

Dealing with Disruption: IFSWF Annual Review 2017



Letter from the Chair 1**Dealing with Disruption:
sovereign wealth funds in 2017** 2*What is a sovereign wealth fund?* 3*Dealing with disruption* 10*Data methodology notes* 23**Contributed articles** 29*Evolution of SWFs* 30*Private market survey* 44*Assets and liabilities* 52**Case studies** 59*The China Investment Corporation's
Asset Allocation Journey* 60*National Development Fund
project facility process* 63*Te Puia Tapapa* 65*Trinidad & Tobago's heritage
and stabilisation fund* 68*Investing in a highly
uncertain environment* 71*Investing in disruption* 75

Letter from the Chair

Adrian Orr
IFSWF Chair



Welcome to the IFSWF's first annual review of sovereign wealth fund investment activity. In the ten years since the inception of the International Forum of Sovereign Wealth Funds (IFSWF) and the Santiago Principles, the IFSWF has focused on raising the standards of governance and disclosure amongst the sovereign wealth fund (SWF) community, both within the membership and outside.

This review is a new effort to improve public understanding of SWFs. We have sought to provide reliable data and a factual analysis of how sovereign wealth funds directly allocated capital into global equity markets in 2017. We hope that this report will clarify many of the misconceptions about what sovereign wealth funds are and how they invest.

To produce this review, we have undertaken a rigorous data-collection process using regulatory filings and other primary sources. We gave all our members on which we had data the opportunity to review it. Our Advisory Committee of nine IFSWF members also gave feedback on the analysis.

Our review also includes content from our members, much of which has not been published before. We include case studies from six of our members about specific aspects of their investment practices. In a piece written with input from our members, we also highlight the diversity of the sovereign wealth fund community. Finally, we include the results from a 2016 survey of 10 of our members' experiences of investing in private markets.

We are delighted to be working with the Sovereign Investment Lab at Bocconi University on this review. Bernardo Bortolotti and his team, who have been analysing SWF investments since 2007, have been kind enough to describe the evolution of sovereign wealth funds over the past decade. This analysis provides a helpful context for anyone interested in the activities of all sovereign wealth funds.

We hope you find our first annual review interesting and useful. The IFSWF Secretariat team in London are always willing to help with any queries you have on this publication.

Dealing with Disruption: sovereign wealth funds in 2017

Evidence from the IFSWF database

What is a sovereign wealth fund?

Sovereign wealth funds (SWFs) have been active in the financial markets for more than half a century. However, during the 2000s, high prices boosted the assets of commodity-rich nations, and a series of favourable balance-of-trade results in Asia saw foreign exchange reserves rise. SWFs became more prominent as they sought to diversify their resources into foreign assets. From 2007, there was a climate of rising protectionism, and SWFs began to attract suspicion in some quarters, partly due to their role in facilitating the free flow of international capital.

The tenor of the international debate concerned many SWFs and they recognised the need to establish and communicate their role in global financial markets. A constructive dialogue started between the governments of countries receiving SWF investment and the funds from the beginning of 2008. During the meetings of the World Bank and the International Monetary Fund and extensive ongoing dialogue, representatives from 26 SWFs – the International Working Group of SWFs – worked to create a set of Generally Accepted Principles and Practices (GAPP) for SWFs, intended to promote good governance, accountability and transparency.

In September 2008, these institutions gathered in Santiago, Chile, to finalise the GAPP. The Santiago Principles, as they became known, have done much to encourage a better understanding of SWFs as commercial investors whose main objective is to deliver financial returns for their sponsoring governments.

Following an April 2009 meeting in Kuwait City, the Working Group became a more formal organisation and knowledge-sharing platform: The International Forum of Sovereign Wealth Funds (IFSWF).

But while perceptions of SWFs have shifted, confusion lingers as to how they should be defined. This is understandable, as they are a diverse group of institutions. Some SWFs are decades old, others are newly created; some are financed by oil receipts, others have no connection to commodity revenues; some invest primarily in bonds and equities, others allocate the bulk of their capital to alternative assets such as infrastructure and private equity. Many invest outside their own countries, some exclusively at home.

Sources of wealth for IFSWF members, 2018

Fiscal Surplus



Natural Resources Revenue



Government-owned companies



How to define a SWF

During the annual meetings of the World Bank and the International Monetary Fund in 2008, representatives from the founder members of IFSWF formulated the following definition of sovereign wealth funds:

Special-purpose investment funds or arrangements that are owned by the general government. Created by the general government for macroeconomic purposes, SWFs hold, manage, or administer assets to achieve financial objectives, and employ a set of investment strategies that include investing in foreign financial assets.

This definition excludes foreign currency reserves held by central banks for balance of payments or monetary policy purposes. It also excludes state-owned enterprises, government-employee pension funds and assets managed for the benefit of individuals.

In 2014, the IFSWF Board admitted several members that predominantly manage domestic assets, reflecting the changes in the SWF landscape since 2008. Each of these applicants satisfied the Board that they complied with the requirements of a sovereign wealth fund and that their admittance enabled the IFSWF to remain true to its history, founding purpose and obligations.

IFSWF members are heterogeneous community. The Santiago Principle self-assessments carried out by the Forum's members in 2016 reveal great diversity, particularly in the funds' legal structures and how they are managed. However, most SWFs have one – or more – of the following objectives: long-term savings, fiscal stabilisation, economic development.



1. Long-term savings

Some commodity-rich countries choose to save a portion of their resource wealth for the future. Oil, gas and precious-metal reserves are finite: one day they will run out. There is also a risk that these resources will become stranded assets as climate-change regulation and the rise of green-energy alternatives render hydrocarbon extraction uneconomic.

But by using their SWFs to convert today's resource wealth into renewable financial assets, governments can share the windfalls with the generations of tomorrow. By investing overseas, savings funds in commodity-rich countries can also help prevent Dutch Disease, whereby a surge in commodity exports leads to a sharp rise in foreign-exchange inflows, generating inflationary pressures and damaging the competitiveness of other economic sectors. The world's oldest SWF, the Kuwait Investment Authority (KIA), is a good example.

Similar types of funds may also be set up by countries that have had persistent trade surpluses to diversify their foreign exchange reserves. By doing so, these countries can generate higher long-term returns on a portion of these reserves by investing in a wide range of asset classes.

Some savings funds are designed to finance future liabilities. Pension reserve funds, such as Australia's Future Fund, the New Zealand Superannuation Fund and Chile's Pension Reserve Fund, typically invest to build capital that will help defray their sponsoring government's future pension obligations. Unlike orthodox pension funds, which must continually pay out to their members, pension reserve funds do not have any immediate liabilities. Therefore, they can put their capital to work in long-term investments.



Case study: The New Zealand Superannuation Fund (NZSF)

The New Zealand government created NZSF in 2001 to build savings to defray future pensions costs. As is the case in many countries, such costs are likely to rise as the population ages; as the number of older citizens increases, the number of taxpayers relative to the number of retirees falls.

The Guardians of New Zealand Superannuation, a Crown entity independent of the government, manages NZSF. The Guardians invest government contributions, along with the returns generated by these investments, to grow the capital of the fund. Withdrawals are due to begin in the mid-2030s.

As a long-term investor, NZSF can devote a relatively large proportion of its portfolio to private-market assets, taking advantage of the illiquidity premium available on such investments. For example, the fund invests in global forestry assets, transport infrastructure and real estate.

The Guardians use a reference portfolio as a benchmark against which to measure the performance of NZSF and the value added by its various active investment strategies. The reference portfolio is comprised of passive, low-cost, listed investments, split between global equities (80%) and fixed income (20%).

