Sovereign Wealth Funds for Sustainable Economic Development in Sub-Saharan Africa

by

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1. Introduction

In 2008, then World Bank Group President, Robert B. Zoellick, outlined a call to action for Sovereign Wealth Funds (SWFs) with assets totaling more than $3 trillion at the time, to invest 1% of their assets to bridge $10 billion of Sub-Saharan Africa’s infrastructure development gap. More than 10 years later, the gap is more persistent than ever (Graph 1), while the total assets of the SWFs more than doubled (African Development Bank, 2017). This research sustains that there are synergies between SWFs and the Sub-Saharan Africa (SSA) region for three main reasons. First, the region receives the least amount of SWF investments by a significant margin according to Triki and Faye (2011). Second, the African Development Bank (2018) identified the two largest, persistent barriers to infrastructure as the scarcity of long-term finance and the constrained liquidity of African financial institutions. Interestingly, SWFs have long-term investment horizons, which align with long-term capital needs of extensive infrastructure projects in different sectors to support economic diversification. Third, according to the Bortolotti et al. (2017) estimations, established African SWFs are already beginning to show this domestic prioritization of infrastructure investments (at 33% of total investments by asset class).
As the number of new sovereign wealth funds (SWFs) grow in Sub-Saharan Africa (SSA) and globally, my study aims to better inform the public and the Sub-Saharan governments on empirically demonstrated best practices for 1. establishing country-relevant sovereign wealth funds and 2. attracting sovereign wealth fund investments into their countries – both avenues aimed at using these uniquely-positioned investment vehicles to achieve sustainable financing for economic growth. In Section 2 (Part A), the former goal of offering the best fit for Sub-Saharan SWFs will be achieved through consolidating current categorizations of the investment vehicle, and examining motivations behind the global adoption of different forms of SWFs. The latter goal will be accomplished through analyzing factors that drive long-term SWF investments in Africa in Section 3 (Part B).

First, in Part A I will give a full exposition of sovereign wealth funds, particularly their working definitions, and growing economic and political significance, which will also serve as background for my research in Part B. Part A will also demonstrate the indicators that SSA countries must examine to determine whether they should establish their own SWF vehicle(s). Second, in Part B, I will dive directly into why sovereign wealth fund investments are
specifically of interest in Sub-Saharan Africa, and the need to align incentives to attract these investments. Then, I will discuss the methodology and data selection followed by analyzing the preliminary results. Lastly, I will discuss the broader policy implications for Sub-Saharan governments as well as propose next steps to build upon my research.

Section 2 — Part A

2.1 Background

The first priority is to establish the definition of Sovereign wealth funds. Sovereign wealth funds (SWFs) are government-owned investment vehicles typically established to manage excess foreign exchange reserves or natural resource export surpluses (IMF, 2008). However, this definition is one of many ways to categorize SWFs, which is inherently as difficult as categorizing government structures and economies around the world. In other words, the different nature and eccentricities of these “sovereignties” and their “wealth” represent the heterogenous nature of their investment instruments. Nevertheless, what is certain is their growing international influence on both the capital market and private asset managers. Thus, this section will answer the question of “what are SWFs?” by first assessing their growing presence and trends, then examining variations in geographies, source of funds, and purpose of funds through categorizing existing definitions.

The popular coverage of sovereign wealth funds spiked in the late 2007 through 2010, around the time of the Financial Crisis, when the urgency to report their increasing ability to influence market competitiveness abroad overshadowed the need to examine the history and heterogeneity of sovereign wealth funds. During the Crisis, various SWFs, mainly from Middle
East and North Africa (MENA) and Asian regions, invested nearly $69 billion USD to help bail out key American banks like Barclays, Citi, and Merrill Lynch with an average deal value of $3 billion USD (Curzio, 2011). Despite the realization of their influence, at the time, SWFs was only 2% of globally traded assets and were around the same size as the global hedge-fund industry (The Economist, 2008). Thus, it is the tremendous growth and adoption of SWFs post-2008 that should warrant further attention.

Today, Sovereign Wealth Funds are a major force in the global asset management industry by managed volume and by investment penetration. Specifically, as of June 2018, SWFs’ assets under management (AuM) topped $7.8 trillion USD, which doubled that of 2007 and now far surpasses any other alternative asset management AuMs (2.5 times hedge funds and 2.3 times private equity funds) (Sovereign Wealth Fund Institute, 2018). The largest of them, the Norges Bank Investment Management (NBIM) or the Norwegian SWF, has just surpassed a trillion dollars AuM in 2017, which is equivalent to two and a half times the size of the Norwegian economy and owns on average 1.3 percent of global equities (Reuters, 2017). This was only announced in a handful of major news outlets such as The Economist, Bloomberg and Sputnik News—representing a general lack of media attention despite their continuously growing importance in the past decade.

