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The state of research on sovereign wealth funds

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ABSTRACT

The new global economic and political environment brings new challenges to sovereign wealth funds (SWFs) and forces them to adopt new strategies to adapt to the environmental changes. This study is a sequel to Fotak, Gao, and Megginson (2017). We focus on the newly produced research on SWFs and confirm the impact of new environmental changes on SWFs' asset allocations and decision-making process. Recent studies on cross-border SWF investments show that SWFs are different from other private institutional investors although no evidence explicitly proves that SWFs have exerted political influence on recipient countries through their cross-border deals. SWFs are improving their transparency. However, the variations in transparency and institutionalization are attributed to the disparities in national culture, political regime, and internal political dynamics. We re-examine the long-term impact of SWF investments on target firms and industries and affirm the necessity to consider the heterogeneity among SWFs. We also survey the research investigating the government's motivations to establish new SWFs.

1. Introduction

Huge assets under management, providing financing flexibility and liquidity, sovereign background, and lack of transparency. These labels make Sovereign Wealth Funds (SWFs) an extremely important but unique group of institutional investors in international capital markets. Two recent surveys—Megginson and Fotak (2015) and Fotak, Gao, and Megginson (2017)—summarize SWFs' history, capital allocation strategies, and impact on investment targets. In the traditional view, SWFs are giant government investment vehicles with rapid asset growth. They lack short-term liability and liquidity needs and prefer to make long-term investments in the financial and real estate sectors of developed countries. However, by observing the changing international political and economic environment in recent years, we realize that SWFs are in a critical transition period with new challenges.

The prolonged depression of oil prices after mid-2014 has seriously affected the revenues of energy exporting countries. The rise of protectionism and escalating international trade frictions may potentially pose financial pressure on emerging economies with trade surpluses. SWFs from traditional resource exporting or trade surplus countries face the situation that they may receive reduced financial support from home country governments, or may be required to help the domestic economy and budgets. The reduction of funding sources and potential increase of financial needs force SWFs to require higher returns from their investments. However, their traditional target countries, such as the United States, United Kingdom, and other European countries, have shown increased political and economic uncertainty in recent years due to the rise of unilateralism, security issues, Brexit, and other political events. Investment returns from the financial sector have declined after the crisis, and the real estate sector has also failed to provide

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attractive returns recently due to intense competition and high prices. Under new circumstances, it is important to understand how SWFs make changes to overcome difficulties in funding sources and boost returns.

This article is a sequel to our 2017 survey paper. For the sake of brevity and avoiding duplication, we do not repeatedly summarize the papers cited in our earlier survey, but rather focus on the studies produced recently (mainly after 2015). We review the academic and practitioner articles investigating the impact of the new political and economic environment on SWF asset allocations and decision-making processes. At the academic level, we also survey recent research advances on open or previously unresolved questions. First, we examine studies debating the benefits and costs of cross-border SWF investments to recipient countries. Second, we focus on the research exploring the factors that influence a SWF's transparency and the reasons for some SWFs to remain opaque. Third, the impact of SWF investments on target firms or industries is re-examined. We put an emphasis on the articles investigating the long-run post-investment market reactions and operating performance since the findings of previous studies are inconclusive. Last, we survey the research scrutinizing the motivations of countries to establish new SWFs.

2. SWF asset allocation strategies under new environments

The rise of SWFs as international investors has doubtless caught the attention of practitioners, policymakers, and academics all over the world. According to [Bortolotti, Fotak, and Loss \(2017\)](#), the aggregated assets under management of all SWFs is around \$8 trillion in 2017, which is triple the size of private equity funds and is more than twice as large as hedge funds. As one of the largest classes of asset managers in the global market, SWFs are usually viewed differently from other classes of international investors due to their sovereign nature. Their funds are majorly from commodity sales (such as crude oil and natural gas) and foreign currency reserves from trade surplus. Since they are owned by sovereign governments, SWFs do not have liabilities and do not have short-term liquidity needs, which makes them more long-term oriented when making investment decisions. Due to the change of economic and political environments in recent years, SWFs are in a transitional period. Crude oil prices started falling rapidly in late 2014. In just six months, the prices dropped from more than \$100 per barrel to less than \$45 per barrel. These bounced back to around \$60 per barrel in the second quarter of 2015, but fell again sharply to less than \$27 per barrel by the beginning of 2016. After that, although the price of oil rebounded somewhat, they fluctuated around \$50 per barrel until the end of 2017. The plummeting oil price seriously affected the income of oil exporting countries. Furthermore, it cut off the source of funds for the relevant commodity based SWFs. Besides the oil price collapse, the GDP growth rate of emerging economies has slowed down since 2010 and reached a low point in 2015. Coupled with burgeoning protectionism, the trade surplus of emerging countries has shrunk and their foreign exchange reserves have decreased. This limits governments' ability to inject sufficient funds to their foreign exchange based SWFs. Therefore, both commodity based and non-commodity based SWFs may no longer receive adequate funds from their governments, as they did before. The potential shortage of funds forces SWFs to change from asset accumulators to asset managers and to start changing their investment strategies and governance roles to chase for higher returns. Besides the economic environment change, political events such as Brexit and the election of a new U.S. president, increased the political uncertainty in western markets and challenged the investment choices of SWFs, which traditionally have allocated most of their capital in western countries. In this section, we first survey recent studies examining the target selection criteria and investment decision-making process of SWFs. Second, we review articles investigating the change of SWF asset allocation and management strategies under these new economic and political environments. Finally, we summarize the research focusing on the impact of SWFs on their home countries. A brief summary of the related studies is shown in [Table 1](#).

2.1. SWF Investment Target Selection Criteria and Decision-Making Process

Our 2017 survey paper summarizes twelve articles addressing how SWFs should allocate their capital theoretically and another thirteen studies empirically investigating how SWFs make their investment decisions in reality. For the sake of brevity, we do not repeat reviews of all twenty-five articles here. However, we focus on five recent studies falling into the above two categories and discuss their connections to the previous literature. The five articles are summarized in Panel A of [Table 1](#).

A major debate in the SWF literature is whether SWFs behave like other classes of international investors with profit maximization goals. [Boubakri, Cosset, and Grira \(2016\)](#) approach this question by comparing the target selection criteria between SWFs and another group of institutional investors, pension funds. 344 firms targeted by SWFs and 663 firms into which pension funds invest are included in their study. Their results show that, compared to pension funds, SWFs are more likely to be attracted by firms with higher profitability, operating in strategic industries, and operating in countries with weaker legal and institutional environments and greater economic growth. Additionally, SWFs are less concerned about a firm's size, liquidity, and dividend payout than are pension funds.

[Debarsy, Gnabo, and Kerkour \(2017\)](#) investigate the impact of the national macroeconomic and political factors on cross-border SWF investments. Different from previous research, the authors assess the spatial interaction and competition among recipient countries with geographical, economic, and cultural similarities. By exploring a self-constructed database containing the net SWF capital inflows of 43 recipient countries over the period of 2004 to 2009, they first find that countries with higher GDP per capita, more developed financial systems, lower stock market volatility, and better political stability attract more capital inflows from foreign SWFs. This is consistent with previous literature [[Candelon, Kerkour, & Lecourt, 2011](#) and [Ciarlone & Miceli, 2016](#)]. Second, cross-border SWF investments are also positively related to the amount of capital injection from recipient countries' domestic SWFs. Finally, it is confirmed that there exists a certain level of competition for cross-border SWF capital among "neighboring" countries with close economic ties or similar cultures. An increase in SWF investments in one country might result in lower SWF investments in

Table 1

Summary of recent studies of SWF asset allocation strategies under new environments.