As of 31 March 2018, the Guardians allocated 66% of the fund's NZ\$37.8 billion (\$27.4 billion) portfolio to global equities, 13% to global fixed-income and other public market investments, 4% to domestic equities and 17% to alternative investments such as infrastructure, private debt and property.



2. Fiscal stabilisation

Commodity-rich nations can create pools of capital which governments can draw on to smooth the budget to manage revenue streams; the fund will save some of the proceeds from large influxes of revenue and pay out when commodity receipts fall below a specified amount.

Stabilisation funds can thus help mitigate the resource curse, an economic phenomenon whereby commodity-rich countries tend to experience slower growth than comparable countries that lack such wealth. The resource curse occurs partly because energy prices are volatile. When prices are high, governments usually increase spending; when they are low, governments must tighten their belts. These fluctuations exacerbate the economic cycle.

By helping to smooth out commodity revenues, stabilisation funds can help governments avoid extreme peaks and troughs in the cycle. These funds are also used to help stabilise the value of the country's currency during macroeconomic shocks. For this reason, stabilisation funds tend to hold a large proportion of their assets in liquid investments so that they have access to capital at short notice.



Case study: Economic and Social Stabilisation Fund of Chile (ESSF)

The Chilean government established ESSF in 2007. ESSF superseded an older fund called the Copper Stabilisation Fund, which the government had used to save a portion of its revenues from copper exports. The ESSF inherited much of its \$2.6 billion in start-up capital from this older vehicle.

The timing was propitious. Only a year after the fund was created, the financial crisis hit, reducing demand for commodities. By drawing on the fund's capital, the government could support the Chilean economy without issuing more debt. This is one reason Chile fared better than its Latin American peers during the crash (Chile's GDP growth declined by 1% in 2008; by contrast, Mexico's fell by 4.7%).

ESSF works in tandem with another SWF, the Pension Reserve Fund, in Chile's fiscal setup. According to Chile's Fiscal Responsibility Law, ESSF receives an amount equal to the government's annual surplus once contributions to the Pension Reserve Fund and the Central Bank of Chile have been deducted. As of 31 March 2018, the fund held \$14.9 billion in assets.

As a stabilisation fund, ESSF needs to keep the bulk of its portfolio in liquid securities that can be accessed at short notice. As of 31 March 2018, ESSF held 33.4% of its portfolio in money-market assets; 55.2% in sovereign bonds; 8% in developed-market equities; and the rest in inflation-linked bonds.



3. Economic development

Since the global financial crisis, there has been a marked change in how governments use their liquid and illiquid assets. With interest rates at record lows and global economic growth sluggish, the appeal of traditional savings and stabilisation funds has diminished. Instead, many states have created development funds that form part of their domestic economic policies.

These funds follow the lead of two well-established South-East Asian SWFs, Singapore's Temasek Holdings and Malaysia's Khazanah Nasional. These funds acquire stakes in companies in strategic industries to nurture their development, promoting the growth of the wider economy and realising financial returns. Temasek and Khazanah have also been able to build portfolios of overseas assets from the proceeds of the realisation of some of their major investments, as well as using the dividends and other cash distributions they receive from their portfolio companies.

The Irish Strategic Investment Fund (ISIF), one of the more-recent development funds, neatly illustrates how these vehicles differ from traditional savings funds. ISIF's predecessor, the National Pensions Reserve Fund (NPRF), was created in 2001 to build savings for future pension liabilities, much like NZSF, and assembled a portfolio of global financial assets.

Following the government bailout of the Irish banking sector in 2008, the fund was restructured as ISIF under the auspices of the National Treasury Management Agency in 2014, with a new mandate to invest on a commercial basis to support economic activity and employment in Ireland in targeted economic sectors. ISIF's portfolio is now largely comprised of Irish investments. ISIF's recent activity includes the launch of an infrastructure development plan to finance student accommodation across Ireland and a €100 million (\$107 million) fund that will offer loans to Irish milk producers.

ISIF shows how development funds may promote the domestic economy in a variety of different ways. They may provide financing to early-stage companies in strategic industries for instance, or buy stakes to facilitate the development of more-mature firms.

Some strategic funds will make direct investments in infrastructure, occasionally using their local expertise to leverage co-investments from peer institutions. The Russian Direct Investment Fund is a perhaps the best example of this approach.



Case study: Russian Direct Investment Fund (RDIF)

Founded in 2011, RDIF co-invests in Russian projects with expected attractive returns on investment and economic benefits to the country. It also allocates a small proportion of its assets to overseas investments alongside foreign partners.

Unusually, RDIF is designed to work in tandem with top global investors, including SWFs, acting as a catalyst for direct investment in Russia. To this end, RDIF has formed partnerships with over 20 international institutions. Several of RDIF's investment partners automatically participate in all its deals.

In 2012, RDIF partnered with the China Investment Corporation (CIC) to create the Russia-China Investment Fund, a vehicle that invests primarily in the Russian economy, with each party allocating \$1 billion to the vehicle. RDIF also has similar agreements in place with the Kuwait Investment Authority, Mubadala Investment Company, Qatar Investment Authority, Caisse des Dépôts, CDP Equity, the Korea Investment Corporation, and the Public Investment Fund of Saudi Arabia, among others.

RDIF often makes direct investments alongside more than one international partner at a time. Over 30 deals have been closed across a wide range of sectors in the five years of RDIF's investment activity, with a proportion of funds attracted from partners per each rouble invested by RDIF totalling 9 to 1.

This co-investment model enables RDIF to amplify the economic impact of its investments. As of end-2017, RDIF has invested 100 billion roubles (\$1.8 billion) of Russian government capital while over RUB 1.1 trillion came from its co-investors, partners and banks. RDIF has also established joint investment platforms with a total value of more than \$30 billion through partnerships with leading international investors.



4. Multiple objectives

Not every SWF has a single objective. Many funds combine two or more mandates, including stabilisation, savings, development, and other mandates not listed above.

While these types of funds arise all over the world, and include the Trinidad and Tobago Heritage and Stabilisation Fund and the State Oil Fund of Azerbaijan. Many of these nations created their SWFs following the commodity super-cycle of the 2000s, which led to a boom in resource revenues.

Locking away capital for future generations is clearly inappropriate for countries with high levels of poverty or pressing infrastructure-development needs. For this reason, African countries have created innovative SWF structures that often integrate sub-portfolios dedicated to discrete objectives.

For example, the Fundo Soberano de Angola allocates a third of its portfolio to international securities such as Treasury bonds and developed-market equities, and the remainder of its assets to private-equity investments in Angola and elsewhere in sub-Saharan Africa to support "socioeconomic development". Similarly, Botswana uses its Pula Fund, sub-Saharan Africa's oldest SWF, for savings and stabilisation.

Perhaps the clearest example of a multiple mandate fund that separates its operations between savings, stabilisation and development objectives is Nigeria's SWF.



Case study: Nigeria Sovereign Investment Authority (NSIA)

In 2004, Nigeria created a fund called the Excess Crude Account (ECA), designed to manage its oil revenues for both savings and stabilisation purposes. As oil prices surged during the 2000s, ECA collected a large proportion of the government's revenues. But ECA also had a poorly-defined legal mandate, which meant its savings were subject to wrangles between the federal government and state governors.

In 2012 Nigeria launched a new SWF, NSIA, to rectify these problems. NSIA has a clearer and more-legally rigorous mandate than ECA: it is divided into separate, ring-fenced pools of capital, each of which has a different objective: a Future Generations Fund, an Infrastructure Fund and a Stabilisation Fund.