Investors, however, have already embraced the SWF phenomenon by engaging in various collaborative business opportunities. SWFs are now the largest group of LPs\(^1\) for the private equity industry and among the most active SWFs, more than half have also established co-

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\(^1\) Limited Partners are traditionally large, passive institutional investors in contrast to active managers who are referred to as General Partners (GP) (Investopedia, 2017)
investment relationships with the top 15 global private equity firms (including firms like KKR, Carlyle, Apollo, and Blackstone) (Lopez; PWC, 2015). Thus, not only have many SWFs become increasingly dominant players in the investing space, they have also garnered the recognition of established, private players in the decade following the Crisis.

Moreover, these non-traditional investing and management mechanisms have also experienced tremendous growth and concentration in the total number of institutions and in total asset volume. Based on records from Preqin and the Sovereign Wealth Funds Institute (SWFI), 50 out of the current 78 funds were established after 2000, which includes 23 SWFs that originated after 2008. However, a deeper geographic analysis reveals high asset concentration despite significant recent variations. Not only does the top ten largest SWFs account for 74% of total sovereign wealth assets globally, they only come from six governments— with developing nations in Asia and the MENA regions dominating with multiple SWFs each and by total asset volume (Graph 1). These top funds all hold more than $200 billion USD each, double the average AuM, and ten times the average of the bottom 50% of funds (United Nations Environment Programme, 2017). Thus, this hints that SWFs may very much be a story of developing economies and the geopolitical consequences of their wealth emergence.

Also of importance illustrated in graph 2 is the creation of 15 SWFs vehicles in Sub-Saharan Africa (SSA), mostly in the past two decades, which has yet to hold relative volume significance compared to other regions. Given that many new adopters (and various others in consideration) belong to a region (SSA) with some of the least economically and democratically

2 Norway, China, Singapore, UAE, Kuwait, Saudi Arabia (SWFI, 2017)
developed nations (UN defined LDCs), further discussion and awareness of SWF research will have significant implications on their future political and capital market development. Therefore, the very uneven distribution of assets among players and the highly concentrated emergence of SWFs in developing and least developed countries requires further analysis of SWF mechanisms.

Graph 2: Breakdown of SWFs by Region

![Breakdown of SWFs by Region](chart.png)

*Data Source: Sovereign Wealth Center 2018; my calculations are based on a set of 78 SWFs*

Evidently, SWFs are here to stay and are increasingly large players in people’s everyday lives in developed and developing countries alike. Yet despite their increasing global political and economic importance, the general public is not equally informed (due to the lack of transparency and some journalistic tendencies to construct compelling narratives from extreme cases) and many existing definitions are confusing, incomplete, or overgeneralizing. As this section mentioned earlier, the heterogeneity of SWFs requires clarification. Thus, to answer the latter half of the question “what are SWFs?”, the next section will further explain the extensive permutations through three ways of categorization: by sources of funds, by purpose of the fund, and by investment destination.
2.2 SWF Categorization and the Alignment of Goals and Economic Profiles

First, SWFs can be categorized based on their source of funds, which also helps explain drivers of many SWFs’ tremendous asset growth over three waves. The source of SWF capital can be primarily funded through three ways: commodities (e.g. oil & gas, precious metals), excess-reserves (non-commodity based), and sovereign debt issuance. Specifically, many countries that primarily export natural resources store surpluses into a SWF vehicle as a way to manage excess liquidity. The top two SWFs by asset volume, Norway (NBIM) and Abu Dhabi (ADIA), represent the dominance of commodity-based SWFs that originated from the 1970s oil boom and subsequent decade of high oil & gas demands (Balin, 2008). In contrast, many countries that do not rely on or have major commodity exports, fund their vehicles with excess fiscal budget or excess foreign exchange reserves. Dominant players are mostly from Asian nations such as the China (CIC), South Korea (KIC), and Singapore (GIC, Temasek), which emerged alongside their export-economy boom from the late nineties through 2000s (Balin, 2008). Additionally, almost all SWFs receive capital from selling sovereign debt in the international market (albeit this is not a primary differentiating source). In a typical case like Temasek (Singapore), which only recently issued its first 5-year bond for retail investors (Temasek, 2018), these capital in excess of federal spending may be kept in the SWF for further management. Therefore, categorizing SWFs through their major funding sources shows that the resource boom and export waves, amplified by global imbalances such as high commodity prices and balance of payment surpluses, drove SWFs’ sharp asset growth since the year 2000 (see graph 3 below).
Second, SWFs can also be categorized by their goals. A thorough reading of sovereign wealth fund mandates reveal most vehicles set out to fulfill one or more of the following: stabilization, savings, reserve investment, pension reserve, and development (see table 1). The pension reserve mandate will not be elaborated since most people are familiar with the goal of pension funds and its regular payout obligations (Manca, 2013). To begin, SWFs with a mandate for fiscal stabilization are established to ameliorate macroeconomic volatility from usually a dependency from natural resources. Given that volatile commodity prices have had significant impacts on countries in the MENA region, Russia, and a number of Latin American countries, these SWFs are one of many ways for the government to routinely call for capital to respond to price shocks in the near term (Pill et al., 2017). Therefore, it is common for nearly all commodity-based SWFs to combine this goal with other relevant goals such as intergenerational savings and diversification (Das et al., 2009). However, the potential downside to stabilization use is if a longer period of low commodity pricing persists, then these SWF vehicles could be quickly depleted (Das et al., 2009). This problem may be more pronounced for the countries (e.g. Algeria) that have stabilization as their only mandate. Thus, although stabilization funds
predominantly act as mechanisms to absorb macro shock for resource-dependent countries, they’re ability to buffer shock should be measured relative to conventional fiscal and monetary policy tools.