Study	Research question and methodology	Summary of findings and conclusions
Panel A		
Akyol and Cicen (<i>Turkish Economic Review</i> , 2017). The role of institutional factors when determining investment strategies of sovereign wealth funds in stock market.	Focus on one New Zealand SWF and examine its investments in 42 countries over the period of 2010 to 2015. Study different factors explaining the SWF's investment strategies.	Find that a country may attract more SWF investments if it has higher GDP growth, weaker protection to private property rights, and higher degrees of investment, labor, and monetary freedom.
Debarsy, Gnabo, and Kerkour (<i>Journal of International Money and Finance</i> , 2017). Sovereign wealth funds' cross-border investments: Assessing the role of country-level drivers and spatial competition.	Use the data of annual cross-border SWFs net capital inflows for 43 recipient countries over the period of 2004 to 2009 to study the impact of national political and economic factors on cross-border SWF investments. Also investigate the spatial interaction effect among recipient countries.	Countries with higher GDP per capita, better financial development and political stability, and lower stock market volatility tend to attract more SWF investments. There exists a competitive relationship among countries with geographic, economic, and cultural similarities. The SWF investment increase in one country is at the cost of its "similar" countries.
Gnabo, Kerkour, Lecourt, and Raymond (<i>International Economics</i> , 2017). Understanding the decision-making process of sovereign wealth funds: The case of Temasek.	Focus on 291 acquisitions made by the Singaporean SWF, Temasek Holdings, over the period of 1990 to 2010. Investigate Temasek's investment decision-making process.	Temasek is more likely to invest abroad when Singapore's foreign exchange reserves increase rapidly. Temasek prefers unlisted firms when the recipient country is culturally closer to Singapore and has better governance. Temasek tend to acquire a majority stake when the target firm has higher asset growth rate but lower debt growth rate and when the recipient country has higher degree of financial openness.
Boubakri, Cosset, and Grira (<i>Journal of International Financial Markets, Institutions & Money</i> , 2016). Sovereign wealth funds targets selection: A comparison with pension funds.	Examine 344 firms targeted by SWFs over the period of 1991 to 2011 and compare to 663 firms targeted by pension funds in the same period. Investigate how SWFs make investment decisions and select targets differently from pension funds.	Compared to pension funds, SWFs are more likely to target profitable firms in strategic sectors and in countries with higher economic growth and weaker legal and institutional environments. They are less attracted by firm size, liquidity, and dividends.
Diallo, Tchana, and Zeufack (Working paper, 2016). Sovereign Wealth Funds and Long-Term Investments in Sub-Saharan Africa.	Investigate 26 SWFs making investments in Africa over the period of 1985 to 2013. Study the factors affecting SWF investments in Africa.	Africa receives the least share of SWF investments compared to other regions in the world. Real estate and hotels are the most targeted sectors in Africa and most SWF investments are made by Asian funds. GDP growth rate and being a "political fund" are another two factors positively related to SWF investments in Africa.
Panel B		
Martinez-Oviedo and Medda (<i>Journal of Economics and Business</i> , 2017). Assessing the effects of adding timberland and farmland into resource-based Sovereign Wealth Fund portfolios.	Conduct a case study with Norway's Government Pension Fund Global. Examine if including natural assets (such as timberland and farmland) in a SWF's strategic asset allocation may positively affect the performance of its portfolio.	Find that adding natural assets into a SWF's asset allocation may positively affect its portfolio performance by showing higher returns, lower volatility, and better resilience against financial downturns. In addition, timberland and farmland can be used as a good hedging property against commodity price risk.
Pauhofova and Svocakova (<i>Ekonomicky Casopis</i> , 2016). Impact of oil prices on sovereign wealth funds (the assets and investments).	Use SWFs in Canada, Kazakhstan, Norway, Russia, Saudi Arabia, and UAE to empirically study the impact of oil price changes on SWF asset growth and foreign direct investments.	Confirm that oil price changes have significant impacts on the asset growth of SWFs in Norway, Kazakhstan, and Russia. The impact on Russian SWFs is the greatest among the three countries. Find a positive relationship between the oil prices and the foreign direct investments of an individual country. This positive relationship is more pronounced if the individual country has an oil-based SWF.
Panel C		
Vasudeva, Nachum, and Say (<i>Academy of Management Journal</i> , 2018). Overcoming information asymmetry in internationalization: The signaling effect of a sovereign wealth fund as an institutional intermediary.	Investigate whether SWF investments send signals about the institutional environment of host countries to home country acquirers and other internationalizing firms. Select Norway's GPF as the signaler. Sample includes 4003 cross-border acquisitions spanning 47 host countries made by Norwegian and Swedish firms over the period of 1998 to 2011.	Confirm the signaling effect. Internationalizing firms are more likely to acquire full rather than partial ownership in target firms if SWFs make larger investments in the same country. Larger SWF investments signal higher institutional quality of host countries. However, this signaling effect weakens when internationalizing firms have alternative information channels or when the information asymmetry level between the home country and host country is relatively lower.

(continued on next page)

Table 1 (continued)

Study	Research question and methodology	Summary of findings and conclusions
Mohaddes and Raissi (<i>Journal of Commodity Markets</i> , 2017). Do sovereign wealth funds dampen the negative effects of commodity price volatility?	Construct a sample of 69 commodity-dependent countries over the period of 1981 to 2014. Investigate if SWFs may mitigate the negative impact of commodity price volatility on long-term economic growth of commodity-dependent countries.	Confirm that higher commodity price volatility harms the long-term economic growth of commodity-dependent countries through the total factor productivity and physical capital accumulation channels. Find that having a SWF may help dampen the negative effects of commodity price volatility, especially in countries with higher institutional quality.
Huat (<i>The Pacific Review</i> , 2016). State-owned enterprises, state capitalism and social distribution in Singapore.	Analyze the “Singapore model” and examine how Singaporean SWFs support social expenditure, help stabilize domestic economy, and increase social welfare.	Around half of the investment income of SWFs is used to support national budgets. It enables the government to increase social expenditure without increasing the tax burden of citizens, stabilizes the national currency, and increases social welfare through a subvention to low income groups.

its similar “neighbors”.

Diallo, Tchana, and Zeufack (2016) solely focus on SWF investments in Africa. They report that Africa has the least attraction for SWFs compared to other markets in the world. SWFs established in African countries tend to invest outside of Africa. By examining 26 SWFs making investments in Africa in the period 1985 to 2013, the authors conclude that Asian SWFs show stronger interest in Africa compared to other SWFs, and real estate and hotels are the most targeted sectors. Additionally, they find that African countries having higher GDP growth rates may attract more SWF investments. SWFs with more political involvements (so called “political funds”) are more likely to invest in Africa.