As of end-2016, the most recent date at which the NSIA disclosed the composition of its investment portfolio, the Future Generations Fund was 43% in cash, 53% in public- and private-equity strategies, with the remainder devoted to commodities and other diversifiers. The Stabilisation Fund devotes its portfolio to more-liquid assets such as short-duration Treasury bonds (29%) and time deposits (47%). It also holds 14% of its portfolio in Nigerian Eurobonds.

The Infrastructure Fund is primarily run by an in-house team and invests domestically, in projects such as bridges and toll roads, alongside commercial partners. For example, NSIA collaborated with construction firm Julius Berger Nigeria to help finance a new bridge over the Niger River connecting the cities of Asaba and Onitsha. The Infrastructure Fund has also made investments in telecommunications and healthcare.

Dealing with disruption: Sovereign wealth fund direct equity investment activity in 2017

Sovereign wealth funds are known for investing in almost all asset classes across the globe. Much of this capital is put to work by external managers in publicly listed fixed-income and equity markets. However, some sovereign wealth funds have made the strategic decision to deploy their funds using their own investment teams.

While many execute passive strategies in listed markets, a number of these institutions are active in private markets and take substantial stakes in listed companies. These organisations include major savings funds, as well as those with the objective of investing strategically in their domestic economies. It is these investments that are of most interest to financial markets as they are perceived to provide an indication of the geographies and sectors in which these important investors see opportunities to deliver above-market returns.

To help provide an accurate picture of what this group of sovereign wealth funds is acquiring directly, IFSWF has built a database of direct equity investments by sovereign wealth funds going back to January 2015. The data is sourced from primary public sources.

This data reveals that, in 2017, SWFs completed more direct equity investments than they did in 2016 (303 versus 290), but that the value of these has largely stayed flat: \$52.6 billion, compared to 2016's \$51.4 billion

Consequently, their median¹ equity cheque was \$50 million, just over half that of 2016, which was \$90 million. Excluding real assets, such as bricks-and-mortar properties and infrastructure projects, this trend was even more marked. In this case, the median equity invested was \$27 million, plummeting from that of previous years: \$60 million in 2016, and \$58 million in 2015.

We observed four investment trends in sovereign wealth fund direct investment activity that may explain this observation:

1. Private market deal activity slows
2. A greater emphasis on partnership and co-operation with other institutions
3. A changing approach to the consumer goods and services sector
4. Taking India public

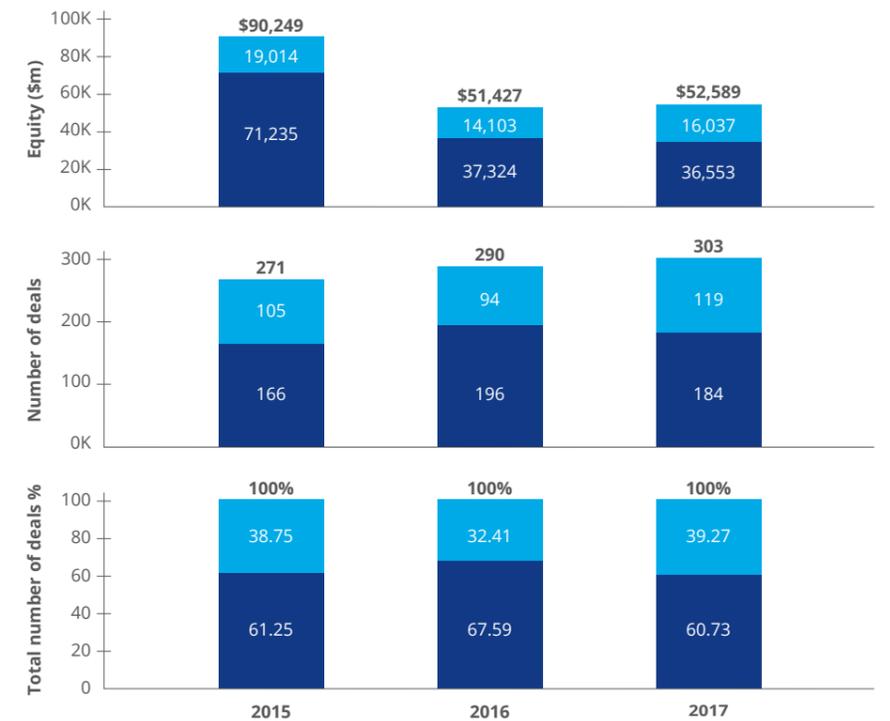
Private market deal activity slows

In recent years, there has been a well-documented trend for sovereign wealth funds to take advantage of their scale, long investment horizon and little need for liquidity to dedicate increasing amounts of money into private markets, particularly real estate and infrastructure. However, in 2017, we identified a reversal of this trend. This observation could be one-year aberration, or a signal that investments in unlisted markets have plateaued after years of steady growth – as valuations are high, competition intense and SWFs have reached their target allocations – a trend that was foreshadowed in a 2016 survey of IFSWF members that suggested this trend was peaking.

¹ For reference the average amount of equity invested per deal was \$186.6 million, down from \$189.7 million in 2016. Both average and median \$ equity invested are calculated excluding the null values. We used the median rather than the average, to temper the influence of very large deals as outliers and all the transactions with a null or missing value. In this case the median provides a much more representative number for our sample.

Last year, SWFs made 184 direct investments in unlisted assets, 61% of the total, down from 196 in 2016, representing 68% of the total.

SWF Direct Investments: Listed vs Unlisted Assets



Investment Type: Listed Unlisted

Source: IFSWF Database

Signs of real estate fatigue

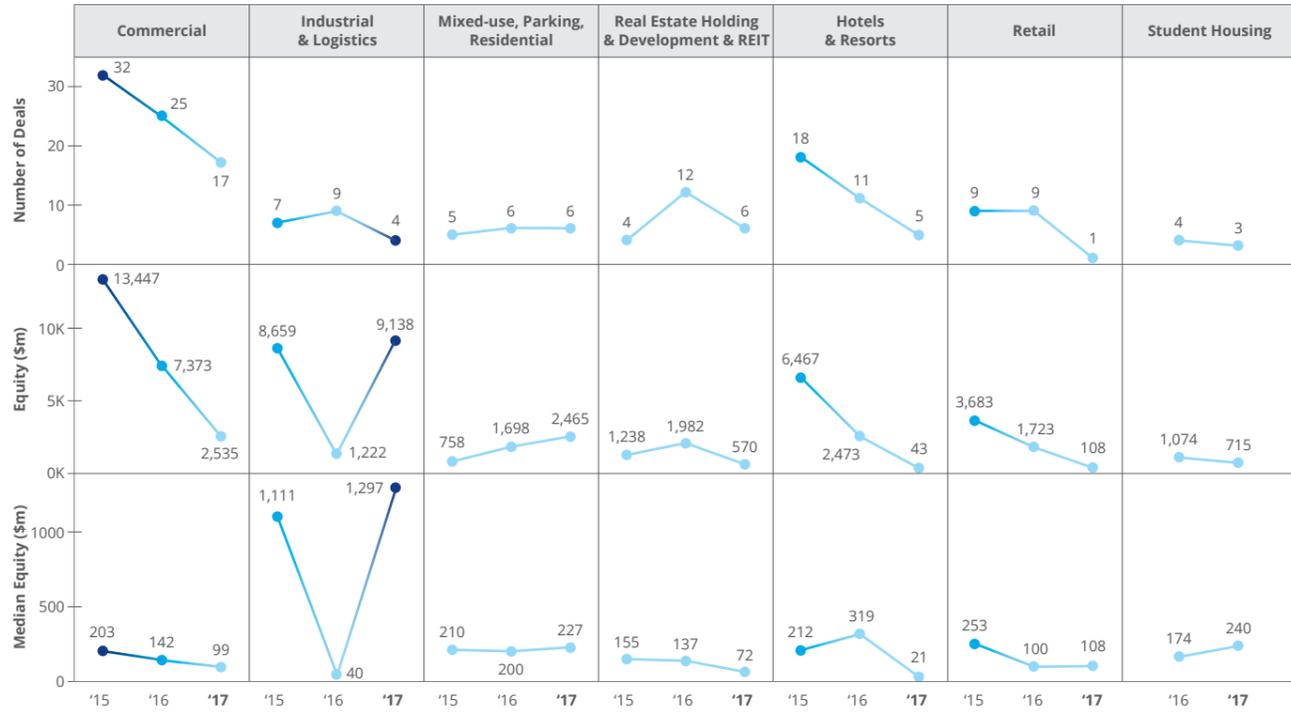
A lower volume of real estate deals in 2017 looks to be the main reason for the slowdown in allocation to private markets, as this sector has been favoured by sovereign wealth funds for some years. In 2017, the number of direct real estate and infrastructure investments made by sovereign wealth funds declined from a total \$25 billion in 2016, split between 77 in property, and 33 in infrastructure, to \$23.2 billion, comprising only 42 deals in real estate and 28 in infrastructure.

