we first identify their investment arms and affiliated companies. The SEC filings of companies in which there are SWF investments help us identify most of these investment arms. We further augment this data by searching SWF-specific websites for information, including the website from the SWF Institute (www.swfinstitute.org).

We then collect data on equity investments for each SWF, including the timing and size of the investment, using a variety of sources.[12] To ensure adequate coverage for our empirical analyses, we limit our sample of SWFs to those for which we have information on at least 20 foreign equity investments. This reduces the sample to investments from eight SWFs.[13] For four out of these eight funds (Government Pension Fund of Norway, National Pensions Reserve Fund

[11] The list also does not include the investment tranches of Saudi Arabia's central bank, because these are mainly foreign currency reserve assets held by the country's monetary authority, nor does it include Malaysia's government-owned enterprise, Khazanah Nasional, with has a large proportion of short-term oriented equity investments and invests largely in the South-East Asian region.

[12] The complete dataset of SWF investments is available upon request from the authors.

[13] We did collect information on investments of other SWFs (including the China Investment Corporation, Korea Investment Corporation, and Kuwait Investment Authority) but excluded investments by these funds from the analysis because of poor coverage (i.e., less than 20 investments). Our results are, however, qualitatively similar when including investments from these SWFs in the analysis.

of Ireland, Alaska Permanent Fund, and New Zealand Superannuation Fund), we obtain complete information about their equity investments from their company websites (see Table 1).

For the remaining funds, we augment this list by browsing the complete US Securities and Exchange Commission (SEC) database of 13G and 10K filings of individuals firms. Data from the SWF Institute, available from www.swfinstitute.org, is used to extend the list further. We complete the list of SWF investments through keyword searches in the Factiva and Lexis-Nexis news databases, using "sovereign wealth fund" and the name of the fund (or investment arm) as keywords. Due to the lack of transparency at these remaining four SWFs, coverage is by construction sparse and incomplete. Still, we are confident that we have identified the majority of SWF investments in traded equity that have been made public to the market. Moreover, we show that our results are robust to limiting the sample to the funds with complete information on investments.

For each investment we collect information on the date of investment, the amount invested, and the percentage of equity acquired. When information on the date and amount invested is not available from the primary source, we search through the Factiva database and major newspapers (including the Financial Times and the Wall Street Journal) to locate the date and amount of investment. We are able to collect information on a total of 41,472 equity holdings by SWFs over the period 1997-2007, comprising of 17,323 equity holdings across 56 countries as of year end 2007. This list includes investments in both private and public equity.

For each of the firms that receive these SWF equity investments, we collect year-end market capitalization from Datastream International and firm-level accounting data from Worldscope. We have firm-level market capitalization and accounting data for a total of 6,842 SWF equity investments as of end of 2007.

For our bilateral investment analysis we require stock market capitalization of each of the invested countries in our sample. Such data is obtained from the World Bank's annual World Development Reports. As an alternative benchmark for the size of the host equity market, we use the Morgan Stanley Capital International (MSCI) indices obtained from MSCI Barra.

Two SWFs in our sample publish their holdings annually, namely the Government Pension Fund of Norway and the National Pension Reserve Fund of Ireland. For these two funds, we collect time-series information on their equity investments over the period 2002 to 2007 from their annual investment reports, resulting in a total of 32,024 investment-year observations. The annual investment reports only report the end-year investment holdings and we are therefore unable to identify the exact investment date for these investments.

We have information on the announcement date of equity purchases for a small subset of 319 SWF investments, though most of our analysis does not depend on the availability of such information. For each of these equity investments we collect daily stock prices, equity returns, trading volumes, and market capitalization from Datastream International. Given the availability of stock return data, this sample reduces to 50 events. For each of these investments we collect information on the relevant benchmark market index for the country of investment. For example, for investments in the UK the FTSE 100 is used as the relevant market index. We also collect firm-level accounting data for these investments from Worldscope.

Information on the quality of transparency and governance of SWFs is collected from the Truman (2008) report. We also collected data for the Linaburg-Maduell transparency index for each SWF developed by the SWF Institute and available from their website at www.swfinstitute.org. Since the results for the two indices are qualitatively similar we only

report those results obtained when using the governance and transparency scores from the Truman report.

We complement the data on the investment allocation of SWFs with data on cross-border equity investments and data on the investment allocation of representative global investors, including US mutual funds and CalPERS, the California Public Employees' Retirement System. The latter is one of the largest public pension funds in the world. We obtain annual data on the geographic breakdown of cross-border equity investments from the Coordinated Portfolio Investment Survey (CPIS) maintained by the International Monetary Fund. The CPIS dataset provides a geographical breakdown of information on individual economy year-end cross-border holdings of portfolio investments in equity securities (valued at market prices), cross-classified by the country of issuer of the securities. These data proxy for the actual geographical distribution of cross-border investments in equity securities. The CPIS dataset provides a total of 5,655 country-pair-year observations over the period 2001 to 2007.

Next, we obtain data on the global portfolio holdings of individual US mutual funds from EPFR Global (www.epfr.com), a company that provides mutual fund asset allocation data to financial institutions around the world. We limit the sample of mutual funds to global funds that have a mandate to invest globally to enhance comparability with sovereign wealth funds. For each fund, we have detailed information on portfolio holdings, including the size of each investment and the country of investment, for the period 1997-2007. We aggregate foreign shareholdings at the host country level for each fund into a total of 1,555 country-year observations, covering a total of 87 global mutual funds.

Data on the equity investment allocation of CalPERS are obtained from their Annual Investment Reports, available from www.calpers.ca.gov. We have data on the complete portfolio

holdings for the period 2002 to 2007. We aggregate firm-level investments at the host country level into 146 country-year observations for a total of 54 countries.

3.2 Descriptive statistics

Table 1 reports descriptive statistics on the SWFs included in our sample, including their name, country of origin, asset size, year of inception, and size of the fund relative to the total foreign reserves of the country. We obtain this information from the SWF Institute. We also report for each fund the number of equity investments and the fund's internet homepage. Appendix 1 provides information on a larger set of SWFs, including those not included in the sample.

The largest SWF is the Abu Dhabi Investment Authority (ADIA) fund with an estimated US$ 875 billion in assets under management as of end 2007. Other countries with SWFs in excess of US$ 100 billion include Norway and Singapore. The Norwegian Government Pension Fund-Global is with US$ 132.8 billion at end-2007 in foreign equity by far the largest equity investor among SWFs.

Though some SWFs have been around for decades—the funds established by Abu Dhabi and Singapore date back to the 1970's—, the number and size of SWFs has been rising fast in recent years, spurred by record commodity prices and rapid accumulation of foreign reserves.