Gnabo, Kerkour, Lecourt, and Raymond (2017) study the decision-making process of SWF investments. Instead of examining a group of SWFs, they follow the approach of Heaney, Li, and Valencia (2011), which is included in our previous survey paper, and focus on one of the largest and most active SWFs, Temasek Holdings. Unlike Heaney et al. (2011), who investigate corporate level target selection criteria, Gnabo et al. (2017) ask three interdependent questions regarding the investment decision-making process of SWFs: 1) Domestic or foreign targets? 2) Public or private target firms? 3) Large or small investments? With 291 investments made by Temasek over the period of 1990 to 2010, the authors find that Temasek is more likely to make cross-border investments when the growth rate of foreign exchange reserves in Singapore increases. Moreover, Temasek tends to target private firms when the recipient country is culturally closer to Temasek's home country, Singapore, in terms of language and geographical distance and when the recipient country has better governance than the fund's home country. Lastly, Temasek is willing to make larger investments when target firms have higher total asset growth rates but lower debt growth rates and when target firms operate in countries with higher degrees of financial openness.

Similar to Gnabo et al. (2017), Akyol and ÇİÇEN (2017) also focus on a single SWF, from New Zealand, to study the impact of institutional factors on SWF investment decisions.¹ The authors explain that the high transparency of the fund is the reason that it is selected. Using equity investments made by this New Zealand SWF over 42 target countries in the period 2010 to 2015, they claim that countries with faster economic growth and higher degrees of investment, labor, and monetary freedom may attract more SWF investments. However, countries with stronger protection of private property rights receive less SWF investments than countries with weaker protection to private property rights.

2.2. Change in asset allocation and management strategies

The changing global economic and political environment over the past few years has hugely influenced SWF operations and has forced them to change their investment and management strategies. In response to the new global environment, SWFs are compelled to manage the potential reduction in the capital injections from their home country governments, explore new investment opportunities with higher returns, restructure their portfolios to avoid potential macroeconomic and political risk, and help support their domestic financial budgets and stabilize economies. In this section, we summarize the changes in SWF asset allocation strategies using the data from two recent reports generated by the Sovereign Investment Lab (SIL) and the International Forum of Sovereign Wealth Funds (IFSWF), respectively. We also include one study examining the effect of an investment strategy improvement and another study evaluating the impact of oil price changes on SWF asset growth and investments. The two studies are summarized in Panel B of Table 1.

In order to draw a clear picture about how SWFs switch their asset allocation strategies, we compare two recently published reports: “Hunting Unicorns: Sovereign Wealth Fund Annual Report, 2016,” by SIL, and “Dealing with Disruption: IFSWF Annual Review, 2017,” by IFSWF. Both influential reports describe SWFs' investment patterns in recent years in terms of amounts, sectors, investment forms, and geographical locations. Due to the slightly different definitions of SWFs, there exists a difference in the number

¹ The formal name of the New Zealand SWF is never mentioned in Akyol and Cicen (2017). However, we reasonably conjecture that their selected New Zealand SWF is the New Zealand Superannuation Fund founded in 2001.

of deals and values of SWF direct equity investments between the two reports. However, they show consistent patterns. The total amount of SWF investments sharply declines after 2015, in response to the low oil prices, slowdown of economic growth, and increased global political uncertainty. The shrinkage in investments is mainly from commodity-based SWFs. Apparently, the prolonged downturn in oil prices has hurt the export revenue of commodity-dependent countries, which may further limit their governments' financial support to SWFs. However, energy-consuming countries may benefit from the low oil prices and boost their economies with higher foreign reserve accumulations. This view is consistent with the data showing slight increase in non-commodity SWF investments. Overall, we must admit that the new normal of falling commodity prices, slowing economic growth, and emerging trade protectionism and unilateralism challenge SWFs' traditional asset accumulation and allocation models. Both types of SWFs appear eager to seek out new operating strategies balancing the financial demands of domestic governments and the need for organic growth.

In our previous survey article, we reported a "shift to real estate" SWF investment pattern. However, the recent data shows that this preference for real estate is no longer there. The total investments in real estate started shrinking in 2015 after reaching a historic high in 2014. This new "shift away from real estate" pattern has continued and become more evident in recent years. There are two explanations. On one hand, more institutional investors have recently entered this market, pushing up the real estate prices and making future returns lower than the expectations of SWFs. Several SWFs caught this opportunity to exit this market and realize positive returns. On the other hand, due to the increased global political uncertainty, SWFs have changed their strategies to stay away from real estate investments in order to avoid potential geopolitical risk. Besides real estate, other safe assets, such as infrastructure and utilities, have also received fewer investments from SWFs after 2015. Insufficient expected returns from safe assets and more stringent regulatory restrictions from host countries against foreign investments in this sector have prompted SWFs to depart from safe assets and target other sectors that are more attractive in terms of returns. One eye-catching trend is that SWFs have continuously increased their asset allocation on high-tech and disruptive industries such as artificial intelligence, biotechnology, and new materials. This is different from their traditional safe-play strategy. Apparently, they are changing their risk-taking behavior in exchange for higher returns to surmount the economic pressures under new global economic and political situations.

It is also worth noting that SWFs are more willing to make co-investments through partnerships. This change in investment form has reduced the risk exposure of SWFs and, to a certain extent, alleviated the concerns about their sovereign backgrounds, enabling SWFs to better access diversified asset classes. In addition, SWFs are exploring new methods to collaborate with private equity funds or other strategic investors to develop their direct investment strategies and lower investment costs. In terms of the geographical location of SWF investments, The U.S. is reported as the most popular market in 2016. Although the U.S. presidential election increased the political uncertainty in that year, with favorable economic data, the U.S. market has retained its attractiveness to international investors. On the contrary, European markets failed to maintain their magnetism to SWFs in the same year. Due to the increasing security issues and the political and economic instability in Europe, SWFs are compelled to leave this traditionally favored market and allocate more capital to other markets with more controllable risks and healthier returns. India is another rising market for SWF investments. According to IFSWF's 2017 report, the total investment of SWF in India in 2017 was \$2.9 billion, an increase of 70% compared with 2016. By targeting the financial services sector and other privatizing firms, SWFs obviously expect to benefit from the fast-growing Indian economy.

One specific channel for SWFs to respond to the oil price collapse and equity market downturn is to change their traditional strategic asset allocation and include more illiquid assets, such as natural assets, into their portfolios. [Martinez-Oviedo and Medda \(2017\)](#) highlight this ongoing trend and conduct research studying how an oil based SWF's portfolio is affected if they reallocate their capital and add timberland and farmland into their investments. The authors select the Norwegian Government Pension Fund Global (GPF) to execute a case study. By employing the Norway model, they compare the performance of portfolios with different asset allocations. Their results indicate that the increased investments in timberland and farmland may help improve the SWF's portfolio performance by showing higher returns, lower volatility, and stronger resiliency against financial downturns. The effect is more pronounced when equity investments, rather than real estate or fixed income investments, are replaced by natural assets investments. Furthermore, they state that timberland and farmland investments can be used to hedge the oil price risk due to their low sensitivity to energy price changes.

[Pauhofová and Svocáková \(2016\)](#) empirically confirm that the change in oil prices may positively affect the asset growth rate of oil based SWFs in Norway, Kazakhstan, and Russia. Among the three countries, a shock in oil prices generates the greatest and long-lasting impact on the asset accumulation of Russian SWFs, but has the least impact on the Norwegian GPF. Additionally, the authors find a positive relationship between the oil price level and an individual country's foreign direct investments. They claim that this positive correlation is more conspicuous if the country has oil-based SWFs. This article, in some sense, provides evidence supporting our statement that the slump in oil prices after the middle of 2014 affected SWFs' capital accumulation and forced them to act as asset managers and actively chase higher investment returns.