In the property sector, there was an almost 40% decrease in the number of SWF investments in private markets between 2016 and 2017. SWFs are finding it more difficult to buy properties; more institutional investors have recently entered the sector, increasing competition for high-quality assets and pushing asset valuations higher.²

Most significantly, SWFs reduced their investment activity in commercial and office properties. However, these types of assets still represent 40% of the total invested in real estate with 17 deals out of 42 in the year, down from 25 out of 76 in 2016. Sovereign wealth fund interest in luxury hotels, another traditional cornerstone of several SWFs' real-estate strategies, has also declined over the last year to only five deals, a reduction of more than 75% from 18 in 2015. In 2016, the trend was also downwards with only 11 transactions.

² See Jones Lang Lasalle's view. Accessible at: <https://www.jllrealviews.com/economy/investment/real-estate-investment-strategies-get-more-creative/>

SWF Direct Investments in Real Estate Sub-sectors



Total invested (\$m): 43 | 17,283

Source: IFSWF Database

The slowdown in SWFs real estate transactions may also be emphasised by the fact that the more recently established sovereign wealth funds are strategic funds, such as Kazakhstan's Samruk-Kazyna or Italy's CDP Equity, with a mandate to develop their home economies, rather than to save national wealth, and are not active in international real estate markets.

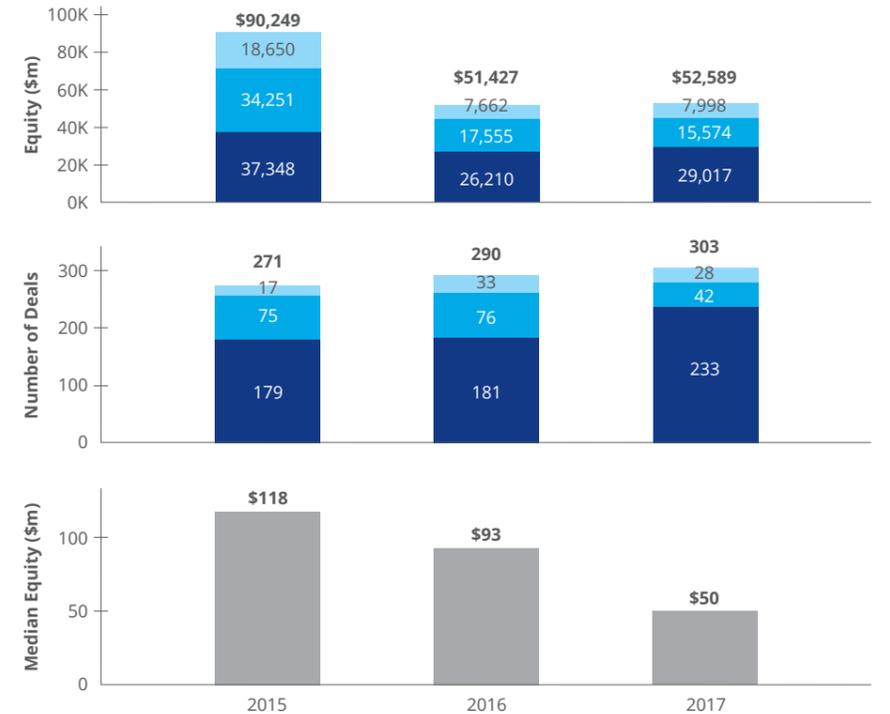
Despite overall volumes of sovereign wealth fund investment in real estate being lower, they have continued to look down the value chain for more attractively priced assets. Sovereign funds are showing a sustained interest in mixed-use or residential rental properties. In developed markets, this market looks attractive as it allows investors to harness two secular trends: large ageing populations looking to downsize and move out of the family home, and the millennial generation currently priced out of property ownership. GIC has also shown interest in mixed-use developments in emerging markets, including a joint venture with Indonesian property developer Intiland Development to own and manage the South Quarter integrated mixed-use complex in Jakarta.³

A number of sovereign funds that have previously been active property investors, have reduced their overall exposure to the sector, taking advantage of high valuations to sell assets they acquired at low prices after the financial crisis. For example, Australia's Future Fund and real estate investment firm TH Real Estate sold 685 Third Avenue, New York, to Japanese real estate company UNIZO Holdings for \$467.5 million⁴ – almost two-and-a-half times the purchase price in 2010 (the Future Fund entered into partnership in March 2011).

³ See press release, accessible at <http://www.gic.com.sg/newsroom?id=623&Itemid=159>

⁴ See TH Real Estate press release, accessed at: <https://threalestate.com/news-and-views/articles/17-10-16-th-real-estate-completes-sale-of-685-third-avenue-to-japanese-investor>

SWF Direct Investments in Real Estate & Infrastructure vs Total



Industry Group: Infrastructure Real Estate Others

Source: IFSWF Database

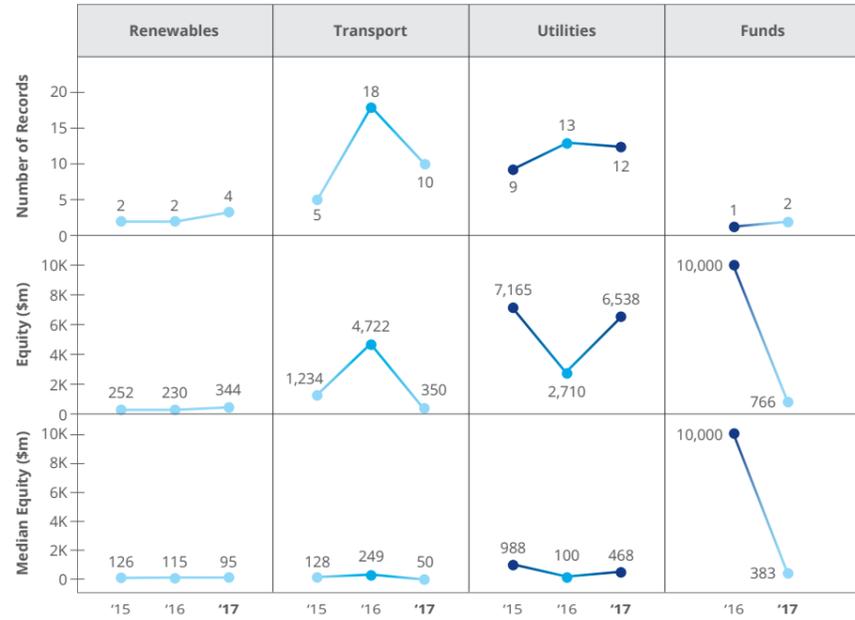
Regulatory and competitive pressures build in infrastructure

Infrastructure was even more challenging in 2017. The number of infrastructure investments made by sovereign wealth funds dropped by 15% year-on-year, from 33 in 2016 to 28 in 2017.