Next, the intergenerational savings goal aims to sustain spending for future generations once their natural resource is depleted. Naturally, some of the largest oil producers such as Norway, and Kuwait, adopted this mandate to guarantee future government pensions and fiscal revenues from today’s export earnings (Brière, 2011). Many academic literature and news platforms use intergenerational saving and stabilization interchangeably (i.e. Balding, 2012), but it is important to differentiate their investment horizons. At a high level, setting aside funds for times of need fits the definition of “stabilization”. However, saving for generations at least fifty years into the future requires a much different set of performance measures and allocation strategy than buffering year to year pricing shocks (Brière, 2011). Thus, it is essential to measure savings funds based on their ability to generate long term returns and prevent governments from drawing too much funds prematurely.

The third category, reserve investment, refers to the management of excess reserves beyond the stabilization requirement for fiscal budgeting. SWFs with the reserve investment goal are common to countries that retain significant foreign exchange surpluses either because of income volatility and/or structural deficits (CityUK, 2015). This implies close relationship and sometimes even shared governance with the central bank. For example, India’s National Investment and Infrastructure Fund (NIIF) receive set annual allocations amounts from the government, while Saudi Arabia’s Saudi Arabian Monetary Authority (SAMA) serves as both its
sovereign wealth fund and its central bank. Interestingly, new adopters of this model, such as Bangladesh, Romania, and Turkey, follow India’s version (Reuters, 2017). Then it appears that this mandate category stands in stark contrast to the stabilization, diversification, and inflation prevention mandates common to commodity-based funds. Rather, these countries share large fiscal burdens such as sovereign debt problems and persistent current account deficits (CIA World Factbook, 2018). Therefore, adopting this SWF purpose implies that there must be prospects of increasing return on central bank assets through foreign investments. Correspondingly, SWFs with this mandate should be measured for returns above the 3 percent to 5 percent norm (annualized) of non-SWF Forex holdings.

The last purpose type is development, which aims to boost specific domestic sectors through government mandate. Consequently, SWFs in countries such as UAE (one of the two) and Kazakhstan own major stakes in strategic firms in industries such as healthcare, and information communication technology (ICT) firms, which are beneficial to revenue diversification, infrastructure development (e.g. India’s NIIF also targets this gap), and national security (Santiso, 2008). Similar to UAE’s strategy of creating a separate development fund (Mubadala) from its initial stabilization and savings fund, Abu Dhabi Investment Authority (ADIA), Singapore also created Temasek to hold strategic domestic assets, differing from its foreign reserve fueled fund, Government Investment Corporation (GIC) (Singapore Ministry of Finance, 2018). In many cases, additional upside can be created as the funds often acquire voting shares and board seats to incentivize multinational corporation investments or promote foreign technology transfer to domestic firms (Balin, 2008). Nevertheless, given that many of these
development funds invest both domestically and internationally (e.g. Temasek and Mubadala), there is ongoing debate about whether SWFs should be allowed to invest domestically.

### Table 1: Mandate Analysis Using Key Word Search

<table>
<thead>
<tr>
<th>Key Word Search Example (fund names added for countries with multiple SWFs)</th>
<th>Stabilization</th>
<th>Savings</th>
<th>Reserve Investment Corp.</th>
<th>Development</th>
<th>Pension Reserve</th>
</tr>
</thead>
<tbody>
<tr>
<td>insulate economy</td>
<td>inter-generational transfer</td>
<td>part of reserves; increase returns</td>
<td>socio-economic objectives</td>
<td>contingent government liabilities for pension</td>
<td></td>
</tr>
<tr>
<td>Chile, Peru, Algeria, Mexico, Venezuela, Mongolia</td>
<td>Kuwait, Qatar, Singapore, UAE's ADIA, Alaska, Alberta</td>
<td>China's SAFE, Korea's KIC, Saudi Arabia's SAM, Bahrain's Mumtalakat</td>
<td>Mubadala, UAE's ADIA, Bahrain's Mumtalakat</td>
<td>China SAFE, China NSSF</td>
<td></td>
</tr>
</tbody>
</table>

Data Source: purpose paragraphs of 52 SWF websites and/or annual reports; 26 missing due to limitations to accessibility

In all, global sovereign wealth funds are important to study given its growing influence in absolute assets managed and in market penetration. At the same time, large variations in size, source of funds, and purpose exist due to fundamentally different needs of mostly developing countries. Now that there is an established understanding of SWFs, both in definition, motives, and presence, it is then potentially beneficial for Sub-Saharan countries to adopt various purposed SWFs by evaluating their match with current global adoption motivations (i.e. economic profile, institution quality profile, and goal similarity). At the same time, it is also important to potentially isolate (by designating a specific domestic development fund) or hold off on investing domestically until more concrete benefits are observed from the global peer set.