2.3. SWFs' impacts on their home countries

Although SWFs do not belong to a homogeneous group and may pursue various objectives, sovereign governments establish SWFs to manage their current resources, and they expect SWFs to benefit their countries and citizens when their countries encounter economic difficulties or have financial needs in the future. We have observed a slight rebound in crude oil prices in 2018, but they are still much lower than the level before late 2014. The new normal of oil prices has affected the fiscal revenues of oil exporting countries. The slowdown in economic growth and the rise of protectionism have had negative impacts on global trade and hurt the economies of traditional trade surplus countries. Although we have not perceived many governments withdrawing funds from SWFs,

under the new world economic and political landscape, it is critical to understand whether and how countries with economic turbulence may use their SWFs to support government budgets and help stabilize domestic economies. In this section, we survey two recent articles discussing the impacts of SWFs on their domestic economies and include a third study investigating the signaling effect of SWF investments on domestic cross-border acquirers. The three articles are summarized in Panel C of [Table 1](#).

[Huat \(2016\)](#) analyzes the influence of Singaporean SWFs on the city state's domestic social economy. SWFs are used to accumulate state capital and their operating revenue may be used to finance government budgets, stabilize domestic markets and economy, and realize capital redistribution to increase social welfare. According to the "Singapore model" in the paper, around half of the return from SWF and other government investments is reinvested for future capital accumulation, and the other half is retained by the government to support national budgets. Based on the author's estimation, the total financial contribution from the two Singaporean SWFs (Temasek Holdings and Singapore Investment Corporation) and the Monetary Authority of Singapore accounts for 2% of Singapore's GDP and 12% to 15% of the government's annual operating budget. This financing channel is crucial to the Singaporean government. With the financial support from SWFs, Singapore does not have to tie their economic development to the support of outside financial institutions. The government can better finance its social expenditures without increasing the tax burden on its citizens and increase the social welfare by explicitly or implicitly subsidizing low-income groups. Finally, the profit from SWF investments may help Singapore stabilize its currency and better implement its economic stimulation plans during financial crises.

[Mohaddes and Raissi \(2017\)](#) verify that commodity price volatility (measured by the volatility of commodity terms of trade) hurts the long-term economic growth of commodity-dependent countries through the total factor productivity and physical capital accumulation channels. However, by comparing 29 commodity-dependent countries with SWFs with another 40 commodity-dependent countries without SWFs, they draw a conclusion that the negative impact of commodity price volatility on a country's economic growth can be mitigated if the country has a SWF. Furthermore, this mitigating effect is stronger if the country also has higher institutional quality.

[Vasudeva, Nachum, and Say \(2018\)](#), from a unique and interesting perspective, discuss how SWFs serve their home country acquirers and other similar internationalizing firms. They propose a signaling hypothesis arguing that SWF investments send signals regarding the institutional quality of host countries to their home country acquirers and other observing firms seeking cross-border investments. The authors choose Norway's SWF (GPF) as the signaler and build a sample with 4003 cross-border equity acquisitions over 47 target countries originating from Norwegian and Swedish firms in the period of 1998 to 2011. They find that when GPF increases its investments in one country, these Norwegian and Swedish firms are more likely to acquire full rather than partial ownership of target firms in the same country. However, this signaling effect is weaker if an acquirer is a co-national firm or if the acquirer's host and home countries are in one or more inter-governmental organizations (IGOs). Co-national firms may have more channels to receive information about a host country's institutional quality from its government. While being in the same IGO implies that the two countries may share similar social, economic, or political institutions and it lowers the information asymmetry faced by cross-border acquirers. In both cases, the signal from SWF investments seems redundant.

3. The continuing debate concerning cross-border SWF investments

SWFs have grown to be one of the most important group of institutional investors in the international market. By entering into foreign markets, SWFs may find investments with more favorable returns and diversify revenue streams to hedge domestic economic and political risks. However, recipient-country governments are always concerned by this type of cross-border investments and might view them as a threat to their domestic economic security. Although [Bortolotti, Fotak, and Megginson \(2015\)](#) have pointed out that SWFs tend to behave like passive investors and rarely vote against incumbent managers, due to their sovereign nature, SWFs are often suspected of being strategic investors with political objectives and may exert political influence on recipient countries or access foreign technologies. Additionally, the huge amount of foreign equity investment from SWFs may increase the financial market volatility of recipient countries and create equity price bubbles. Although several governments seemingly start changing their negative attitude towards SWFs after observing the role of SWFs in providing market liquidity during the 2008 Financial Crisis, the debate about cross-border SWF investments has never halted, and has drawn the attention from researchers, practitioners, and policymakers. We summarize nine recent academic studies in [Table 2](#). They provide us new evidence regarding the security implications of foreign equity investments by SWFs.

[Kamiński \(2017\)](#) and [Sun, Li, Wang, and Clark \(2014\)](#) focus on Chinese SWF overseas investments in the energy sector. Energy, due to its scarcity, has always been regarded as a strategic resource by governments around the world. Recipient country governments and policymakers are sensitive to overseas investments in their energy sector, especially when the foreign investors are state-owned or are from countries with different ideologies. According to [Kamiński \(2017\)](#), Chinese SWFs invested more than \$16 billion in the energy sector of European Union (EU) countries from 2007 to 2014. This enormous amount of investment is a result of Chinese government's strategic policy of sustaining long-term economic development by securing access to foreign energy resources. [Kamiński \(2017\)](#) argues that the strategic investments in energy markets by Chinese SWFs might potentially hurt the interest of EU countries. The author believes that the negative impacts come from the potential political pressure/influence from controlling Chinese SWFs or the possible transfer of sensitive information/technology from European companies controlled by Chinese SWFs to Chinese competitors, although no solid evidence of this occurring is presented in the paper. [Sun et al. \(2014\)](#) also confirm the non-commercial use of Chinese SWFs and describe them as strategic investors. Their overseas investments in the energy sector are motivated by the Chinese government to ensure China's energy security. The authors realize the concerns and debates in western countries and suggest that a more transparent operation environment, better cooperation with domestic energy enterprises, better understanding about the energy field, more diversified investments managed by professionals, and more capital allocation to

Table 2

Summary of recent studies of cross-border SWF investments.