Table 2 reports the geographic breakdown for the listed equity investments by SWFs included in our sample. The geographic diversification of the equity portfolio of several SWFs is limited, with most funds exhibiting substantial home bias, and with a foreign bias toward investments in the US and UK relative to other countries, possibly because SWFs exhibit preference for large and liquid stock markets when investing abroad.[14]

[14] It is interesting to note that Qatar Investment Authority invests a disproportionately larger share in the UK than the US compared to other SWFs, in part due to substantial investments in BHP Billiton, the largest mining company in the world in terms of stock market capitalization. Such preference may be related to weaker disclosure rules and

(continued)

Table 3 reports the industry breakdown of equity investments in our sample. SWFs appear to predominantly invest in the energy and financial sectors. This bias is particularly strong for SWFs from oil producing countries. For example, the largest investment of Abu Dhabi Investment Authority is in Statoil, a major Norwegian oil company, representing 38.5 percent of its foreign equity portfolio. Investments in consumer goods and manufacturing are fairly limited. The fact that the home countries of some of the largest SWFs are major oil exporters could explain the relatively high share of investments in oil and related industries. The large fraction of investments in financials is largely due to SWFs' recent capital injections in distressed US and European financial institutions.[15]

While the majority of SWFs' equity investments are in global listed equities, some SWF also have large holdings of private equity, though such information is less well documented.[16] Given the lack of information on such private equity investments, our analysis focuses on public equity investments. Also, to assess the valuation impact of SWF investments we require equity return data that are available only for public equity investments.

Summary statistics on the foreign investment allocation of SWFs indicate that most SWFs exhibit strong home bias. For example, the Abu Dhabi Investment Authority invests about 11.5 percent of its equity portfolio in the United Arab Emirates, much more than the share of this capital market in the global equity market. Such bias is often a direct result of restrictions imposed by home authorities on investments in foreign equities.

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lower compliance costs for investments in the UK compared to the US (see also Zingales, 2006, and Doidge, Karolyi, and Stulz, 2008).

[15] The Government of Singapore Investment Corporation alone invested a total of US$ 16.5 billion in two major investment banks (Citibank and UBS). These banks sought additional capital due to their massive writedowns and losses on US subprime mortgages and investments in mortgage-backed securities.

[16] Abu Dhabi Investment Authority and Qatar Investment Authority appear to be particularly active private equity investors, with substantial private equity stakes in well-known companies such as Ferrari and the Carlyle Group.

Table 4 ranks SWFs depending on their perceived transparency and governance using the transparency and governance scores constructed for each SWF by Truman (2008). The transparency score is based on three broad categories, including the degree of public disclosure of annual and quarterly reports, the degree of public disclosure of investments (including information on size, return, type, location, instrument, and currency composition of investments), and the extent of public audits (including whether the fund has a regular audit, whether the audit report is published, and whether the audit is conducted independently). All binary variables under the transparency categories are summed up to create a composite score. The transparency score has a range from 0-12. The governance score is based on a number of factors, including the role of the government in setting the investment strategy, the role of the manager in executing investment strategy, guidelines for corporate responsibility, and whether the fund has ethical guidelines for investments. Each of these binary variables are aggregated to create the governance score. The governance score ranges between 0 and 4. We also create an overall governance score that simply equals the sum of the governance and transparency scores.

There is substantial variation in these transparency and governance scores. The New Zealand Superannuation Fund scores the highest on account of both governance and transparency, followed by the Alaska Permanent Fund. Abu Dhabi Investment Authority and Qatar Investment Authority rank the lowest, with a minimum score of zero for both governance and transparency.

4. Investment Allocation of Sovereign Wealth Funds

In this section, we analyze the geographic allocation of SWFs' equity portfolios and its determinants. We start by estimating equation (8) to identify foreign biases in the investment

allocation of SWFs, much like a gravity model from the trade literature. As explanatory variables for foreign biases in investment allocations we include several bilateral differences in country traits (between home and host country), such as physical distance and cultural traits, as well as measures of legal, economic, or financial development of the country.

As dependent variable, we use the log difference between the share of country *j* in total equity investments by SWFs from country *i* and the share of country *j* in the world equity market, or $\ln(w_{ij} / w_j^*)$. Note that we specify the dependent variable in log difference terms, following Chan, Covrig, and Ng (2005). We compute country *j*'s share in the world equity market as the overall share of country *j* equities in total world market capitalization (as reported by the World Bank's World Development Report), or as the weight of country *j* in the MSCI world equity index (both as of end-2007). The number of observations is based on bilateral country pairs and hence is less than the total number of investment announcement information collected. Variable $\ln(w_{ij} / w_j^*)$ denotes the foreign equity bias, and takes on a positive (negative) value if the fund's equity allocation to that particular country is overweight (underweight). For example, if the SWF of country A has 11% of its total equity investments invested in firms in country B, but country B has only a share of 10% in the MSCI World Index, then the foreign equity bias for this particular country pair, $\ln(w_{AB} / w_B^*)$, is 10%. The sample consists of investments in publicly listed and traded equities only. We exclude domestic investments from the sample in all regressions to focus on the foreign equity bias of each fund, and rescale the portfolio weight of each foreign investment such that the weights sum to 100 percent. However, including domestic investments does not alter any of this paper's findings.

As explanatory variables we include a number of bilateral differences in country characteristics. Prior research has found that investors prefer to invest in familiar investment

opportunities as opposed to foreign or unfamiliar investments (Huberman, 2001; Grinblatt and Keloharju, 2001). We capture such preferences using a set of geographic and cultural distance variables. First, we control for the distance between the capital cities of the home and host country, where home country denotes the country of origin of the SWF and host country denotes the country where the invest takes place. The distance data come from Gleditsch and Ward (2001). We take the inverse of the distance in kilometers, as used by Acemoglu et al. (2008), and consider this a measure of geographical closeness. In other words, our measure of geographic closeness denotes the inverse distance (closeness) between home country *i* of a given SWF and host country *j* of investment.

In terms of cultural variables, we have data on ethnicity, languages, and religion from Acemoglu et al. (2008). All cultural variables are arranged such that they indicate similarity between two countries, with higher scores denoting more similarity or proximity. Let $l \in \{1,..,L\}$ denote the total number of distinct languages (or ethnic groups, or religions) in the sample. Let $S_i = (S_{i1},\ldots,S_{il},\ldots,S_{iL})$ be the vector of shares of language groups in home country i. Following Acemoglu et al. (2008), we then define closeness of home country *i* and host country *j* in terms of ethnicity (or languages or religion) as the uncentered correlation $\frac{\sum_l S_{il} S_{jl}}{\sqrt{(\sum_l S_{il}^2)(\sum_l S_{jl}^2)}}$.

We follow the same approach for ethnicity and religion.[17]

Next, we control for whether or not the home and host country are major trading partners using data on trade flows between the two countries. As our measure of closeness in terms of trade we use trade (exports plus imports) between home country *i* and host country *j* in the year 2000 divided by total trade of home country *i* in the year 2000. Unlike the geographic distance

[17] Data available upon request from the authors.

and cultural variables, the bilateral trade variable is not symmetric between countries but depends on the home country of origin. Data on bilateral trade are from Acemoglu et al. (2008).

We also control for similarity in industrial structure, to allow for the possibility that investors may have a preference for investing in industries that are familiar, or, alternatively, to gauge potential for industry diversification. Similar to the cultural proximity variables, we construct a variable that is the uncentered correlation between vectors of home and host country shares of value added of different industries, based on the United Nations classification of industries, to capture (the inverse of) industrial distance. We obtain data on industry value added for our sample of countries from the United Nations Industrial Statistics database.

We also control for proxies of legal and financial using variables that have previously been found to explain international patterns in portfolio allocation (see, for example, Chan et al., 2005). These variables include the level of stock market development (proxied for by the ratio of stock market capitalization to GDP), judicial efficiency, risk of expropriation, accounting standards, and per capita income in the host country. We obtain data on stock market capitalization and per capita GDP from the World Bank's World Development Indicators database. Data on judicial efficiency and accounting standards is from La Porta et al. (1998). Data on expropriation risk is from the International Risk Country Guide. Summary statistics on the main regression variables are reported in Appendix 2.