There are two factors driving this trend. First, some sovereign wealth funds are encountering greater resistance from regulators, preventing them from investing in major infrastructure assets. Regulatory regimes in the US and Europe⁵ are installing more stringent screening processes for foreign direct investments in strategic infrastructure assets. Secondly, government-owned funds are facing increased competition and higher valuations for mature assets in developed markets, as more investors seek bond-replacement exposure to infrastructure assets' steady cash flows. Australia has been a case in point where major privatisation programmes have been hard fought. For example, in May 2017, the Qatar Investment Authority (QIA) was part of a Macquarie-led consortium that purchased a 50.4% stake in the 99-year lease in one of Australia's largest electricity companies, Endeavour Energy. The consortium won the hotly contested asset – auctioned by the government of New South Wales, which fetched a final valuation of approximately A\$15.1 billion (\$12.1 billion) a multiple of 1.6 times the grid regulated asset base (RAB). The valuation was in line with two other Australian assets auctioned off by the government in 2015-2016: Transgrid, which sold for A\$10.3 billion to a consortium which included several government investors, and Ausgrid, which sold for 1.4 times RAB.

⁵ See EU's press release. Accessible at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017SC0297&from=EN>

SWF Direct Investments in Infrastructure



Total invested (\$m): 230 — 10,000

Source: IFSWF Database

Consequently, sovereign wealth funds are turning to Asia and Latin America to find established infrastructure companies with predictable cash flows. In 2017, sovereign funds completed 17 direct investments in emerging-market infrastructure, of which 10 were cross-border, for a total value of \$3.8 billion versus 11 deals in developed markets totalling \$4.2 billion. Although this is not a new trend, it has intensified over the last year. While it might, on the face of it, appear to be a higher-risk strategy, emerging markets can carry lower potential political risks as there are fewer concerns about foreign investment in infrastructure and SWFs can pair with a domestic promotor. Deals are often less complex, with fewer parties involved, and lower costs reducing third-party operating risk. As a result, emerging-market infrastructure can be more attractive than that in the US, Europe and Australasia.

Listed opportunities on the rise

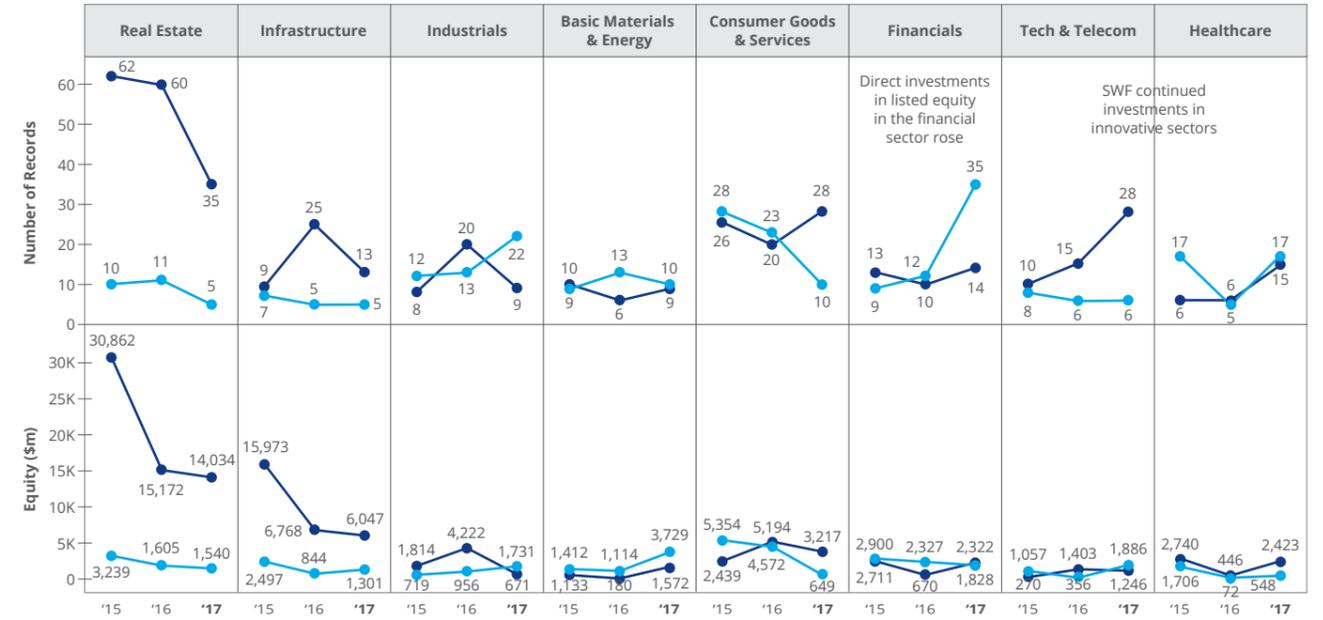
While there are certainly headwinds in private markets, sovereign wealth funds have increased their direct investments in listed companies during 2017. Sovereign wealth funds joined many other institutions to take advantage of the a weak dollar, strong global growth,⁶ record-low volatility,⁷ and expectations of a tax reform in the U.S. pushing stock markets⁸ to record highs. In 2017, sovereign wealth funds bought publicly listed shares in 119 transactions – 39% of the total – up from 94 deals in 2016, which represented 32% of the total.

6 According to the OECD, global real trade growth accelerated from 2.6% in 2016 to 4.8% in 2017 and world GDP growth increased from 3.1% in 2016 to 3.6% in 2017.

7 Volatility of the S&P 500 Index reached an all-time low in October 2017.

8 In global terms, the MSCI all-country world index gained 22% or \$9tn on the year to an all-time high of 514.53 in the last trading day of December 2017.

SWF Direct Investments: Breakdown of Listed vs Unlisted Assets by Sector



Investment Type: Listed Unlisted

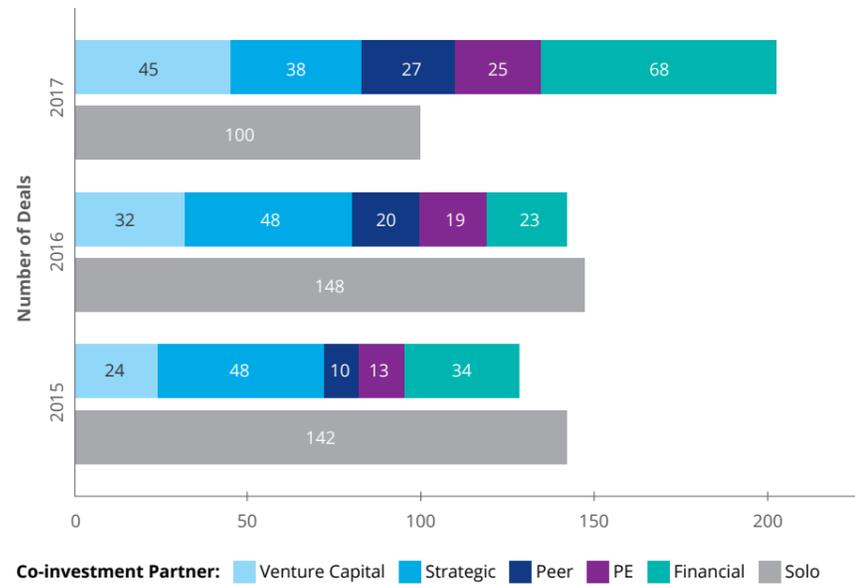
Source: IFSWF Database

A greater emphasis on partnership and co-operation with other institutions

In the last three years, SWFs have invested alongside a range of partners. In 2017, the trend reached a new high as SWFs completed 203 investments in a consortium or partnership, over double the number of solo deals.