Study	Research question and methodology	Summary of findings and conclusions
Bortolotti, Fotak, and Loss (Working paper, 2017). Taming Leviathan: Mitigating political interference in sovereign wealth funds' public equity investments.	Construct a sample of 1018 SWF investments over the period of 1980 to 2012 and a "benchmark" sample of 5975 equity investments by non-government-owned financial institutions. Investigate the determinants of the "SWF discount" and study how to mitigate this discount.	Confirm the "SWF discount". Find that this discount is larger for SWFs from autarchic countries. Autarchic SWFs may mitigate this discount and lead to greater target firm profitability and valuation by taking a passive stance and reducing the threat of political interference. However, they tend to take an active stance and value their influence on domestic targets. Investors are less concerned about the political interference when SWFs making cross-border investments.
Calluzzo, Dong, and Godsell (<i>Journal of International Business Studies</i> , 2017). Sovereign wealth fund investments and the US political process.	Use the 2010 Citizens United ruling as a quasi-natural experiment. Investigate if SWFs are attracted by U.S. campaign finance firms to gain access to the U.S. political process.	Find that SWFs are increasingly attracted by the U.S. campaign finance firms after the legislative shock liberalizing corporate campaign finance activity. These campaign finance firms increase their political contributions after receiving SWF investments. Also find that this attraction to campaign finance firms is more pronounced in industries where foreign investments are subject to stringent restrictions. Confirm the non-financial objectives of cross-border SWF investments.
Lattanzio and Megginson (<i>Wake Forest Law Review</i> , 2017). International relations and sovereign wealth funds' political value: Evidence from a quasi-natural experiment.	Use the 2016 U.S. presidential election as an exogenous shock to international political relations. Construct a hand-collected sample with 52 public U.S. firms partially owned by four SWFs. Examine if the political value of SWFs is reflected in the market.	Since Muslim countries were attracted by then-candidate Trump during his presidential campaign, firms partially owned by the Middle East SWFs experienced greater negative market reactions after knowing the electoral outcome than the ones partially owned by non-Muslim SWFs. Confirm the political value of SWFs. Against the view that SWFs are completely lack of political involvement.
Kaminski (<i>Energy Policy</i> , 2017). Sovereign wealth investments in Europe as an instrument of Chinese energy policy.	Study 34 investments made by Chinese SWFs in the energy and natural resources sector in the European Union from 2007 to 2014. Examine if Chinese SWFs carry political purposes or are used to implement Chinese foreign policies.	Claim that Chinese SWFs are different from other private investors on the energy market. Chinese SWFs carry political motives and should be treated differently. They might hurt the interest of EU members by transferring sensitive information to Chinese competitors. In addition, China might use their SWFs to control target European energy companies to increase their political influence in Europe.
Thatcher and Vlandas (<i>Socio-Economic Review</i> , 2016). Overseas state outsiders as new sources of patient capital: Government policies to welcome sovereign wealth fund investment in France and Germany.	Execute a case study on SWF investments in France and Germany and study how policy makers in the two countries react to foreign SWF equity investments. Investigate whether financial liberalization and internationalization may bring in new overseas patient capital.	Find that governments and managers of industrial firms in France and Germany not only welcome, but also actively seek for SWF investments. They direct SWF investments to certain sectors and firms that require patient and passive capital.
Bortolotti, Fotak, and Megginson (<i>Review of Financial Studies</i> , 2015). The sovereign wealth fund discount: Evidence from public equity investments.	Construct a dataset of 1018 investments by SWFs (or by SWF-owned investment subsidiaries) in publicly traded firms completed over the 1980-November 2012 period. Generate a "benchmark" control sample of stock purchases by financial investors from the same home countries as the sample of SWFs, targeted at firms headquartered in the same countries as SWF investment targets, and executed over the same time period	Find that announcements of SWF investments are associated with significant mean abnormal returns of 0.9% over (-1, +1), including investments by Norway's GPF, and 2.45% without Norway. However, these are significantly lower than the 5.02% mean abnormal returns generated by the private benchmark investors, implying the existence of a sovereign wealth fund "discount" due to their government ownership.
Mietzner, Schiereck, and Schweizer (<i>Journal of Asset Management</i> , 2015). The role of sovereign wealth funds as activist or passive fund managers.	Construct a sample including SWF investments in 147 target firms worldwide over the period of 1989 to 2008. Investigate whether SWFs play an active or passive role when making cross-border investments.	Find that SWFs tend to target larger firms with higher profitability, dividend payouts, and financial stability. Target firms' long-term performance following SWF investments is not significantly different from zero. Conclude that SWFs pursue passive strategies to diversify portfolios through cross-border investments. Governments do not need to intensively restrict on their investments.
Wisniewski, Kaminski, and Obroniecki (<i>e-Finance</i> , 2015). Sovereign wealth funds in central and	Review SWF investment transactions in central and eastern Europe. Evaluate the impact of SWF	Find no negative impact on recipient economies from SWF operations in CEE. Conclude that SWF investments in CEE may provide alternative

(continued on next page)

Table 2 (continued)

Study	Research question and methodology	Summary of findings and conclusions
eastern Europe: Scope and methods of financial penetration.	investments on the central and eastern European capital markets.	financing sources, better support projects with long-term horizons, and help stabilize the capital markets in CEE.
Sun, Li, Wang, and Clark (<i>Energy Policy</i> , 2014). China's sovereign wealth fund investments in overseas energy: The energy security perspective.	Focus on Chinese SWF investments in the energy sector. Discuss the impact of SWF energy investment on China's energy security. Point out the concerns of recipient governments about China's huge overseas energy investment.	Confirm the strategic role of Chinese SWFs. Their overseas energy investments are motivated by China's energy policy and have raised security concerns by recipient country governments. Authors provide suggestions to balance the benefits and costs of Chinese cross-border SWF energy investments.

renewable energy may increase Chinese SWF's commercial return, alleviate the political concerns from recipient countries, and acquire more political benefits for the Chinese government.

Calluzzo, Dong, and Godsell (2017) and Lattanzio and Megginson (2017) use different exogenous shocks to study the impacts of SWF investments on the U.S. economy and politics from unique perspectives. Calluzzo et al. (2017) look at the 2010 Citizens United vs. Federal Election Commission Supreme Court ruling, which provides a channel for foreign investors to provide political contributions through U.S. campaign finance firms. They find that SWFs are attracted by those campaign finance firms. Using the Citizens United ruling as a quasi-natural experiment, they further confirm that the campaign finance firms significantly increase their political contributions after receiving SWF investments. This attraction to campaign finance firms is more conspicuous in industries that are more vulnerable to the constraints of the U.S. government. Although the authors believe that SWFs are buying “foreign state insurance” by investing in campaign finance firms to protect against potential political risk from the U.S. government, this study provides evidence showing SWF's involvement in the U.S. political process and supports the view that SWFs have objectives other than return maximization. Lattanzio and Megginson (2017) select the 2016 presidential election as their quasi-natural experiment to investigate the political value of SWFs. They hypothesize that the newly elected President Trump's negative attitude towards Muslim countries will negatively affect the political relations between the U.S. and Middle East countries. Furthermore, the anticipated deteriorating bilateral relations will result in negative market reactions to the U.S. firms targeted by Middle East SWFs. The authors find evidence supporting their hypothesis by showing that the firms partially owned by SWFs from the Middle East countries experience more negative stock market reactions after knowing the electoral outcome than the ones partially owned by non-Muslim SWFs. Their findings suggest that the market does not believe SWFs are purely profit-oriented. The political incentives of SWFs are priced when SWF investments are being evaluated.

Bortolotti et al. (2015) report that the average market reaction to SWF investments is lower than the reaction to investments from comparable private institutional investors by 1.31 percentage points. Firms targeted by SWFs experience a decline in operating performance and valuation over three years after the investment compared to firms targeted by private-sector investors. The authors attribute the “SWF discount” and long-term performance deterioration to the potential political interference from SWFs' home countries. As a follow-up paper, Bortolotti et al. (2017) find that the “SWF discount” is larger for SWFs from autarchic countries or from countries with weaker institutional constraints. Due to the expectation of stronger political interference from autarchic governments, markets value more if SWFs from autarchic countries act as passive investors. For SWFs from democratic governments, markets welcome their active stance in corporate governance. At the same time, the authors point out that investors are more concerned about political intervention when SWFs invest domestically. For cross-border SWF investments, the impact of autarchic governments on foreign targets is significantly weaker.