The results of the bilateral investment regressions are presented in Table 5. We report results using alternative proxies for the weight of each country in the world portfolio, either based on the country distribution of world market capitalization, or the country weight in the MSCI World Equity, both at year-end 2007. To account for systemic differences across host countries that could influence foreign bias, such as capital controls, we include host-country

fixed effects in all regressions. We correct standard errors for clustering at the fund's home country level.

Column 1 presents regression results with foreign bias relative to the world market portfolio as dependent variable. By aggregating the more than 17,000 year-end 2007 investments at the bilateral country level, the sample reduces to 159 observations. On average, the eight funds have investments in about 20 countries. We find that SWFs tend to be overweight in countries with the same religious origin. The economic effect of this result is significant. For example, a one standard deviation increase in Religious Closeness (0.37) would imply an increase in foreign bias of 0.76 (=2.05*0.37). This is significant given the standard deviation of foreign bias of 1.83.

When using the MSCI World Equity index as an alternative proxy for the world market portfolio, we confirm the results on Religious Closeness and in addition find a negative association between Industrial Closeness and foreign bias, suggesting that SWFs tend to diversify into different industries than those found at home when investing abroad (Column 2).

In Column 3 we limit the sample to investments from the four funds with complete coverage, and use the world market portfolio as benchmark to compute foreign bias. The sample reduces to 89 country pairs. We confirm the earlier results on Religious Closeness. The economic effect of this result is again significant. A one standard deviation increase in Religious closeness (0.37) implies an increase in foreign bias of 0.91. This is large compared to the sample standard deviation of foreign bias in the sample with full coverage of 1.86.[18]

Similarly, we now also find that SWFs tend to be overweight in countries with which they have language affinity. Interestingly, we find that SWFs tend to be underweight in countries that are physically close, suggesting that cultural familiarity dominates physical proximity. In

[18] As a robustness check, we run quantile regressions for the first three regression specifications in Table 5 and obtain very similar results (not reported), indicating that the results are not driven by outliers.

addition, results indicate that SWFs on average tend to be overweight in countries that are major trading partners. The economic effects of these results are also significant.[19]

These results are not confounded by high correlation between the different Closeness variable. As indicated by Panel B of Appendix 2, the correlations between the different Closeness variables, with the exception of the 0.4 correlation between Physical Closeness and Trade Closeness, is generally low. We obtain qualitatively similar results when we include individual Closeness variables one-at-a-time.

Next, we include an interaction term between Religious Closeness variable and a dummy variable that takes a value of one if the Governance and Transparency score of the fund is lower than the median score in the sample (and zero otherwise) to test whether the correlation between religious affinity and foreign bias depends on the governance of the fund (Column 4). While we find that the link between Religious Closeness and foreign bias is stronger for funds with low governance scores, the effect is not statistically significant.

In Column 5, we use a measure of foreign bias that is constructed at the firm-level for each fund. Specifically, the dependent variable is defined as the log ratio of the share of a given equity investment in the total portfolio of the fund and the share of this firm in the world market capitalization. As additional firm-level control variables we include the leverage ratio (measured as the ratio of debt to assets), to proxy for firm indebtedness, and the logarithm of total sales, to proxy for firm size. We obtain firm-level data from Compustat and Worldscope for the year 2007. Due to missing accounting and equity price data on about 10% of firms, the sample

[19] A one standard deviation increase in language closeness (0.29) implies an increase in foreign bias of 0.38; a one standard deviation increase in industrial closeness (0.14) implies a decrease in foreign bias of 1.06; a one standard deviation increase in trade closeness (0.04) implies an increase in foreign bias of 0.81; and a one standard deviation increase in physical closeness (0.41) implies a decrease in foreign bias of 0.87. Each of these effects are substantial compared to the sample standard deviation of foreign bias of 1.86.

reduces to 6,842 equity investments. We include industry fixed effects to control for unobserved industry characteristics and we therefore drop the Industrial Closeness variable. We obtain similar results on religious affinity, and also find that trade closeness and language affinity are associated with foreign bias. In addition, we find that foreign bias is less pronounced for investments in larger firms. In sum, we find that culture ties and affinity, either through religion, language, or trade, influence foreign investments of SWFs.

Table 6 repeats the foreign bias regressions for other groups of global investors to determine whether similar affinity factors play a role in the asset allocation of other global investors. Column 1 reports results for the foreign bias with respect to the world market portfolio for global investors based on CPIS data, which captures the geographical distribution of all cross-border equity investments. The results are based on annual observations of bilateral allocations over the period 2001-2007. The sample consists of 5,655 time-varying country pairs. We include host country and year fixed effects to control for unobserved time effects and time-invariant country characteristics. We also control for several time-varying host country characteristics that prior literature has shown to be important host country determinants of capital flows and global asset allocation (see, e.g., Portes and Rey, 2005). As proxy for the level of stock market development we include the ratio of stock market capitalization to GDP and as proxy for economic development in the host country we use the logarithm of per capita GDP. We correct for two-way clustering at the home and host country level to mitigate concerns that standard errors are inflated because of repeated home-host country pair observations of the Closeness variables. Column 2 repeats the regression using data for the period 2002-2007. We perform this additional regression to be able to compare results to regressions for investments by other investors for which we have data only over the period 2002-2007.

Again, we find that Religious Closeness is positively associated with the foreign bias variable. The economic effect is significant. Based on the regression in Column 2 of Table 6, a one standard deviation increase in Religious closeness (0.39) implies an increase in foreign bias of 0.34. This is substantial compared to the sample standard deviation of foreign bias of CPIS investors of 1.96. However, contrary to the results for sovereign wealth funds in Table 5, all other Closeness variables now also enter with a positive and significant coefficient. In particular, contrary to the results for sovereign wealth funds, the CPIS data indicate that global investors are more likely to hold stocks in firms that are located close to the investor and in countries with a similar industrial structure. As before, we find that global investors are more likely to invest in countries that are major trading partners and communicate in the investor's native tongue. The CPIS results are in line with previously established results in the literature on home and foreign bias of mutual funds and institutional investors (see, for example, Chan et al. (2005), suggesting that the CPIS investors indeed invest much like these other global investors.

Next, we estimate the model for the foreign bias of US mutual funds using data on the portfolio holdings of US-domiciled mutual funds. Column 3 presents estimation results for the period 1997-2007 and Column 4 presents results for the period 2002-2007. We limit the sample of mutual funds to global funds that invest worldwide. We aggregate firm-level investments across all mutual funds at the host country level into a total of 1,555 country-year observations. Given that the sample consists of mutual funds from a single country (the US), there is no home country variation in the foreign bias variable, and we therefore do not include host country fixed effects. Instead, we include year fixed effects to control for systematic differences in foreign bias over time. Standard errors are corrected for clustering at the host country level.

While we obtain similar results for Religious Closeness compared to the CPIS regressions, physical closeness enters with the opposite sign, similar to what we found for SWFs in Table 5, suggesting that US mutual funds are less likely to invest in countries that are physically nearby. As before, Trade Closeness and Language Closeness enter with a positive sign, though only the effect of Trade Closesness is statistically significant. The influence of Religious Closeness is again economically significant, and similar in magnitude to that of CPIS investors. Based on the coefficient estimates in Column 4, a one standard deviation increase in Religious closeness (0.33) implies an increase in mutual fund foreign bias of 0.37, compared to the sample standard deviation of mutual fund foreign bias of 1.14. Stock market development and per capital income in the host country do not enter significantly.