Sovereign wealth funds are distinctive financial market participants, often with a shared culture of collaboration and interaction. Both the data and IFSWF's experience suggest they are increasingly looking to invest with peers, forming private equity consortia with other government funds in quality companies offering steady cash-flows and dividends in more prosaic sectors such as consumer goods and services. These types of investments now represent approximately a tenth of all sourced deals.

SWF Direct Investments – partnerships and consortia



Source: IFSWF Database

The rise of the partnership and consortium

The data suggests that this trend will develop further. Over the last five years there has been a significant growth of new government vehicles with a mission to attract foreign investors and foster new relationships and co-investment partnerships. The Russian Direct Investment Fund is a pioneer. Since 2011, RDIF has acted as a catalyst for direct investment in Russia and it has invested and committed over \$20 billion across 25 partnership agreements, including in 2017, two agreements with the newly established Turkiye Wealth Fund (also a new member of the IFSWF), and the Armenian state-owned company SME Investments. Several other European nations created similar models, including France (CDC International) and Italy (CDP Equity).

This arrangement allows sovereign wealth funds to gain lower-risk access to infrastructure assets, which are often instrumental for economic growth, development and diversification. RDIF has been particularly active in this regard. In October 2017, it announced⁹ a significant partnership with Mubadala Investment Company, and Saudi Arabia's Public Investment Fund for a joint equity participation in United Transport Concession Holding to invest in the construction and operation of roads, railways, urban transportation and public-private partnership (PPP) projects in Russia.

Another new player is India's National Investment and Infrastructure Fund (NIIF), which was established by the Modi government in 2015 to attract foreign capital, particularly from long-term investors like sovereign wealth funds, to solve some of India's infrastructure needs. In October 2017, the Indian government attracted capital from the United Arab Emirates.¹⁰ The Abu Dhabi Investment Authority (ADIA) committed \$1 billion to become the first institutional investor in NIIF's Master Fund and a shareholder in the NIIF's general partner company. NIIF committed 49% of the capital to the \$6 billion fund, with the goal of attracting other foreign peers into the venture.

⁹ See press release, accessible at: https://rdif.ru/Eng_fullNews/2656/

¹⁰ See press release, accessible at: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=171749>
ite/PrintRelease.aspx?relid=171749

Harnessing private-sector expertise

Although sovereign wealth funds want to work more with their peers, in many sectors they need to harness the expertise of the private sector that they are unable to bring in-house.¹¹ In recent years the relationship between sovereign wealth funds and their private-sector counterparts has changed. Sovereign wealth funds are less likely to be simple investors in funds; as they have developed more expertise internally, they have sought to develop new, more collaborative models to work with their managers.

As a result, it appears that private-equity firms are beginning to accept SWFs as favoured investors. In the past, private-equity funds used to hold an investment for between three and five years and then look for an exit, via an initial public offering, or a sale to a trade buyer or another private equity fund ("pass-the-parcel"). Recently, however, sovereign wealth funds, which are limited partners in these firms' funds have offered buyout firms the option of a partial exit with a minority stake sale. This enables the PE firm to book some profit, while the SWF can take on some upside by investing in growth businesses they already know, limiting the downside risk.

One example in 2017 was when Hellman & Friedman and Carlyle Group announced the sale of a minority stake in global outsourcing healthcare research company Pharmaceutical Product Development¹² to two sovereign funds, ADIA and GIC, in a deal that valued the company at \$9 billion. Under the agreements, Hellman & Friedman became a majority shareholder with Carlyle, ADIA and GIC taking minority positions.

Some sovereign funds are mixing their direct investment model, taking a multiple mandate approach¹³ where they back venture-capital or growth-equity funds as an anchor investor, using the fund as an "investment platform" with the right (but not the obligation) to co-invest in a deal. The manager, however, remains the lead investor as it has the industry expertise, while the SWF is an important partner. A good example is the partnership that Saudi Arabia's PIF and Mubadala has with Softbank. In May 2017, SoftBank Group announced the first closing of the SoftBank Vision Fund with over \$93 billion of committed capital. PIF provided \$28 billion of debt in form of preferred units giving a 7% coupon over 12 years, and \$17 billion in equity; while Mubadala put \$5.7 billion in equity, lending \$9.3 billion at same terms. Important strategic investors such as tech giants Apple, Foxconn Technology Group, Qualcomm, and Sharp also joined as anchor investors. Although we don't have enough data for an analysis of relationships with external managers, we noted that the commitments to the Vision Fund are also significant because they show sophisticated SWFs allocating capital with very niche asset managers to fit in a specific strategy.

¹¹ New challenges, private markets: Sovereign wealth funds' changing investment strategies, IFSWF, November 2016 <http://www.ifswf.org/publication/new-challenges-private-markets-sovereign-wealth-funds%E2%80%99-changing-investment-strategies>

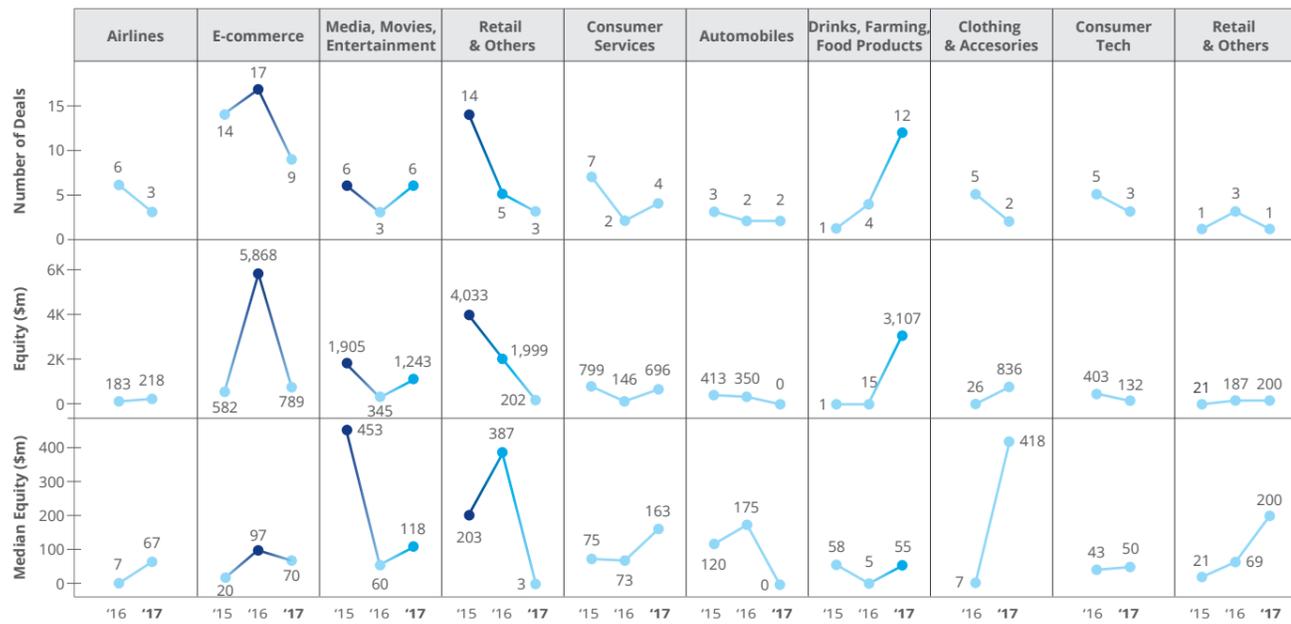
¹² See press release, accessible at: <http://www.ppd.com/News-And-Events/News/2017/PPD-to-Recapitalize-with-Existing-Owners-and-Investors>