### Section 3 — Part B

#### 3.1 Background

In Part A, I confirmed that there are various motivation alignment between globally established SWFs and the predominantly extraction-based, developing SSA economies in need.
of sustainable long-term funding for infrastructure projects. However, the analysis also reveals that SSA countries are only beginning to establish these investment vehicles, which cannot adequately serve these drastic and pressing underlying needs in the short to medium term. This research is further motivated by recent Turkisch (2011) findings that Sub-Saharan countries have 20 year average GDP growth rates that are positively correlated with SWF investments (received in proportion to GDP). Thus, the latter portion of this paper turns to the 7 trillion AuM of global SWFs (from countries outside of SSA), in particular their on-going investments in the SSA, to answer the question: “What factors encourage more long-term SWF investment quantity towards the region?”

3.2 Methodology and Data

Hypothesis A: SWF investors share the same investment evaluations as their private fund counterparts, who are incentivized by earning excess returns and discouraged by country risks.

After assessing various approaches such as difference of differences, I returned to using multivariable regressions to test for how various country and SWF effects influence the share of SWF investments in a particular Sub-Saharan country. The finalized model used to test the empirical development and SWF datasets is narrowed-down to the theoretical portfolio choice model, equation number 6, derived by Diallo, Tchana, and Zeufack in 2016, which I will now explain its components illustrated in Table 2. To start, the dependent variable consists of logging the share of total dollar investment value from a SWF \((i)\) into SSA country \((j)\) during the inclusive years 1985 to 2017 for 28 SWFs in SSA \((\theta)\) plus one. The data comes from both the Regional Portfolios section of the 2018 Sovereign Wealth Fund Institute database (SWFI) and directly from available 2017 annual reports online. By accounting for new investments and
divestments for additional years and two additional SWFs (Australian and Chile), a total of 47 observations were used, which offer an expanded data set compared to the previous study. Next, the equation captures the excess return such share of SWF investment would experience in a given SSA country based on the common incentives of private investors to seek expected additional returns above the risk-free rate (R-Rf) with coefficient $\alpha_2$. Using the African Development Bank’s annually updated online database, I gathered the average real GDP growth rates between 1985 and 2017 inclusively. I also use the U.S. for risk-free asset for the same period from version 9.1 of the Penn World Table, which captures data up to 2017. Then, the equation considers the second investor motivation factor, the risk of investing in a host SSA country ($\sigma$ stand for SD), which includes risks from the country characteristics, with coefficient $\alpha_3$. The SD is directly calculated from the average real GDP (per capita) growth rates from 1985 to 2017 from the African Development Bank database.

Table 2: Multivariable Regression Equation and Breakdown of Components

$$\log(1 + \theta_{1ij}) = \alpha_1 + \alpha_2 (\overline{R}_{ij} - R_f) + \alpha_3 \sigma_{1ij}^2 + \alpha_4 X_j + \alpha_5 Y_i + \epsilon_{ij}$$

Lastly, in addition to the error term, the equation accommodates for potential influences from the host country’s economic, social and political profile ($X_j$) with coefficient $\alpha_4$ as well as the political and institutional characteristics of the SWF ($Y_i$) with coefficient $\alpha_5$. In all, the equation was chosen because it could theoretically suggest that the percentage of portfolio
capital a SWF chooses to invest into a specific SSA country is influenced by expectations to generate excess returns (+) while managing investment risks (-) --much like most non-government owned investment fund entities. However, the political nature of the debate as well as various profile influences requires further discussion in the next section on selecting characteristics and controls (for X and Y).

**Selecting Country and SWF Characteristics**

*Hypothesis B: SWFs are politically motivated in their investments into SSA.*

To date, a significant portion of available literature has been focused on the political factors’ impacts on SWF investments. At a global level, there has been two distinct sides of the political influence debate. On one hand, researchers like Santiso (2012) and Avendano (2009) suggested SWFs are as politically motivated as mutual funds, that is, not bias at a statistically significant level (10% threshold). On the other hand, however, a more recent study conducted by Knill et al. (2012) concluded that there are political motivations for SWF investments. Given that only 3 years ago, Diallo et al. (2016) found that over 48% of SWF investments in SSA came from China alone, and that there has been similar scaling of Chinese loans into the region, I hypothesis that my results will demonstrate some significant level of political bias.

To include this potential political characteristic of the SWF (Yi), I used the list of political funds from Bortolotti et al. (2015) which placed all SWFs with the managerial independence score of less than 1 as politically-motivated funds (which were given “1” in dummy variable inputs). Unfortunately, I found a few shortcomings of this method, specifically it’s dependency on reporting and governance transparency, as well as the lack of consideration for any significant managerial independence score changes in the past 4 years. The
last concern can be especially pronounced given that younger funds may require a period of hand-holding and heightened government scrutiny.