Next, we repeat the analysis for CalPERS, one of the largest public pension funds in the world, using data on all its individual portfolio holdings for the period 2002-2007. We aggregate CalPERS stockholdings at the host country level into 146 country-year observations. Results are presented in Column 5. It turns out that the foreign bias of CalPERS is primarily influenced by religious proximity. A one standard deviation increase in Religious closeness (0.33) implies an increase in foreign bias of 0.37. This is a large effect compared to the sample standard deviation of CalPERS' foreign bias of 1.22.

To summarize, we find that the same cultural factors that influence foreign holdings of sovereign wealth funds also influence the holdings of other global investors, including US mutual funds and pension funds.

The natural question to ask is whether these biases are more pronounced for sovereign wealth funds than for other global investors. To answer this question, we re-estimate the model with the difference in foreign bias of sovereign wealth funds and other investors as dependent

variable. Table 7 shows the results for these regressions using year-end 2007 data. Because the foreign biases of sovereign wealth funds and other investors are both expressed relative to the market portfolio, the market weight drops out when computing the difference in foreign bias between the two groups of investors, and the dependent variable can thus be restated as the difference between the foreign investment allocation of the sovereign wealth fund and the global investor. Data are aggregated into home-host country pairs, leaving a total of 130 observations, and standard errors are corrected for clustering at the home country level.

Column 1 reports results for the foreign bias of sovereign wealth funds relative to CPIS investors. CPIS data are aggregated by host country, so that the dependent variable captures the bias of a given sovereign wealth fund in a given country with respect to the allocation to that country of all CPIS investors, irrespective of the home country of the CPIS investor. The regression does not include host country fixed effects because otherwise the CPIS component of dependent variable, being a host-country level variable, would drop out from the estimation. We find that the foreign bias of sovereign wealth funds compared to the average CPIS investor is primarily influenced by religious affinity. A one standard deviation increase in Religious closeness (0.38) implies an increase in foreign bias relative to CPIS investors of 0.63. This is large compared to the sample standard deviation of foreign bias relative to CPIS investors of 1.60. These results indicate that the influence of religious affinity on global asset allocation is more pronounced for sovereign wealth funds than for the average CPIS investor.

In Column 2, CPIS data are aggregated into bilateral country pairs, such that the dependent variable denotes the bias of a given sovereign wealth fund in a given country with respect to the allocation to that country by investors from the same home country as the sovereign wealth fund. Unlike the previous regression, we can include host country fixed effects

because the bilateral CPIS foreign bias varies by country pair. Due to missing CPIS data on foreign investments by the home countries of three sovereign wealth funds included in our sample, the sample reduces to 103 observations. We obtain similar results on the influence of religious affinity and also find that the relative foreign bias of sovereign wealth funds is negatively influenced by physical proximity.

Columns 3 and 4 report results for the bias of sovereign wealth funds with respect to the country-level allocation of US mutual funds and CalPERS, respectively, using 2007 data on their global shareholdings. Given that US mutual funds and CalPERS invest in a smaller set of countries than the SWFs in our sample, the sample reduces from 130 to 120 and 116 observations, respectively. As in the first regression, we do no include host country fixed effects because the mutual fund and CalPERS variables are host-country level variables. We obtain similar results on the relative importance of religious affinity in explaining the global asset allocation of sovereign wealth funds. A one standard deviation increase in Religious closeness implies an increase in foreign bias relative to US mutual funds of 0.67 and an increase in foreign bias relative to CalPERS investments of 0.54. These effects are large compared to the sample standard deviation of foreign bias relative to US mutual funds of 1.60 and the sample standard deviation of foreign bias relative to CalPERS investments of 1.67.

For two funds in our sample, the National Pensions Reserve Fund of Ireland and the Government Pension Fund of Norway we have not only comprehensive but also time-series data on all their foreign investments, extracted from the fund's annual reports over this period. We repeat the analysis in Table 7 for these two funds, exploiting the time-series dimension over the period 2002-2007. The results are presented in Table 8. The regressions include time-fixed effects to control for systematic differences in the relative foreign bias of SWFs compared to

other global investors over time. Standards errors are corrected for clustering at the host country level. Our results are unaltered if we include host country fixed effects or cluster at the home country level instead. Column 1 shows results when we compare the foreign bias of the Ireland and Norway sovereign wealth funds to the foreign bias of CPIS investors; Column 2 compares the bias of sovereign wealth funds to that of US mutual funds; and Column 3 compares the bias of sovereign wealth funds to that of CalPERS.

In each regression, we find that Religious Closeness is a systematically more important factor in influencing the foreign bias of SWFs than the foreign bias of other global investors. For example, the results in Column 2 of Table 8 indicate that a one standard deviation increase in Religious closeness (0.42) implies an increase in foreign bias of SWFs relative to that of US mutual funds of 0.33. This is large compared to the sample standard deviation of the foreign bias of SWFs relative to US mutual funds of 1.36. We find the opposite result for the language affinity variable, though these results come with the caveat that no other country shares the native tongue in Norway so that the Language Closeness takes a value of zero for all observations of the Norwegian SWF. For the other affinity variables we do not find a systematic difference between the foreign bias of SWFs and US mutual funds.

For robustness, we repeat the analysis in Tables 5 to 8 after recasting the host country institutional variables (stock market development and per capita income) into bilateral differences between home and host countries following the same procedure used in constructing the closeness variables. This does not alter our main findings. Clustering of standard errors by sovereign wealth fund or home country also does not alter our main findings. We also tried including alternative time-varying measures of institutions, including measures of judicial

efficiency, risk of expropriation, and accounting standards, but again this does not qualitatively alter our main findings.

Overall, the results indicate that the foreign investment allocation of SWFs tends to be influenced by affinity and cultural factors, particularly similarity in religion. While these factors also tend to influence the investment behavior of other global investors, such as mutual funds and pension funds, we find that the bias is stronger for SWFs. This suggests that SWFs have strong preference for investing in the familiar.

5. Valuation Effects of Sovereign Wealth Fund Investments

To gauge the immediate valuation effect of SWF investments, we perform an event study of abnormal equity returns around the time of the announcement of equity investments by SWFs.

Table 9 reports the univariate results of this event study for different event windows. Our sample consists of 89 firms for which we have the exact announcement date for the investment made by the SWF. The event study methodology is similar to Karpoff and Malatesta (1989). We use a simple market model to compute the cumulative abnormal returns (CARs) relative to the market returns for each host country. Abnormal returns are calculated as the difference between actual and predicted returns based on the market model. We sum over abnormal returns to calculate cumulative abnormal returns. For each event, the market model is estimated over the period 281 to 80 trading days prior to the event date. For each market, we use the return on a commonly observed stock market index as proxy for the market return (e.g., for the US we use the CRSP value-weighted return index, and for the UK we use the FTSE 100 index). Daily return data are collected from Datastream for each of these market indices and used in the market model to compute abnormal returns.