¹³ See: "Technology and Disruptive Innovation Investing by Sovereign Wealth Funds: Current Landscape, Opportunities and Challenges" by Markus Massi, Alessandro Scortecchi, Pratik Shah. Accessible at: <http://www.bafficarefin.unibocconi.eu/wps/wcm/connect/e0b6bbe1-4df0-4d6c-b866-20eb5f38bac9/2016+SWF+Annual+Report.pdf?MOD=AJPERES&CVID=IYFVHE7&CVID=IYFVHE7>

A changing approach to the consumer goods and services sector

Sovereign wealth funds invested less in companies serving the growing emerging-market middle class than in previous years. It appears that this change was partly because some of them felt too exposed to the Chinese economy, and partly because they had already chosen their regional champions. After years of buying consumer goods and e-commerce companies, SWFs have slowed down their investments in listed consumer goods and services, as they declined from 23 deals to 10 with a total value of equity \$600 million from \$4.6 billion in 2016. The sector has reached consolidation with a few regional champions blocking new entrants, e.g. Amazon in US, and Alibaba in China. The only regional market, where competition is still fierce is India, where, in 2018 U.S. retail giant Walmart acquired 77% of regional operator Flipkart (which originally counted also GIC and QIA as shareholders). Before the \$16 billion boost from Walmart, Flipkart was struggling to keep its initial local advantage against the global giants. In August 2017, Flipkart failed in its bid to merge with local rival Snapdeal, which counts Singapore's Temasek Holdings as an investor.

SWF Direct Investments in Consumer Services Sub-sectors



Total invested (\$m): 0 — 5,686

Source: IFSWF Database

However, sovereign wealth funds are still keen on backing the circulatory system of the e-commerce industry: logistics. Sovereign funds have identified this niche as a major investment opportunity as warehouses and logistics hubs support the growth of online shopping. The two most significant transactions of the year were in European logistics. At the beginning of January 2017, GIC bought P3 Logistic Parks, a large European owner and operator of logistics properties valued at €2.4 billion (\$2.5 billion), from TPG Real Estate and its partner Ivanhoé Cambridge, the real estate firm of Canadian pension fund La Caisse de dépôt et placement du Québec (CDPQ).

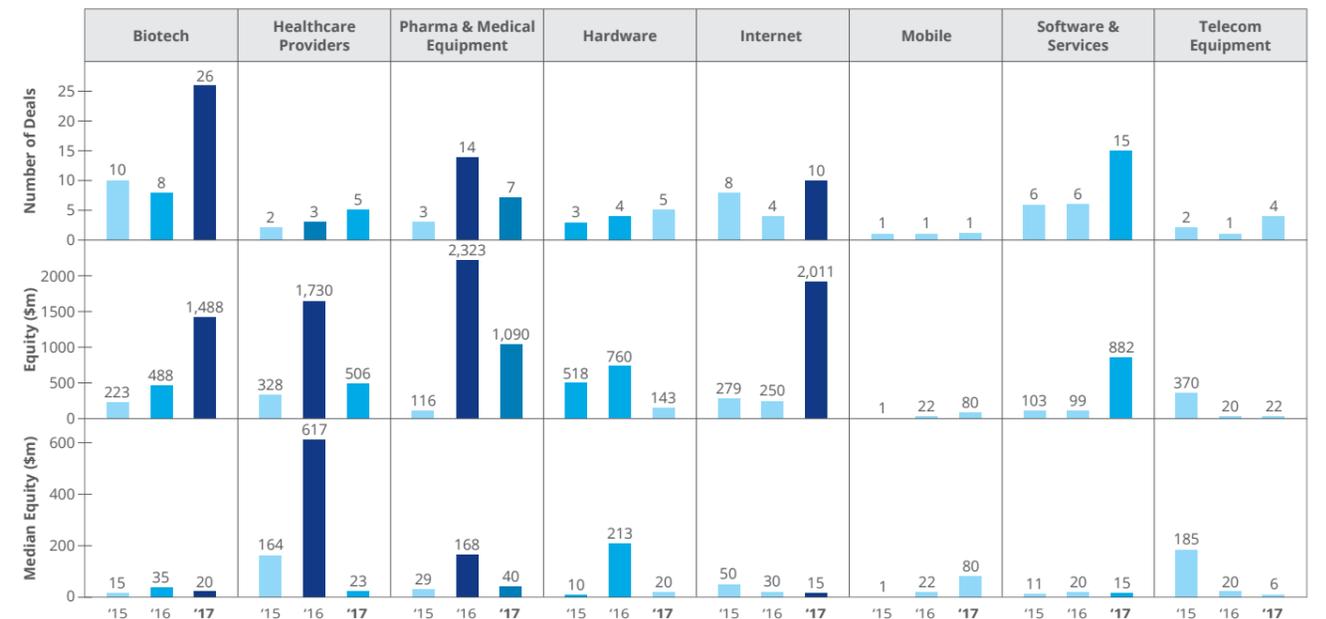
In September, the China Investment Corporation made the largest purchase of the year with the €12.25 billion (\$14.2 billion) acquisition¹⁴ of Logisor, a European logistics assets portfolio, from Blackstone Group (in which CIC used to be a shareholder). The assets of Logisor are well maintained, featuring high occupancy and stable income.

From AI to medtech: the rise of disruptive industries

E-commerce was SWFs' entry point into innovative sectors that disrupted established business models. They have now become more comfortable with these types of companies. As a result, the well-reported¹⁵ trend of government funds investing at earlier stages of the private equity cycle has continued and developed.

Sovereign wealth funds have embraced disruptive technology investment from artificial intelligence to new materials. SWFs sourced 15% of their deals from venture capital firms in 2017, up from 9% in 2015. They invested alongside these firms in biotechnology, innovative pharmaceuticals and new medical devices. We saw a material uplift in investments in innovative sectors in 2017, with 29 deals in technology and 16 in healthcare up from 15 and 6 respectively in 2016.

SWF Direct Investments in Healthcare & Tech Sub-sectors



Total invested (\$m): 1 — 2,323

Source: IFSWF Database

¹⁴ See CIC's [press release](#) on 8 December 2017

¹⁵ See: "Hunting Unicorns", from Bocconi's Sovereign Investment Lab: accessed at <http://www.bafficarefin.unibocconi.eu/wps/wcm/connect/e0b6bbe1-4df0-4d6c-b866-20eb5f38bac9/2016+SWF+Annual+Report.pdf?MOD=AJPERES&CVID=IYFVHE7&CVID=IYFVHE7>

SWFs are keen on backing the next technology platform that will create an all-encompassing ecosystem touching on different industries from consumer services to healthcare – as happened with smartphones. Several sovereign funds are, therefore, investigating different technologies, including higher risk industries such as augmented reality. Although a very impressive and promising technology, augmented reality currently has limited applications, and only Temasek Holdings (in September 2017) and Saudi Arabia's PIF (in March 2018) have recently committed equity to this niche, both backing the sector leader: Magic Leap.