Although several recent articles question the motivations of cross-border SWF investments, two studies focusing on European recipient countries show positive attitude towards SWF investments. Thatcher and Vlandas (2016) find that the political executives and managers of large industrial firms in France and Germany not only welcome, but also actively court overseas SWF investments from non-western countries. Since SWFs are long-term passive investors, they are not sensitive to the target firm's short-term profitability fluctuations and rarely intervene in the operational decisions or act against the incumbent managers of their target firms. The governments in the two countries view SWF investments as a new source of patient capital in lieu of the traditional patient capital, such as banks, company cross-holdings, or state coordinated capital, to adapt to the new capital market environment under financial liberalization and internationalization. Wiśniewski, Kamiński, and Obrońiecki (2015) review the SWF investments in Central and Eastern European countries and make conclusions in favor of these foreign government owned investors. They claim that SWF investments provide more financing channels for local enterprises and help stabilize the capital markets in Central and Eastern Europe. In addition, Mietzner, Schiereck, and Schweizer (2015) study the characteristics of target firms in which SWFs invest and investigate their post-investment market performance over the long run. Based on their findings, the authors classify SWFs as passive investors and suggest that the recipient country governments should not put more intensive restrictions on cross-border SWF investments.

From the previous and newly presented studies, we do not have solid evidence showing that SWFs have ever actively exerted political influence on recipient countries through cross-border investments. However, it is clear that SWFs are different from other,

private institutional investors. They provide financing flexibility and liquidity to the capital markets of recipient countries [Ciarlone & Miceli, 2016] but raise concerns because of their sovereign nature. A core question for policymakers is whether the benefit of restricting cross-border SWF investments is greater than the benefit provided by SWF investments. This is a question waiting for more research by future scholars.

4. The opacity of SWFs

The feature causing concern and suspicion for recipient countries regarding SWF investments is the opaqueness of SWFs. Although transparency varies across different SWFs, most of them release little financial, operational, and governance information to the public. This secrecy causes outsiders to question the real motives and goals behind SWF investments. In academia, the opacity of SWFs yields two critical questions demanding further research. First, it is important to open the black box of SWFs to have a better understanding and a clearer picture about SWFs' capital allocation, portfolio returns, and operational strategies. Second, it is also useful to study the determinants of SWF governance/transparency and find out why some SWFs choose to remain opaque endogenously even though they know that they will face challenges and restrictions when investing overseas. While the first question still requires more specific answers from future researchers, the second question has been partially answered by recent studies.

Stone and Truman (2016) recently released their fourth SWF scoreboard to evaluate the transparency and accountability of 60 SWFs. Although the transparency scores of different funds vary widely, by examining the time series change in scores, they find that, in general, SWFs are making progress to improve their transparency. Both Aggarwal and Goodell (2018) and Wang and Li (2016) investigate the variation in SWF governance across different countries. Aggarwal and Goodell (2018) particularly emphasize that national culture is an important factor affecting SWF governance. The national culture is measured in six dimensions following Hofstede, Hofstede, and Minkov (2010). Bagnall and Truman (2013) SWF scores are used to measure the quality of SWF governance. The authors find that SWF governance quality is better if a society is more ambiguity averse, focuses more on the future and has long-term orientation, and is more indulgent rather than restrained. However, larger power distance and more individualism in a society may negatively affect SWF governance.² Besides cultural factors, they also point out that SWFs with more overseas investments are usually associated with lower levels of governance. Wang and Li (2016) focus on the impact of political regimes and internal political dynamics on SWF governance. They claim that SWFs from democratic countries are more institutionalized and have more transparent governance rules than SWFs established in autocratic countries. In addition, they investigate how the number of veto players in a country's governing coalition may affect the institutionalization of relevant SWFs. Interestingly, the relationship between the two variables is not monotonic, but shows an inverted U shape. If there is only one veto player, explicit governance rules are not needed because they will restrict the veto player's monopoly power. As the number of veto players increases, conflicts of interest emerge and governance rules become preferable as a result of compromises among different veto players. However, when the number of veto players is too large, it will be difficult for all veto players to reach a consensus and the cost of negotiation and coordination is too high. Therefore, there is a lower likelihood to generate clear governance rules over SWFs. In conclusion, when the number of veto players is small, adding more veto players in a country's political system may have a positive impact on the country's SWF institutionalization. However, when it passes a threshold,³ increasing the number of veto players will generate negative marginal effects on the institutionalization of SWFs.

5. Re-examine the impact of SWF investments on target firms

A large fraction of the SWF literature has focused on the impact of SWF investments on target firms. The post-investment market reactions and operating performance of target firms have been extensively investigated by numerous studies. It is gratifying that several studies have reached a consistent conclusion that markets usually generate positive short-term reactions to SWF equity investments [Dewenter, Han, & Malatesta, 2010; Bortolotti et al., 2015; Hua, 2015; Karolyi & Liao, 2017; Kotter & Lel, 2011; Sojli & Wah Tham, 2011, and Megginson, 2017]. It is worth noting that the intensity of market reactions depends on the transparency of the SWF and the size of their purchases.⁴ The evidence for long-run market reactions is, however, far from conclusive. Studies have reported positive, negative, and insignificant long-run market returns following SWF investments. The reactions are also sensitive to the selected study periods [Dewenter et al., 2010]. The evidence for the long-run operating performance of targets is also mixed and inadequate. Fernandes (2014), Sojli and Wah Tham (2011), and Del Giudice, Marinelli, and Vitali (2014) document improved post-investment operating performance of SWF target firms while Bortolotti et al. (2015) show deteriorating performance in terms of return on assets, sales growth, and market-to-book ratios over the three years following SWF investments. Therefore, the long-term impact of SWF investments on target firms is still unclear and requires additional in-depth research. Bortolotti et al. (2015) compare SWF investments with investments made by comparable private institutional investors. Although both types of investments generate positive market reactions, they document a "SWF discount" by showing that the market reactions to SWF investments are less positive. In our opinion, this "SWF discount" itself deserves further study. What caused this discount? What are the determinants of

² A detailed description about Hofstede's six dimensions of national culture can be found at <https://www.hofstede-insights.com/models/national-culture/>.

³ In Wang and Li (2016), they find that the threshold is four veto players.

⁴ See Kotter and Lel (2011) and Hua (2015) for the discussion about SWF transparency and target firm value and see Dewenter et al. (2010) for the discussion about market reaction and SWF transaction size.

Table 3

Summary of recent studies examining impact of SWF investments on target firms.