Column 1 reports the average CAR of these 89 SWF investments for different event windows over the period [t-20, t+10], where t denotes the announcement date and the event window is expressed in number of days. The results indicate that SWF investments generate substantial, positive CARs during the 10 trading days prior to the announcement of the investment. For example, the average CAR is 1.15% over the period [t-10, t-5]. This suggests that the investment is often already known to the market several days in advance of the official announcement. CARs are not statistically different from zero for event windows prior to t-10 and post t+2. The average CAR over the extended period [t-20, t+10] is 1.76%. These results are similar in magnitude to those obtained by Fotak et al. (2008), and consistent with the hypothesis that SWFs as large investors may enhance firm value by monitoring firm management (e.g., Shleifer and Vishny, 1986).

To make sure these results are not driven by US firms that constitute a large part of the sample, Column 2 reports the average CAR after dropping investments in US firms. This reduces the sample to 69 firms. The results are very similar. Overall, we find that SWFs investments on average are associated with substantial, positive CARs.

6. Conclusions

We collect extensive new data on investments by SWFs to study the investment behavior of SWFs. Several insights emerge from our analysis. First, we find that SWF investments exhibit cultural biases, suggesting they investment in the familiar. Second, share prices of firms respond favorably when SWFs announce investments, possibly in anticipation of enhanced corporate governance by SWFs as large shareholders. While politicians and economists alike have

expressed concerns that SWFs may serve political objectives and invest in strategic industries, these results offer a somewhat more benign view of SWFs.

Our finding that SWF investments exhibit cultural biases does raise questions about whether such investments are at odds with the principles of portfolio theory. While such preference for investing in the familiar may indicate the exploitation of informational advantages, such preference may also simply indicate affinity with the familiar, in which case it is much harder to argue that the investments are consistent with expected utility-based portfolio theory. Moreover, while such display of familiarity in international portfolio allocation is quite common among other institutional investors (e.g., Huberman 2001), we find that compared to other global investors the cultural bias of SWF investment is particularly pronounced.

Finally, we find that there is substantial heterogeneity in transparency and governance of SWFs, leaving much room for improvement in transparency, governance, and shareholder activism on the part of some funds. Also, given their growing importance as global equity investors, SWFs could potentially play an important role as large shareholders in monitoring firms, but given their lack of transparency and potentially conflicting objectives they are unlikely to achieve such a role at this stage. Therefore, we concur with the view that SWFs should become more transparent about their investment holdings and strategies.

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Table 1
Description of Sovereign Wealth Funds

This table reports summary statistics for the sovereign wealth funds included in our sample. The data is collected from the SWF Institute, Lexis-Nexis, annual investment reports of individual SWFs, and 10-K filings of individual firms. We only include SWFs for which we have at least 20 investments and that are labeled as SWFs by the International Working Group of Sovereign Wealth Funds. Appendix 1 provides a complete lists of SWFs. Data on foreign reserves are from the IMF IFS, as of end 2007, and exclude gold. For Abu Dhabi, combined reserves of United Arab Emirates are used. Country denotes the home country of the SWF. Fund name denotes the full name of the SWF. Assets denotes the total assets under management of the SWF at end-2007, including non-equity investments, in billions of US dollars. Inception denotes the year of inception of the SWF. Origin denotes the origin of revenues for the SWF. SWF assets to foreign reserves denotes the ratio of SWF assets under management to total foreign reserves of the home country. Number of investments denotes the number of equity investments by the SWF as of end-2007 for which we have collected data. We report the number of foreign investments between brackets. The coverage of equity investments is complete for the SWFs of Norway, US, Ireland, and New Zealand. Website denotes the homepage of the SWF.

Country	Fund Name	Assets ($bn)	Inception	Origin	SWF assets to foreign reserves	Number of investments (of which foreign)	Website
Abu Dhabi (UAE)	Abu Dhabi Investment Authority	875	1976	Oil	11.3	133 (86)	www.adia.ae
Singapore	Government of Singapore Investment Corporation	330	1981	Non-commodity	2.0	37 (20)	www.gic.com.sg
Norway	Government Pension Fund – Global	301	1990	Oil	4.9	5913 (5913)	www.regjeringen.no/en/dep/fin/Selected-topics/The-Government-Pension-Fund.html?id=1441
Singapore	Temasek Holdings	134	1974	Non-commodity	0.82	23 (20)	www.temasekholdings.com.sg
Qatar	Qatar Investment Authority	60	2000	Oil	6.4	24 (14)	www.qia.qa
United States	Alaska Permanent Fund	29	1976	Oil	0.49	6253 (4005)	www.apfc.org
Ireland	National Pensions Reserve Fund	23	2001	Non-commodity	29.3	2064 (2050)	www.nprf.ie
New Zealand	New Zealand Superannuation Fund	9	2003	Non-commodity	0.52	2876 (2876)	www.nprf.ie

Table 2
Geographical Distribution of Equity Investments of Sovereign Wealth Funds

This table reports the geographical distribution of equity investments of sovereign wealth funds in our sample. The data is collected from the SWF Institute, Lexis-Nexis, annual investment reports of individual SWFs, and 10-K filings of individual firms. Market capitalization of equity investments is collected from Datastream and Compustat. We use the market capitalization as of end 2007. In the table, we only list countries that represent at least 0.01% of the individual sovereign wealth fund's portfolio.

Country	Abu Dhabi Investment Authority	Alaska Permanent Fund	Govt of Singapore Investment Corp	Govt Pension Fund of Norway	National Pension Reserve Fund of Ireland	New Zealand Superannuation Fund	Qatar Investment Authority	Temasek Holdings
Argentina						0.04%		
Australia		1.10%	3.90%	1.53%	0.95%	7.43%		
Austria	5.33%	0.27%		0.37%	0.82%	1.10%		0.32%
Belgium		0.21%		0.76%	1.70%	0.43%		
Bermuda	0.17%	1.01%		0.12%		0.01%		1.21%
Brazil		0.60%		0.66%		1.16%		
Canada	10.32%	1.47%		2.03%	1.40%	2.84%		0.52%
Chile		0.03%				0.05%		
China		0.28%	0.66%	0.59%		0.94%		4.28%
Colombia		0.05%				0.02%		
Czech Republic		0.16%		0.09%		0.04%		
Denmark		0.21%		0.43%	0.37%	1.18%		
Egypt	0.23%	0.11%		0.02%		0.04%		
Finland		0.40%		0.78%	2.40%	0.47%		
France		3.61%		7.47%	15.73%	3.41%		
Germany		2.18%		9.93%	13.97%	2.60%		
Greece		0.19%		0.48%	1.19%	0.13%		
Hong Kong		0.70%	0.13%	1.14%	0.56%	1.17%		1.12%
Hungary		0.11%				0.06%		
India		0.27%		0.12%		0.42%		0.63%
Indonesia		0.03%		0.03%		0.19%		
Ireland		0.21%		0.27%		0.12%		
Israel		0.43%		0.04%		0.15%		
Italy	1.49%	0.52%		2.57%	5.99%	1.68%		
Japan		5.50%		7.90%	3.23%	7.18%		
Korea	0.38%	0.44%		1.46%		0.87%		5.19%
Luxembourg		0.22%		0.10%	0.83%			
Malaysia		0.06%		0.05%		0.11%	51.05%	
Mexico		0.47%		0.38%		8.80%		
New Zealand		0.01%		0.05%				
Netherlands	3.27%	1.65%		2.60%	4.97%			
Norway	38.50%	0.29%			0.54%	0.46%		
Oman		0.02%						
Panama		0.13%						
Pakistan	6.91%					0.03%		
Philippines		0.05%		0.01%		0.01%		
Poland		0.17%				0.09%		
Portugal		0.05%		0.20%	0.60%	0.48%		
Puerto Rico		0.03%				0.01%		
Russia		0.46%	0.46%	0.05%		0.85%		
Singapore		0.31%		0.54%		0.71%		67.13%
Sweden		0.37%	0.68%	1.86%	0.66%	0.75%		
Switzerland		2.90%	54.40%	4.89%	2.26%	4.84%		
South Africa		0.28%		0.58%		0.42%		
Spain		0.52%		2.32%	6.65%	1.78%		
Taiwan		0.58%	0.26%	0.45%		0.79%		0.27%
Thailand		0.08%		0.04%		0.19%		
Turkey		0.17%		0.08%		0.11%		
United Arab Emirates	11.50%						2.04%	
United Kingdom	8.46%	5.45%	5.14%	19.18%	5.59%	7.58%	41.96%	7.85%
United States	13.80%	64.31%	34.06%	27.76%	28.73%	38.24%	4.96%	11.49%