Although some of the above shortcomings I have discussed are difficult to resolve for the purpose of this study, the need to control for transparency can still be incorporated in the regressions. I narrowed down to two ways of indexing transparency. The first is whether the fund upholds the Santiago Principles according to its annual updated membership list (Santiago Principles Membership Updates, 2017), which has been found to be largely in line with progresses in global government institution quality. However, membership may not be a strong indication of actual adherence to the Principles as report transparency and enforcement lag could interfere with the proxy. Thus, I turned to the second method, using the Transparency Index developed by Carl Linaburg and Michael Maduell (hereafter referred to as the L-M Index) for the Sovereign Wealth Fund Institute. As Zhang (2016) points out in his measuring of transparency for Middle East SWFs, by indexing SWFs on a set of 10 principles (min. 1, max 10 points), the L-M model proves to be a more distilling transparency test than alternatives such as the one proposed in Truman (2008) which only indicates whether funds scores low, medium, or high on its scoreboard. Moreover, L-M scores have been widely adopted by SWFs in their annual reports and is annually compiled in the SWFI’s publicly available reports, which I have sourced for the SWF transparency control characteristic.

In addition to the political fund dummy variable and the transparency control, I wanted to specifically control for Asian SWFs’ tendency to invest a abnormal (average) level of the total capitalization in SSA (in either direction) --a proxy indication for the presence of political motivations. Thus, in my third regression, I will test with a dummy asian SWF variable, which
inputs “1” if the fund \( i \) is based in East or South East Asia and “0” if not. Similar methodology has also been used by Diallo et al. (2016) to test whether Islamic influence of host countries affect their SWFs’ decisions in SSA.

**Hypothesis C:** SWF investments in SSA are positively impacted by cultural similarity between the destination and home countries.

I am motivated to test for cultural factors specifically in the Sub-Saharan region because recent studies have suggested that cultural influences may affect the allocation of SWFs investments made globally. Namely, religion, among other social and cultural factors, is shown to impact individual’s investment choices and increases trust between entities from countries that share the same traits (Guiso et al. 2009). Furthermore, Chhaochharia and Laeven (2009) found that SWFs are also more likely to invest in the cultural familiar and even more so than private funds. To apply religion as the country characteristic \((X_j)\), I first surveyed the religious profile of the region. According to a Pew Forum on Religion and Public Life research (2010), SSA has almost double the population of Christians (62%) to Muslims (31.4%) but the ratio becomes one to one once the scope includes North Africa. Moreover, the Pew Forum data also indicates that there is also significant scale of these two religions in the region, as SSA now hosts approximately one-in-five of all the Christians in the world (21%) and more than one-in-seven of the world’s Muslims (15%). The present population dominance of Christians is also a more contemporary phenomenon since the 1970s, which provides that the religion data is fairly stable (illustrated in Graph 4) when used to match the time period of my SWF dataset between 1985 and 2017. Given that the Christians and Muslims make up more than 90% (approximated based on 2020 projections of 62% and 31% respectively), I will only use the Pew Forum database for the share of these populations in the Sub-Saharan country \( j \). Now that the main X and Y (country
and SWF) characteristics are selected, I want to extend the list of controls, which will be explored under two additional hypotheses.

Graph 4: Growth of Islam and Christianity in SSA (1900-2010)

Source: Pew Forum on Religion and Public Life, 2010
Note: historical estimates from atlases and government records. Recent estimates from U.N population surveys.

**Hypothesis D:** SWFs may be influenced to invest more in countries with better human and technological capital.

Although many countries in SSA continue to have some of the lowest education levels, recent enrollment data suggests that there is a changing picture that could impact economic growth and incentivize emerging-market-targeting investors. Specifically, a Brookings Institute study (Gandhi 2018) found that SSA’s growth in school enrollment ratio, especially in secondary education, has doubled to 10% within the past two decades. Furthermore, countries like Nigeria, South Africa, and Zimbabwe, which received more SWF investments, also have above 10% enrollment ratios. Thus, I use secondary enrollment ratio data from the African Development Bank online database to control for the education influence in SWF investment shares.
In addition to human capital influences, I also want to control for technological capital differences among the country profiles. This is due to specific investing mandate descriptions I found in SWF annual reports, which specifically target investment projects with pioneering innovations such as Temasek’s significant investments in renewable energy, bio-tech, and agri-tech meat alternatives. To approximate how close each country’s technological profile is to what is considered by SWFs as at the forefront of innovation, I use real U.S. GDP per capita from the Penn World Table 9.1 again as the frontier denominator and use it to divide the real GDP per capita of the host country. This proxy method requires that we accept GDP as a good indicator of the level of technological advancement in the given country, which is empirically recognized by Justman & Teubal (1991).

**Hypothesis E:** SWFs may be influenced to invest more in countries with better financial and government institutional quality.