Study	Research question and methodology	Summary of findings and conclusions
Lehmann and Sarabi (<i>Academy of Management Proceedings</i> , 2018). Revisiting the monitoring role of sovereign wealth funds: Evidence from a quasi-experimental setting.	Select the Norwegian Government Pension Fund Global (GPF) as a representative of active and governance-sensitive SWFs. Use GPF's increase in equity holdings of U.S. firms as a quasi-natural experiment. Investigate whether SWFs play an active monitoring role in target firms.	Find that the performance of target firms (measured by Tobin's Q) improves after the firms being included in GPF's portfolio. This improvement is more significant in firms that GPF shows monitoring incentives. Confirm that GPF and similar SWFs are active monitors. They help improve firm performance through indirect monitoring activities.
Bortolotti, Fotak, and Loss (Working paper, 2017). Taming Leviathan: Mitigating political interference in sovereign wealth funds' public equity investments.	Construct a sample of 1018 SWF investments over the period of 1980 to 2012 and a "benchmark" sample of 5975 equity investments by non-government-owned financial institutions. Investigate the determinants of the "SWF discount" and study how to mitigate this discount.	Confirm the "SWF discount". Find that this discount is larger for SWFs from autarchic countries. Autarchic SWFs may mitigate this discount and lead to greater target firm profitability and valuation by taking a passive stance and reducing the threat of political interference. However, they tend to take an active stance and value their influence on domestic targets. Investors are less concerned about the political interference when SWFs making cross-border investments.
Boubakri, Cosset, and Grira (<i>Emerging Markets Review</i> , 2017). Sovereign wealth funds investment effects on target firms' competitors.	Construct a sample of 284 targets firms of SWF investments and 729 corresponding competitors. Investigate the impact of SWF acquisitions on the market performance of target firms' competitors.	Find positive market reactions to target firms' competitors following the announcements of SWF acquisitions. The positive market reaction is more conspicuous when competitors are larger, lower leveraged, in less competitive industries, and have similar cash flows as their corresponding target firms. Cross-border SWF investments may also generate greater positive reactions to rivals.
Liu (<i>Journal of Advanced Studies in Finance</i> , 2016). Government block holder ownership, sovereign wealth fund and firm performance.	Compare firms controlled by SWFs to firms owned by other branches of government or private firms. Examine the performance of firms with different types of ownership.	Find that SWF-controlled firms outperform those owned by other types of government or private investors in terms of firm value (measured by Tobin's Q). There is a positive relationship between SWF ownership and target firm performance when SWF ownership is low. This positive relationship turns negative when SWF ownership reaches a high level.

this discount? And is there any mechanism to mitigate this discount? In the following section, we survey three recent articles re-examining the impact of SWF investments on target firms to check if they provide a clearer picture of SWFs' long-term impact. Then we discuss one article attempting to explain the "SWF discount". Finally, we include an interesting study investigating the intra-industry impact of SWF investments by focusing on the target firms' competitors. These articles are summarized in [Table 3](#).

One major drawback of the previous SWF related research is that most studies ignore the heterogeneity among different SWFs. When investigating the impact of SWF investments, previous researchers usually put different types of SWFs into the same pool and focused on the difference between SWFs and other categories of institutional investors. However, can we simply assume that all SWFs belong to a homogeneous group? Different SWFs are established in different countries with different political systems, cultural backgrounds, and degrees of democracy. These differences may cause the funds to have different levels of transparency, to carry different goals, and to face different levels of political interference. The failure to separate different types of SWFs may reasonably explain the inconsistent findings of studies examining the long-term impact of SWF investments. Fortunately, researchers have realized this drawback and recent studies show some conclusive findings, although inconsistency still exists in the results. Both [Bortolotti et al. \(2017\)](#) and [Lehmann and Sarabi \(2018\)](#) examine the target firms' long-run performance changes following SWF investments. Although [Bortolotti et al. \(2017\)](#) report deteriorating performance in terms of return on assets (ROA) and market-to-book ratio, while [Lehmann and Sarabi \(2018\)](#) document improved performance measured by Tobin's Q, the two studies provide some consistent insights when considering the heterogeneity of SWFs.

[Bortolotti et al. \(2017\)](#) separate SWFs according to the democracy level of their home countries. They find that SWFs from democratic countries may more positively affect their targets' long-run performance if these funds acquire the majority or controlling shares and play an active role in governance. However, SWFs from autarchic countries are associated with greater target firm long-run operating performance if they act passively during and after their investments. These results are echoed by [Lehmann and Sarabi \(2018\)](#). Instead of having a sample of mixed SWFs, they focus on the Norwegian Government Pension Fund Global (NGPF) only and use it as a proxy of active and governance-sensitive SWFs. The NGPF significantly increased its equity holdings and included a large number of U.S. firms in its asset portfolio in 2007. The authors use this change of NGPF's investment strategy as a quasi-natural experiment to study the long-term impact of SWF investments on those newly invested U.S. firms. With a difference-in-differences (DID) setting, they document improved target firm performance over a four-year window following the NGPF's equity increase. [Lehmann and Sarabi \(2018\)](#) attribute their findings to the active monitoring role played by NGPF.

It is clear that both studies mentioned above agree that SWF investments from democratic countries may generate more positive target performance in the long run if these funds take an active role in governance. Liu (2016) compares SWF invested targets with other types of government owned firms and find that the former is associated with greater profitability and valuation. This result contradicts the finding of Karolyi and Liao (2017) which state that the market reaction to SWF acquisitions is less positive than the reaction to acquisitions made by other government-controlled acquirers. This inconsistency also raises the need to further study the difference between SWFs and other types of government investors.

Besides re-examining the long-run operating performance of SWF targets, Bortolotti et al. (2017) also extend the research of Bortolotti et al. (2015) to analyze the cause and determinants of the “SWF discount”. By comparing 1018 SWF investments over the period 1980 to 2012 with comparable investments made by private financial institutions, they find that the size of the discount is related to the democracy level of the investing SWF's home country. SWFs from autarchic countries with weaker legal institutions experience larger post-announcement period discounts, because investors believe that they are more likely to harbor political objectives contradicting the profit maximization goal. Furthermore, the authors investigate potential mechanisms to mitigate the “SWF discount”. Not surprisingly, depending on the degree of democracy, different countries may employ different strategies to lower the discount. The market reacts more positively if SWFs from democratic countries acquire controlling stakes through direct investment and play an active role in governance. However, the active stance is not welcome if a SWF is from an autarchic country. Autarchic SWFs should avoid purchasing controlling shares, invest through subsidiaries, and behave passively to convince the market that they do not have an intention to impose political objectives on their targets. Cross-border SWF investments also generate smaller discounts because the political interference on a foreign target is less pronounced than on a domestic target.

Instead of focusing on the SWF targets, Boubakri, Cosset, and Grira (2017) study the impact of SWF investments on their target firms' competitors. They document significantly positive cumulative abnormal returns for SWF targets' competitors following the announcements of SWF investments. This positive market reaction to competitors is explained by a “monitoring hypothesis”. The authors believe that competitors in the same industry may be pressured to improve their governance and operations following a SWF investment to avoid being the SWF's target in the future. From this perspective, SWF investments have positive effects on the target firm's industry and the legal barriers against cross-border SWF investments should be reconsidered.

6. Why would a country set up a SWF?

We have observed that SWFs are clustered in the Middle East, Asia, and Africa. Their home countries are normally rich in natural resources or have large and persistent trade surplus with accumulated foreign currency reserves. However, these observations do not clearly answer a more fundamental question: what kind of country is more suitable for establishing a SWF? Should we always encourage a country to establish a SWF if it has excess foreign reserves or its economy largely relies on the sale of limited natural resources? What factors does the home government value most when considering the establishment of an SWF? We survey three papers attempting to address these questions. They are summarized in Table 4.