Table 3
Industrial Distribution of Equity Investments of Sovereign Wealth Funds

This table reports the industrial distribution of equity investments of sovereign wealth funds in our sample. The data is collected from the SWF Institute, Lexis-Nexis, annual investment reports of individual SWFs, and 10-K filings of individual firms. Market capitalization of equity investments is collected from Datastream and Compustat. We use the market capitalization as of end 2007.

Country	Abu Dhabi Investment Authority	Alaska Permanent Fund	Government of Singapore Investment Corp	Government Pension Fund of Norway	National Pension Reserve Fund of Ireland	New Zealand Superannuation Fund	Qatar Investment Authority	Temasek Holdings
Basic materials	17.60%	7.12%		3.60%	8.48%	7.32%		0.70%
Consumer goods	0.40%	4.94%		8.10%	7.42%	4.19%		0.10%
Consumer services	0.10%	7.93%	6.30%	12.80%	6.94%	5.64%	36.20%	24.10%
Financials	15.00%	19.25%	91.10%	25.50%	24.51%	27.11%	9.20%	45.00%
Healthcare	0.20%	10.14%	0.20%	6.60%	6.14%	5.45%	6.80%	0.40%
Industrials	3.60%	9.05%	1.70%	9.70%	11.34%	18.69%	1.91%	
Oil and gas	60.30%	7.86%	0.10%	6.70%	9.01%	8.71%		23.50%
Technology	0.90%	15.34%	0.30%	6.80%	9.00%	7.79%		4.50%
Telecommunication	1.40%	6.29%		3.80%	6.63%	6.23%		1.60%
Utilities		3.27%			7.36%	5.01%	52.60%	
Unlisted equities		8.81%		0.30%	3.17%	3.84%		

Table 4
Governance and Transparency of Sovereign Wealth Funds

The table reports governance and transparency scores for sovereign wealth funds in our sample. The data is collected from the Peterson Institute for International Economics report called "A Scoreboard for Sovereign Wealth Funds" (Truman, 2008). The governance score is based on the role of the government in setting the investment strategy, role of the manager in executing investment strategy, guidelines for corporate responsibility and whether the fund has an ethical guideline. The governance score has a range between 0 and 4. Transparency and accountability is based on three broad categories. First is 'reports' which is in turn based on whether the fund publishes annual and quarterly reports. The second broad category is termed as 'investments' and includes information on whether the size of the fund, returns, types of investment, location, specific investment instruments used, currency composition and mandates are publicly available information. The third broad category is 'audit' which includes questions on whether the fund has a regular audit, whether the audit report is published and whether the audit is conducted independently. The transparency score has a range from 0-12.

	Governance	Transparency	Governance + transparency
Abu Dhabi Investment Authority	0	0	0
Alaska Permanent Fund	4	14	18
Government of Singapore Investment Corp	0	0.75	0.75
Government Pension Fund of Norway	4	10.5	14.5
National Pension Reserve Fund of Ireland	4.5	12	16.5
New Zealand Superannuation Fund	5	14	19
Qatar Investment Authority	0	0	0
Temasek Holdings	1.5	8	9.5

Table 5
Determinants of Foreign Bias of Sovereign Wealth Funds

The regressions in the table below report host fixed effect regressions for funds where we have at least 20 investments or more. The dependent variable in regressions (1) to (5) is foreign bias, defined as the log ratio of the share of country j in fund holdings of country i to the world market capitalization weight of country j as of end of 2007. In Column (2), foreign bias is measured with respect to the weight in the MSCI world index. In Column (3), we only include observations from SWFs for which we have complete coverage of equity investments. In Column (4), we include an interaction between the Religious closeness measure and a Low Governance Score dummy variable that takes a value of one if the fund scores below the median value of the Truman governance score. In column (5), the dependent variable is foreign bias, defined as the log ratio of the share of firm j investment in the fund and the share of the company in a world market capitalization as defined by world market capitalization of all firms in Compustat and Datastream as of 2007. Physical closeness is the inverse geographical distance (in kilometers) between the capitals of the source and host country of the SWF investment. It is inverse of distance measured in kilometers. Trade closeness is measured by the total exports and imports between source and host country of investment scaled by total trade of host country of the SWF as of 2000. Industrial closeness is based on industrial distance between source and host country of investment based on the United Nations industrial classification. Language closeness, religious closeness and ethnic closeness are cultural proximity variables that indicate similarity in culture between the host and host country. The variables are defined as the uncentered correlation between country pairs and are obtained from Acemoglu et al (2008). Leverage is defined at the firm level as the ratio of total debt to assets in US dollars. Log Sales is defined at the firm level as the natural logarithm of total sales. Host fixed effects are included in all regressions. Regression (5) also includes industry fixed effects. All standard errors are clustered at the fund level. ***, ** and * represent significance at the 1%, 5% and 10% respectively.

	Mktcap Wt.	MSCI Wt.	Full coverage	Governance	Firm-level bias
	(1)	(2)	(3)	(4)	(5)
Physical Closeness	-0.609	0.001	-2.115 ***	-0.710	-4.569
	(0.763)	(0.443)	(0.619)	(0.756)	(2.867)
Trade Closeness	3.401	1.533	18.95 ***	3.927	43.063 **
	(6.791)	(3.761)	(4.665)	(6.946)	(20.84)
Industrial Closeness	-0.618	-1.375 ***	-7.392 ***	-0.247	
	(0.764)	(0.646)	(1.707)	(0.652)	
Language Closeness	0.862	-0.231	1.009 ***	0.801 *	6.944 **
	(0.537)	(0.415)	(0.170)	(0.652)	(0.953)
Religious Closeness	2.049 ***	1.365 ***	2.413 ***	1.756 ***	2.866 **
	(0.438)	(0.402)	(0.529)	(0.334)	(1.272)
Religious Closeness*Low Gov.				1.816	
				(1.218)	
Leverage					-0.146
					(0.283)
Log Sales					-0.200 ***
					(0.066)
Clustered std errors (home country)	Y	Y	Y	Y	Y
Host country fixed effects	Y	Y	Y	Y	Y
Industry fixed effects	N	N	N	N	Y
N	159	159	89	159	6842
R^2	0.64	0.47	0.76	0.65	0.44