There has been significant literature in the past three decades that debate the effects of corruption on FDI inflows. On one hand, Wei (1995), Mauro (1997), Woo (2010) and Alemu (2012) all suggested that corruption deters investments in different regional studies. On the other hand, findings from Bardhan (1997), and Bellos and Subasat (2011) indicate no significant effects. In addition, a more recent research by Ephaphra and Masswe (2017) found that corruption level in the host country negatively affects FDI inflows only when GDP per capita proxy for market size are removed. Given that SWFs investments may be influenced by corruption similarly to its effects on FDI inflows and the distortion effects of corruption, it is necessary to control for corruption among the selected host SSA countries for this study. As found in Diallo et al. (2016) and the International Country Risk Guide (2017), I will use the corruption sequence (labeled as sequence F) in the Political Risk Components section of the
index to sort the countries’ corruption levels on a scale of 1-6 (low to high corruption). Lastly, I will also be running a regression that combines controlling for corruption with the capital development controls mentioned in Hypothesis D. This is based on Boikos (2016), which finds corruption has negative effects on human capital development and on d’Agostino et al. (2016) which finds corruption negatively impacts GDP per capita growth (my proxy for technological development) as well.

Another institutional factor that can potentially distort SWF investments is financial institutional quality --specifically that of banks and their role ensuring liquidity and investment process efficiency. This is especially important to control for in my research as Guzel, Acar, Sekeroglu (2017) found that SWFs favor investing in listed markets (73%), which requires a higher standard of liquidity and efficiency than unlisted markets. Moreover, Turkisch (2011) concluded that there is a positive relationship where the better the financial efficiency the more incentivized SWFs are to invest in the country. Bank efficiency is measured using the same methodology as Diallo et al. (2016): by the percent of bank overhead costs to total assets as well as the operating cost to total operating income. All data comes from the (1985- 2016) Global Financial Development Database (version July 2018), which is updated biannually. Given that I am using updated numbers from the same data source as Diallo et al. (2016), it is likely that my results will reaffirm its conclusion that banking efficiency may actually negatively influence SWF investment decisions.

Interestingly, Diallo et al. (2016) and Turkisch (2011) suggested using private credit as a proxy for financial development. However, I have omitted this control in my research for two main reasons. First, private credit fails to account for direct loans to the country which can omit
significant financing given that in SSA, many governments are the main agents behind
development loans and credit use. Second, according to Aryeetey (2005), using private credit
overlooks the regional predominance of informal financing, which is both difficult to account for
and essential for measuring overall financial development. Therefore, this study will not control
specifically for financial development and only control for bank institutional quality because
banks are the main transaction counterparties for SWFs investments.

3.3 Results

Based on the inputs and methods discussed in each hypothesis, I ran a total of eight
multivariable regressions on the dependent variable, logarithm of SWF’s share of SSA
investments plus one. The results are summarized in Table 3 and I will discuss preliminary
findings for each regression through their coefficients and statistical significance. The main
variables noted in hypotheses A and B, namely political fund, religious influence, excess returns
and risks are first tested without additional controls in Regression 1 followed by incorporating
variations of single and combinations of controls.
Table 3: Regressions (1-8) Result Summary: Factor effects on share of SWF investments

<table>
<thead>
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<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return</td>
<td>0.313**</td>
<td>0.422***</td>
<td>0.201***</td>
<td>0.392***</td>
<td>0.457**</td>
<td>0.604***</td>
<td>0.314**</td>
<td>1.303***</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td>(0.008)</td>
<td>(0.010)</td>
<td>(0.012)</td>
<td>(0.011)</td>
<td>(0.010)</td>
<td>(0.041)</td>
<td>(0.002)</td>
</tr>
<tr>
<td></td>
<td>(0.231)</td>
<td>(0.008)</td>
<td>(0.207)</td>
<td>(0.410)</td>
<td>(0.511)</td>
<td>(0.609)</td>
<td>(0.163)</td>
<td>(0.331)</td>
</tr>
<tr>
<td>Political</td>
<td>1.531***</td>
<td>0.899**</td>
<td>1.545***</td>
<td>1.470***</td>
<td>1.540***</td>
<td>1.521***</td>
<td>1.425***</td>
<td>1.404***</td>
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<tr>
<td></td>
<td>(0.000)</td>
<td>(0.045)</td>
<td>(0.001)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.004)</td>
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<tr>
<td>Christians</td>
<td>0.010*</td>
<td>0.013**</td>
<td>0.011*</td>
<td>0.010*</td>
<td>0.010*</td>
<td>0.013*</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.094)</td>
<td>(0.005)</td>
<td>(0.069)</td>
<td>(0.336)</td>
<td>(0.067)</td>
<td>(0.064)</td>
<td>(0.064)</td>
<td>(0.191)</td>
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<tr>
<td>Muslims</td>
<td>-0.010*</td>
<td>-0.002</td>
<td>-0.007</td>
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<td>-0.009*</td>
<td>-0.010*</td>
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<td></td>
<td>(0.091)</td>
<td>(0.526)</td>
<td>(0.103)</td>
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<td>(0.099)</td>
<td>(0.099)</td>
<td>(0.081)</td>
<td>(0.552)</td>
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<tr>
<td>SWF Transparency</td>
<td>-0.167</td>
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<tr>
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<td>(0.211)</td>
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<tr>
<td>Dum. Asian SWF</td>
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<td>0.013</td>
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<tr>
<td>Overhead costs</td>
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<td>(0.009)</td>
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<tr>
<td>Cost to income ratio</td>
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<td></td>
<td></td>
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<td>School</td>
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<td>(0.060)</td>
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<td></td>
<td></td>
<td></td>
<td>(0.011)</td>
<td></td>
<td>(0.222)</td>
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<tr>
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<td>-5.810</td>
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<td></td>
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<td></td>
<td>(0.589)</td>
<td>(0.510)</td>
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<tr>
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<td>-0.528</td>
<td>0.010</td>
<td>1.991**</td>
<td>0.966</td>
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<td></td>
<td>(0.201)</td>
<td>(0.032)</td>
<td>(0.299)</td>
<td>(0.392)</td>
<td>(0.270)</td>
<td>(0.047)</td>
<td>(0.117)</td>
<td>(0.565)</td>
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<tr>
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<td>33</td>
<td>47</td>
<td>47</td>
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<td>0.405</td>
<td>0.427</td>
<td>0.418</td>
<td>0.422</td>
<td>0.315</td>
<td>0.449</td>
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</table>