Grigoryan (2016) proposes a theoretical model to reveal the political motives of establishing a SWF. In his model, it is assumed that a weakly institutionalized country is dominated by a ruler and an influential elite. The ruler needs the elite's support to maintain the stability of his regime. Otherwise, the ruler will lose his power in a *coup d'etat* and be replaced by a non-elite group. Under this setting, a SWF may be used by the ruler to align the interest between the elite and the ruler. By allowing the elite to participate in the

Table 4
Summary of recent studies investigating the motives to establish SWFs.

Study	Research question and methodology	Summary of findings and conclusions
Amar, Lecourt, and Kinon (<i>Review of World Economics</i> , 2018). Is the emergence of new sovereign wealth funds a fashion phenomenon?	Compare a sample of 37 countries that set up SWFs over the period 2000–2014 to the countries that did not establish SWFs in the same period. Investigate how economic, political, and institutional factors may affect a country's decision to establish a SWF.	Find that Countries with excess foreign exchange reserves are more likely to establish SWFs. However, foreign reserves is not a necessary condition for countries to set up SWFs. Also find that countries with higher natural resource rents, lower level of democracy, and facing greater commodity price volatility tend to establish commodity-based SWFs.
Carpantier and Vermeulen (<i>Journal of Commodity Markets</i> , 2018). Emergence of sovereign wealth funds	Construct a sample of 16 countries that established SWFs over the period of 1998 to 2008. Compare them with the countries that did not establish SWFs in the same period. Explore the determinants of SWF establishment.	Find that autocratic countries are more likely to establish SWFs compared to democratic countries. A country's income level, natural resource rents, and rents volatility are positively related to the country's probability of SWF establishment. Increased domestic investments may reduce a country's probability of SWF establishment.
Grigoryan (<i>Economics of Governance</i> , 2016). The ruling bargain: sovereign wealth funds in elite-dominated societies.	Develop a theoretical model to explain why a SWF may be established in a society with one ruler and one powerful elite.	Argue that in a weakly institutionalized political system, the ruler may set up a SWF to gain the support of the powerful elite. By letting the elite to participate in the SWF's management, the ruler may align the interest between the elite and themselves. Therefore, establishing a SWF may help entrench the ruler's control of the country.

management of the SWF and promising them with opulent compensation, the ruler may acquire the support of the elite and entrench their rule over the country. This study implies that a government's rationale for establishing a SWF may not necessarily be to increase their social welfare. Rulers may use SWFs as a political tool to win over other political forces to maintain the sustainability of their regimes.

Amar, Lecourt, and Kinon (2018) and Carpentier and Vermeulen (2018) investigate the economic and political factors incentivizing a country to set up a SWF. Amar et al. (2018) examine 53 SWFs established by 37 countries over the period 2000–2014 and find that the existence of excess foreign exchange reserves is a sufficient but not necessary condition for the establishment of a SWF. Countries with excess foreign reserves are more likely to set up SWFs to better manage their wealth. However, some other countries with abundant natural resources may also establish SWFs to hedge the risk from the commodity price fluctuations even if they do not have excess foreign reserves. In addition, the local currency appreciation in a country with rich resources may incentivize its government to create a SWF to mitigate the possible negative effects of the “Dutch Disease”.

Besides economics factors, the authors also investigate the impact of political factors on the establishment of SWFs. Autocratic countries with rich resources are more likely to set up SWFs than comparable democratic countries. This raises the concern that SWFs may be abused by dictators as political tools to serve for their political or personal purposes. With a sample of 16 countries establishing SWFs in the period 1998–2008, Carpentier and Vermeulen (2018) confirm Amar et al. (2018)'s findings by showing that natural resource rents, commodity price/resource rent volatility, and the degree of autocracy are positively related to the probability of establishing a SWF. Additionally, they point out that an increase in domestic spending/investment may lower the possibility of creating a SWF. It indicates that a country may set up a SWF as an alternative wealth management choice while domestic investment opportunities become unavailable or less favored.

7. Conclusion

This study provides an overview of the research frontier of SWFs. Focusing on the most recently produced SWF-related works, we investigate how the changes in the global economic and political environment affects the operations of SWFs and how recent academic studies provide new answers or views to previously unresolved research questions or issues that have long been debated.

Extensive literature has studied the asset allocation strategies and investment decision-making processes of SWFs. However, the increase in economic and political uncertainty, escalating international trade frictions, slowing economic growth, and the new normal of low oil prices have changed and are still changing the operating strategies of SWFs. We observe that SWFs are fleeing their traditionally favored safe assets and becoming more exposed to the riskier disruptive innovation sectors in exchange for possibly higher returns. In addition, SWFs explore new ways to work with private equity funds and other institutional investors. They show a preference for making co-investments through partnerships. We document the changes of SWF asset allocation and management strategies in response to new environmental changes. However, do the changes made by SWFs work? With the new operating strategies, can SWFs help support the domestic economy and loosen budget constraints while maintaining their own growth? Future researchers should evaluate the effectiveness of SWF operating strategy changes.

Another related question demanding further research is how SWFs support domestic economic development. Do most SWFs follow the “Singapore model” and allocate a certain percentage of their profits to the governments for national budgets? Or do they follow the “Norway model” and allow their governments to withdraw money only when they have financial constraints? Besides the two models, are there any alternative channels for home country governments to use SWFs to stabilize the domestic economy? Instead of withdrawing money from SWFs directly, can governments implicitly instruct SWFs to invest domestically in certain industries in need to promote economic development? These questions are awaiting answers from future research.

The recent research on SWF cross-border investments reaches agreement that SWFs, unlike other private institutional investors, are not purely profit oriented and may carry political incentives. However, depending on the political regime of their home countries, SWFs are subject to varying degrees of political interference. At the same time, we note that SWFs provide reliable long-term investments, which may improve the financing flexibility and liquidity in the capital markets of recipient countries. Policymakers have this long-standing debate whether it is necessary for recipient country governments to impose policy and regulatory restrictions on SWF cross-border investments. To answer this question, additional research is required to compare the benefits of improved financing flexibility and liquidity with the costs of potential political threat and market instability.

Although recent studies show that SWFs have improved their transparency, most of them are still relatively opaque compared to other institutional investors. Some SWFs choose to remain opaque endogenously even though this may bring them unnecessary resistance from recipient countries when investing abroad. Several articles have investigated the determinants of SWF transparency and governance and revealed that they are affected by a country's culture, political regime, and internal political dynamics. However, due to insufficient information disclosure, we do not have a clear picture of their overall investment portfolio. The details about SWF investments in debt markets still remain hazy. Furthermore, it would make significant contribution to the SWF literature if future scholars could examine the performance of SWF investment portfolios and provide more insights into the relationship between the investment performance and SWF characteristics.

Finally, an important takeaway from the recent research is to consider the heterogeneity among different SWFs when conducting SWF related research. Home countries may vary in culture, political systems, and degree of democracy. This variation implies that SWFs may harbor different objectives and be subject to different levels of political interference from home countries. Therefore, heterogeneous SWFs may generate different impacts on target firms and be treated differently by recipient country governments and investors. According to the recent studies, recipient countries show positive attitudes to investments made by transparent SWFs from democratic countries, because those funds may take a more active monitoring role and are more independent from their

governments. Consistently, firms targeted by democratic country SWFs show better long-term operating performance than others targeted by autarchic country SWFs if both types of funds acquire controlling stakes and take an active stance in governance.

Conflict of interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us.

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing we confirm that we have followed the regulations of our institutions concerning intellectual property.

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