Table 6
Determinants of Foreign Bias of Global Investors

The dependent variable in column (1) is foreign bias of foreign investors, defined as the log ratio of the share of country j in CPIS equity portfolios holdings of country i to the world market capitalization weight of country j at year-end over the period 2001-2007. The dependent variable in column (2) is as in column (1) but over the period 2002-2007. The dependent variable in column (3) is foreign bias of US mutual funds, defined as the log ratio of the share of country j in the aggregate equity portfolio holdings of US-domiciled global mutual funds to the world market capitalization weight of country j at time t. The data on mutual fund holdings is collected from epfr.com and consists of monthly observations over the period 1997-2007. The portfolio data is reported for mutual funds domiciled in the US and holdings are recorded every month. The dependent variable in column (2) is as in column (1) but over the period 2002-2007. Physical closeness is the inverse geographical distance (in kilometers) between the capitals of the source and host country of the SWF investment. It is inverse of distance measured in kilometers. Trade closeness is measured by the total exports and imports between source and host country of investment scaled by total trade of host country of the SWF as of 2000. Industrial closeness is based on industrial distance between source and host country of investment based on the United Nations industrial classification. Language closeness, religious closeness and ethnic closeness are cultural proximity variables that indicate similarity in culture between the host and host country. The variables are defined as the uncentered correlation between country pairs and are obtained from Acemoglu et al (2008). Stock market development is stock market capitalization as a fraction of GDP. Log per capita GDP is the logarithm of per capita GDP. Regressions in columns (1) and (2) include host fixed effects, and standard errors are corrected for two-way clustering at the home and host country level. Regressions in columns (3), (4), and (5) include year fixed effects, and standard errors are clustered at the host country level. ***, ** and * represent significance at the 1%, 5% and 10% respectively.

	2001-2007 CPIS Foreign Bias	2002-2007 CPIS Foreign Bias	1997-2007 Mutual Fund Foreign Bias	2002-2007 Mutual Fund Foreign Bias	2002-2007 CalPERS Foreign Bias
	(1)	(2)	(3)	(4)	(5)
Physical Closeness	0.661 ***	0.662 ***	-1.487 **	-1.504 **	0.872
	(0.172)	(0.174)	(0.575)	(0.560)	(1.242)
Trade Closeness	3.177 **	3.107 **	7.103 **	7.037 ***	-8.051
	(1.519)	(1.461)	(2.605)	(2.512)	(7.950)
Industrial Closeness	1.369 ***	1.361 ***	-0.391	-0.456	1.289
	(0.459)	(0.437)	(1.111)	(1.090)	(1.672)
Language Closeness	0.736 ***	0.719 ***	0.254	0.272	0.234
	(0.257)	(0.252)	(0.503)	(0.496)	(0.375)
Religious Closeness	0.861 ***	0.863 ***	1.160 **	1.132 ***	1.126 **
	(0.215)	(0.218)	(0.423)	(0.406)	(0.496)
Stock Market Development	-0.028	-0.057	0.093	0.071	0.176
	(0.210)	(0.314)	(0.412)	(0.398)	(0.332)
Log Per Capita GDP	0.031	0.294	0.096	0.085	0.046
	(0.672)	(0.638)	(0.074)	(0.070)	(0.096)
Clustered std errors (home and host country)	Y	Y	N	N	N
Clustered std errors (host country)	N	N	Y	Y	Y
Host country fixed effects	Y	Y	N	N	N
Time fixed Effects	Y	Y	Y	Y	Y
N	5655	4794	1555	1473	146
R^2	0.39	0.40	0.24	0.24	0.22

Table 7
Determinants of Foreign Bias of Sovereign Wealth Funds Relative to Other Investors (2007)

The regressions in the table below report regressions of the foreign bias of SWFs as compared to the equity allocation of CPIS investors, US mutual funds, and CalPERS. In Column (1), the dependent variable is the log ratio of the share of country j in the equity portfolio of SWF from country i to the share of country j in aggregate CPIS equity holdings at year-end 2007. In Column (2), the dependent variable is the log ratio of the share of country j in the equity portfolio of SWF from country i to the share of country j in CPIS equity holdings from country i at year-end 2007. In Column (3), the dependent variable is the log ratio of the share of country j in the equity portfolio of SWF from country i to the share of country j in aggregate US-domiciled global mutual fund equity holdings at year-end 2007. Monthly data on US mutual fund holdings are obtained from epfr.com. In Column (4), the dependent variable is the log ratio of the share of country j in the equity portfolio of SWF from country i to the share of country j in equity holdings of the CalPERS fund at year-end 2007. We only include SWFs for which we have at least 20 equity investments. Physical closeness is the inverse geographical distance (in kilometers) between the capitals of the source and host country of the SWF investment. It is inverse of distance measured in kilometers. Trade closeness is measured by the total exports and imports between source and host country of investment scaled by total trade of host country of the SWF as of 2000. Industrial closeness is based on industrial distance between source and host country of investment based on the United Nations industrial classification. Language closeness, religious closeness and ethnic closeness are cultural proximity variables that indicate similarity in culture between the host and host country. The variables are defined as the uncentered correlation between country pairs and are obtained from Acemoglu et al (2008). Host fixed effects are included only in the regression in Column (2). All standard errors are clustered at the fund level. ***, ** and * represent significance at the 1%, 5% and 10% respectively.

	CPIS (2007) Wt	CPIS (2007) bilateral Wt	US Mutual Funds Wt	CalPERS Wt
	(1)	(2)	(3)	(4)
Physical Closeness	0.003	-1.594 **	0.084	0.127
	(0.346)	(0.753)	(0.411)	(0.272)
Trade Closeness	4.673	5.164	1.972	-0.495
	(2.979)	(8.613)	(4.544)	(3.032)
Industrial Closeness	-0.973	-3.909	-1.786 **	-1.894 **
	(0.667)	(4.440)	(0.739)	(0.719)
Language Closeness	-0.627 **	0.439	-0.140	0.366
	(0.221)	(0.696)	(0.287)	(0.706)
Religious Closeness	1.658 ***	1.088 **	1.690 ***	1.402 ***
	(0.279)	(0.487)	(0.361)	(0.375)
Clustered std errors (home country)	Y	Y	Y	Y
Host country fixed effects	N	Y	N	N
N	130	103	110	116
R^2	0.16	0.46	0.48	0.14

Table 8
Determinants of Foreign Bias of Sovereign Wealth Funds Relative to Other Investors (2002-2007)

The regressions in the table below report host fixed effect regressions of the foreign bias of SWFs as compared to the equity allocation of CPIS investors, US mutual funds, and CalPERS. Regressions are based on the relative allocations of two sovereign wealth funds with complete data on portfolio holdings and time series data: the Government Pension Fund of Norway and the National Pensions Reserve Fund of Ireland. The dependent variable in Column (1) is the foreign bias of SWFs relative to CPIS investors and is defined as the log ratio of the share of country j in fund holdings of SWF i (j not equal to the home country) to the share of country j in the aggregate CPIS equity holdings at the end of year t, with t ranging from 2002 to 2007. The dependent variable in Column (2) is the foreign bias of SWFs relative to US mutual funds and is defined as the log ratio of the share of country j in fund holdings of SWF i to the share of country j in the aggregate equity holdings of US mutual funds at the end of year t, with t ranging from 2002 to 2007. Data on US mutual fund holdings are obtained from epfr.com. The dependent variable in Column (3) is the foreign bias of SWFs relative to CalPERS and is defined as the log ratio of the share of country j in fund holdings of SWF i to the share of country j in the equity holdings of CalPERS at the end of year t, with t ranging from 2002 to 2007. Physical closeness is the inverse geographical distance (in kilometers) between the capitals of the source and host country of the SWF investment. It is inverse of distance measured in kilometers. Trade closeness is measured by the total exports and imports between source and host country of investment scaled by total trade of host country of the SWF as of 2000. Industrial closeness is based on industrial distance between source and host country of investment based on the United Nations industrial classification. Language closeness, religious closeness and ethnic closeness are cultural proximity variables that indicate similarity in culture between the host and host country. The variables are defined as the uncentered correlation between country pairs and are obtained from Acemoglu et al (2008). Log per capita GDP is the logarithm of per capita GDP. Stock market development is stock market capitalization as a fraction of GDP. All regressions include year fixed effects. Standard errors are corrected for clustering at the host country level. ***, ** and * represent significance at the 1%, 5% and 10% respectively.