* significance at the 10% level
** significance at the 5% level
*** significance at the 1% level

Regression 1

Regression 1 is control free and tests the relationship of excess returns and risk to the share of SWF investments in the SSA country with the SWF characteristic, political fund, and the country characteristic, religion. Excess return has a positive coefficient and is found to be significant at the 5% level and the coefficient for political fund is found to be positive and significant at the 1% level. This suggests that both above market returns and political bias increases the share of SWF investments in SSA. There is slight effect of religion bias indicated by the 10% significance for both Christians and Muslims, however, both coefficients are very
close to zero. Therefore, I preliminary conclude that SWFs from Christian countries are more likely to invest in SSA while the reverse is true for SWFs from Muslim countries. It is also necessary to note that although risk did not have a statistically significant coefficient, it’s role in the equation is much larger compared to other coefficient numbers (negatively at -4.762), and suggests next steps to either simplifying the model without risk or further test with additional data points.

Regression 2

Based on the rationale given in Hypothesis B, I run the regression while controlling for transparency. The number of observations were reduced to 33 due to three of the SWFs not having a L-M Index score (thus all of its investments could not be controlled for transparency). Excess returns were again positive and significant, this time at the 1% level, as well as political fund at 5% significance but at half the positive magnitude of that of Regression 1. These suggest that excess returns and political bias still increase the share of SWF investments in SSA after removing effects of transparency considerations. Contrastingly, risk is now statistically significant at 1% and doubles the negative coefficient value than that of Regression 1. This suggests that after controlling for transparency, the country’s economic risk decreases the share of investments made in the country. Lastly, the cultural results from the base regression (1) remains largely unchanged except for the increased statistical significance level for the share of Christians to the 10% level and the reverse is true for the share of Muslims. This could be explained by the fact that more of the SWFs from Christian home countries score higher on the L-M Index and are also the same SWFs that are less incentivized to invest in SSA. Further evidences come from the negative coefficient of the SWF transparency control variable (although not statistically significant) and the reduced political fund positive coefficient.
Regression 3

To control for potential influences from Asian (specifically referring to East Asian and South-East Asian origins) mentioned under the Hypothesis B, I regress the variables with the dummy Asian SWF variable. Although the control itself returned positive but not statistically significant, the coefficients for excess return, risk, political fund, and religion were very similar to the base regression (1). In other words, the effects of each variable on the share of SWF investment are generally the same as those in my analysis for Regression 1. Therefore, the hypothesized disproportionate level of political bias from Asian SWF investments may have been already accounted for by the political fund variable, and that these investors are motivated by similar influences as the funds from other regions.

Regression 4

The quality of banking institutions, as discussed in Hypothesis E, is entered as the overhead cost and cost to income controls in this regression. Excess return, share of Christians, and political bias all have positive coefficients and are statistically significant at the 1%, 10%, and 1% levels respectively. Thus, the analysis that these variables increases the share of SWF investments in a given Sub-Saharan country is again similar to those of the base case after controlling for financial system efficiency. In addition, both control measures had statistically significant coefficients at the 1% level, however, the overhead cost to total assets had a negative coefficient at -0.378, while the cost to income had a weaker positive coefficient at 0.036. This result could mean that SWFs may actually invest more in countries that have poorer institutional efficiency in banking, which is contrary to Turkisch (2011) results and confirms Diallo et al.
(2016) findings. It is also means that the same relationship between these controls and the share of investments has remained relatively constant between 2013 and 2017.

Regression 5

Based on the potential influences of higher education on SWF investment decisions, I control for the Hypothesis D factor of secondary school enrollment in Regression 5. The coefficient for enrollment returned positively and significantly, which suggests that improving human capital also improves the share of SWF investments made in the country. At the same time, the significant coefficients for political bias, Christian cultural bias, and excess return reaffirm the base case results that these variables positively influence SWF investment decisions in SSA. Lastly, the results also suggest that the share of Muslims in the country could decrease the share of SWF investments.

Regression 6

Also discussed in Hypothesis D is the impact of technological capital, which translates to controlling for the innovation proxy (GDP per capita gap between the U.S. and country j). The control variable coefficient is statistically significant at the 5% level and enters at a positive magnitude much higher than any other control’s coefficient (0.746). This shows that SWFs are very likely to invest in Sub-Saharan countries with better technological capital. Furthermore, the results show that after controlling for technological capital effects, SWFs are still likely to invest more when there is more excess return, political bias, share of Christians, and less share of Muslims in the country. This is further affirmed by the fact that the coefficient for excess return also doubles that of the base case after controlling for the innovation effects.
Regression 7

The last control variable is the corruption index used to proxy institutional quality in Hypothesis E. The coefficient for political fund is positive and significant at the 1% level and slightly lower than the base case. This suggests that corruption may have some positive relationship with political bias although the coefficient for the control variable is not a large value nor statistically significant. The religious biases also test slightly positive and significant at the 10% level for share of Christians and slightly negative for share of Muslims -- as they did in most previous regressions.

Regression 8

Finally, I run the regression while controlling for the combined human and technological capital development controls mentioned in Hypothesis D with the corruption control (the rationale is explained in Hypothesis E’s corruption section). The coefficients for excess returns and political fund variables return positive and significant at the 1% level, and the former coefficient is noticeably at a bigger magnitude than previous regressions (1.303). This further suggests that SWF investors are mainly attracted to invest based on favorable excess return levels and if they are politically-motivated to invest in SSA. Although the role of the coefficient of multiple determination (R Squared) is more of a secondary fit check, it is necessary to note that this coefficient is higher than that of regressions 5 through 7 because there are more variables combined in regression 8.
3.4 Conclusion and Policy Implications

In this study, I conducted multivariable regressions using data from 28 SWFs between 1985 and 2017, which included a base case for regressing the dependent variable (the logarithm of the share of SWF investments plus one) to risk, return, and various national and SWF vehicle characteristics, and subsequent cases controlling for transparency, Asian fund presence, financial institution quality, capital development factors and corruption. All regressions supported Hypothesis A, which suggest SWF investors, like their private investment counterparts, predominantly increase their investments in SSA when they earn excess returns (but less so influenced by risk). All regression results also found that SWFs that are political funds, tend to invest more into the region. This confirms my Hypothesis B as well as the findings in Knill et al. (2012) and Diallo et al. (2016) but contradicts Santiso (2012) findings. Interestingly, the results did not deviate when controlling for Asian SWFs as I originally hypothesized. In addition, there were a few regressions that found slight influences of cultural bias that suggest religion similarities between the host and home countries boosted investments only in the case of Christianity and actually decreased share of investments in the case of Islam. Thus, my Hypothesis C is only partially correct that SWF investments in SSA are positively impacted by cultural similarity and partially agrees with Chhaochharia and Laeven (2009). Furthermore, the results affirm my Hypothesis D that SWFs are influenced to invest more in countries with better human and technological capital. Lastly, contrary to my Hypothesis E, although curbing corruption may encourage more SWF investing, good institution quality in finance did not positively affect the share of SWF investments into the region, and the banking inefficiency actually promoted more investments.
There are several policy implications for Sub-Saharan countries looking to attract long-term capital from foreign SWFs. First, although they should strive to promote transparency, improve financial system efficiency, and curb corruption in their own SWFs, prioritizing these factors does not lead to incentivizing further SWF capital inflow. Instead, countries should focus on improving secondary education enrollment, and technology development towards the U.S. level to create an economic growth environment conducive to generating excess returns for private and SWF investors alike. In fact, Sub-Saharan countries should prioritize attracting SWFs from countries with cultural similarities, especially if there’s a dominant share of Christians in the population, and make use of SWFs that have less managerial independence and thus more political motivated to invest long term in the country for additional political reasons. These prioritizations are not without economic and political risks. Therefore, host countries in SSA should still strive to diversify their sources of long-term financing both through increasing the number of SWF investors and through establishing their own SWF models that best fits their needs and profiles. Given the growing infrastructure investment participation of China in the region, establishing or attracting SWF vehicles may become one of many ways to economically and politically balance out long-term investment interests, mitigate dependency risks, and protect the host country’s future political and economic autonomy. Based on these conclusions and implications, future research should focus on determining SWF impacts on infrastructure investments in the region and evaluating whether domestic SWFs can sustainably fuel key state projects that will ensure stable economic development.
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