	Ireland and Norway-CPIS Wt	Ireland and Norway-US Mutual Fund Wt	Ireland and Norway-CALPERS Wt
	(1)	(2)	(3)
Physical Closeness	0.184	0.070	0.153
	(0.143)	(0.203)	(0.204)
Trade Closeness	2.546	4.329	2.041
	(1.781)	(2.631)	(1.630)
Industrial Closeness	0.788	0.915	-0.957
	(0.883)	(0.739)	(1.076)
Language Closeness	-0.557	-0.808 **	-1.247 ***
	(0.401)	(0.374)	(0.188)
Religious Closeness	0.749 **	0.807 ***	0.607 ***
	(0.263)	(0.222)	(0.206)
Stock Market Development	0.082	0.359	-0.327
	(0.267)	(0.274)	(0.361)
Log per Capita GDP	-0.079	-0.121	-0.144 *
	(0.065)	(0.098)	(0.079)
Clustered std errors (host country)	Y	Y	Y
Time fixed effects	Y	Y	Y
N	251	248	235
R^2	0.13	0.21	0.13

Table 9
Announcement Effects of Sovereign Wealth Fund Investments

The table reports the event study results. The event study methodology is similar to Karpoff and Malatesta (1989). For each event we estimate a market model (specific to the origin of each fund) from 281 to 80 trading days prior to the event date. The parameters are estimated from a simple market model framework ($R_{it}=\alpha+\beta R_{mt}+\varepsilon_{it}$). Abnormal returns are calculated as the difference between actual and predicted returns based on the market model. We sum over abnormal returns to calculate cumulative abnormal returns. Cumulative abnormal returns are reported in percentages. Our sample consists of responses to 89 SWF investments for which we have the exact announcement date. Column (1) reports results on all investments. Column (2) excludes investments into the US. T-statistics of the cumulative abnormal returns are reported between brackets. ***, ** and * represent significance at the 1%, 5% and 10% respectively.

Event window	All	Non-US investments
	(1)	(2)
[-20,-10]	-0.06	-0.08
	(0.28)	(0.31)
[-10,-5]	1.15***	1.47***
	(3.69)	(3.52)
[-5,2]	0.96***	1.16***
	(3.23)	(2.69)
[-2,2]	0.97**	1.21**
	(2.56)	(2.36)
[2,10]	-0.29	-0.35
	(0.77)	(0.005)
[-20,10]	1.76***	2.12***
	(5.80)	(6.03)

Appendix 1
Sovereign Wealth Funds Around the World

This table reports summary statistics for the largest (in terms of assets) 20 sovereign wealth funds around the world. We only include funds that are members of and labeled as SWFs by the International Working Group of Sovereign Wealth Funds. The data is collected from the SWF Institute, Lexis-Nexis and other news stories as well as 10-K filings of individual firms. Data on foreign reserves are from the IMF IFS, as of end 2007, and exclude gold. For Abu Dhabi, combined reserves of United Arab Emirates are used. For Russia, asset data refers to 2008.

Country	Fund Name	Assets $Billion (estimated, end 2007)	Inception	Origin	Ratio of SWF assets to foreign reserves
Abu Dhabi (UAE)	Abu Dhabi Investment Authority	875	1976	Oil	11.3
Singapore	Government of Singapore Investment Corporation	330	1981	Non-Commodity	2.0
Norway	Government Pension Fund – Global	301	1990	Oil	4.9
Kuwait	Kuwait Investment Authority	265	1953	Oil	15.9
Russia	National Wealth Fund	225	2008	Oil	0.48
China	China Investment Corporation	200	2007	Non-Commodity	13.1
Singapore	Temasek Holdings	134	1974	Non-Commodity	0.82
Qatar	Qatar Investment Authority	60	2000	Oil	6.4
Libya	Libyan Investment Authority	50	2006	Oil	0.63
Australia	Australian Future Fund	44	2004	Non-Commodity	1.8
Korea	Korea Investment Corporation	30	2005	Non-Commodity	0.11
United States	Alaska Permanent Fund	29	1976	Oil	0.49
Ireland	National Pension Reserve Fund	23	2001	Non-Commodity	29.3
Chile	Economic and Social Stabilization Fund	21	1985	Copper	1.2
Canada	Alberta Heritage Savings Trust Fund	15	1976	Oil	0.37
Bahrain	Reserve Fund for Strategic Projects	14	2006	Oil	n.a.
Iran	Oil Stabilization Fund	13	1999	Oil	n.a.
Azerbaijan	State Oil Fund	10	1999	Oil	2.4
New Zealand	New Zealand Superannuation Fund	9	2003	Non-Commodity	0.52
Botswana	Pula Fund	7	1966	Diamonds and minerals	0.72

Appendix 2
Summary Statistics of Regression Variables

The foreign bias is defined as the log ratio of the share of country j in fund holdings of country i (with i not equal to j) to the world market capitalization weight of country j and alternatively to the weight of country j in MSCI world index as of end of 2007. Physical closeness is the inverse geographical distance (in kilometers) between the capitals of the source and host country of the SWF investment. It is inverse of distance measured in kilometers. Trade closeness is measured by the total exports and imports between source and host country of investment scaled by total trade of host country of the SWF as of 2000. Industrial closeness is based on industrial distance between source and host country of investment based on the United Nations industrial classification. Language closeness, religious closeness and ethnic closeness are cultural proximity variables that indicate similarity in culture between the host and host country. The variables are defined as the uncentered correlation between country pairs and are obtained from Acemoglu et al (2008). Panel A reports summary statistic for all explanatory variables and Panel B reports the correlation matrix between them.

Panel A: Summary Statistics

	Foreign Bias wrt Mktcap	Foreign Bias wrt MSCI	Physical Closeness	Trade Closeness	Industrial Closeness	Language Closeness	Religious Closeness
Mean	0.875	0.241	0.296	0.029	0.800	0.112	0.395
Std Deviation	1.834	1.399	0.435	0.048	0.207	0.301	0.371
Maximum	5.947	6.307	3.067	0.244	0.989	0.999	0.999
Minimum	-10.73	-6.941	0.050	0.000	0.249	0.000	0.000
Number of observations	159	159	159	159	159	159	159

Panel B: Correlation Matrix

	Physical Closeness	Trade Closeness	Industrial Closeness	Language Closeness	Religious Closeness
Physical Closeness	1.00				
Trade Closeness	0.41	1.00			
Industrial Closeness	0.112	0.029	1.00		
Language Closeness	0.103	0.345	0.087	1.00	
Religious Closeness	0.278	0.145	0.251	0.296	1.00