A more common approach is to invest in more advanced technologies that are already offering large-scale disruption opportunities across different industries such as consumer services, energy, finance and healthcare. A case in point is GIC's investment in Meituan-Dianping's \$4 billion financing round in October 2017, which was led by Chinese e-commerce giant Tencent. Meituan-Dianping¹⁶ is a Chinese one-stop services e-platform with 280 million annual active consumers with over five million annual active local merchants across a wide range of services and products that has put artificial intelligence capabilities at the front of its platform.

Healthcare technology is the other sector in which direct sovereign wealth fund investments in privately owned firms rose sharply in 2017. The number of deals more than doubled year-on-year, as SWFs sought to benefit from the drive towards personalised healthcare. The first FDA-approved gene therapy¹⁷ is already in the market and more approvals are likely to follow. European biotech is also developing rapidly, and this year a Swiss company is slated to start human trials of the technology known as CRISPR/Cas9 – that can individually change genes within organisms. Temasek-backed Intellia Therapeutics is also using this technology, and it has now initiated the final testing of safety and efficacy in non-human primates on its programme to treat patients with transthyretin amyloidosis (ATTR) – a rare disease caused by the build-up of abnormal material called amyloid within the tissues of the body.¹⁸

SWFs are also tracking companies using deep learning techniques to mine electronic health records,¹⁹ low-quality consumer tracking data and medical images. Several startups are trying to provide a novel solution to the challenge of providing affordable healthcare programmes in developed markets as populations age and overall health declines due to the obesity crisis. Some sovereign wealth funds have investigated digital health companies powered by artificial intelligence that can reduce costs throughout the supply chain. Temasek, at the forefront of this trend, backed Global Healthcare Exchange, a provider of connected, intelligent healthcare supply chains in May 2017.²⁰

¹⁶ See press release, accessible at: <https://www.gic.com.sg/news-and-insights/gic-invests-in-meituan-dianping-chinas-largest-service-focused-e-commerce-platform/>

¹⁷ See FDA's press release. Accessible at: <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm589467.htm>

¹⁸ See press release. Accessible at: <https://ir.intelliatx.com/news-releases/news-release-details/intellia-therapeutics-announces-fourth-quarter-and-full-year-0>

¹⁹ See Exponential Future by Azeem Azhar. Accessible at: <https://mailchi.mp/exponentialview/ev146#Governance>

²⁰ See press release. Accessible at: <https://www.ghx.com/news-releases/2017/ghx-receives-investment-from-temasek/>

Taking India public

2017 was the year that sovereign wealth funds really embraced the Indian market. The world's largest democracy has become an increasingly attractive investment destination for investors looking for long-term growth. The International Monetary Fund expects India's gross domestic product to grow at 7.4% in 2018 and 7.8% in 2019, overtaking China as the world's fastest growing economy.²¹ Moreover, it appears that government investors have bought into Prime Minister Narendra Modi's efforts to modernise India, pursuing a broad privatisation agenda. While we have previously observed some investment in this market from SWFs, we saw a dramatic uptick in 2017. Sovereign funds made 42 investments in India in 2017, worth \$2.9 billion, up from 33 in 2016 for a total of \$1.7 billion.

SWFs did brave India's notoriously tricky private markets, frequently with a local partner with the knowledge to successfully execute real estate development projects and manage assets. For example, in August 2017 GIC signed a \$1.9 billion partnership with Indian property company DLF Cyber City Developers to build a mixed-use rental portfolio, to capitalise on the residential requirements of India's growing middle class. Similarly, ADIA acquired a minority stake in KKR India Financial Services, an alternative credit business providing financing to corporations and mid-sized enterprises, founded by KKR a private equity firm with a long history of investing in India.²²

However, SWFs' preferred way of accessing India's economy was as anchor investors in IPOs. Indian companies raised more cash in new local equity market issuances than they had done for any of the last ten years: more than \$10 billion.²³ There are many opportunities to invest at IPO as India's capital markets remain relatively shallow compared to the size of its economy and there are many companies looking to list on the country's two major exchanges: the Bombay Stock Exchange and the National Stock Exchange of India. The financial services sector was the most attractive to SWFs in 2017, as direct investments in banks and insurers act as a proxy for overall economic growth and sovereign funds took a similar approach when they first sought exposure to China a decade ago. India is also a relatively underserved financial services market, with great potential for growth in both retail and commercial banking. We observed 18 instances of SWFs acting as anchor investors in financial services company IPOs, with a total value of \$2.3 billion in 2017. The lion's share of the amount raised was from five insurance companies that went public. SWFs invested in three of them: HDFC Standard Life, SBI Life and ICICI Lombard. Telecom companies and utilities also grabbed some SWF anchor investors: ADIA invested in Tejas Networks, and the Future Fund in India Grid Trust at IPO.

²¹ International Monetary Fund, World Economic Outlook, April 2018, "Cyclical Upswing, Structural Change". Accessible at: <https://www.imf.org/en/Publications/WEO/Issues/2018/03/20/world-economic-outlook-april-2018>

²² "KKR India Financial Services Secures ADIA as Minority Shareholder", 4 December 2017, accessed at: http://media.kkr.com/media/media_releasedetail.cfm?ReleaseID=1050503

²³ See: "Digging into what was behind 2017's IPO boom", Economic Times, 05 Jan 2018, accessed at: <https://economictimes.indiatimes.com/markets/stocks/news/digging-into-what-was-behind-2017s-ipo-boom/articleshow/62375579.cms>

Outlook

In our first annual review of sovereign investment activity, we indicated four key trends, and several developments that we think have longevity.

Although the data is still not conclusive, one key trend that we identified – the slowdown in direct investments in private markets, particularly in real estate – is likely to stay in the short-to-medium term as the current market dynamics are likely to linger.

Direct investments in innovative sectors, are unlikely to slow down, as sovereign funds seem to be a good match for most startups and growth companies, being long-term, non-intrusive investors with patient capital at their disposal. In fact we have already seen some SWFs, including the Alaska Permanent Fund Corporation, Mubadala and Temasek investing in series A rounds of capital-raising. Companies that have some track record, but are still looking to bring their products to different markets used to court venture capital firms, but are now looking with interest to SWFs, particularly if they want to scale up their businesses in Asia.

In the partnership and cooperation field, one key development that is likely to grow is the relationship with peers and private equity firms in sourcing minority stakes in more mundane sectors, such as consumer staples. These sectors have the potential to withstand downward economic trends, as already highlighted.

It appears that the median size of a SWF investment is likely to remain at current levels, much lower than two years ago, as it is linked to the slowing activity in real estate (which generally requires a higher equity cheque) and the more assiduous participation of sovereign wealth funds in early-stage capital fundings (which have smaller tickets).

In India, SWF investment is likely to remain focused on privatisations of state-owned companies and financial services. Our initial analysis indicates that the region will remain an attractive investment destination, with a similar level of IPOs in 2018.

Data methodology notes

The International Forum of Sovereign Wealth Funds (IFSWF) has created a database of sovereign wealth fund (SWF) direct equity investments starting in January 2015. We have created this database to further encourage disclosure and transparency among the sovereign wealth fund community and provide an accurate representation of the strategies sovereign wealth funds employ when allocating capital in global equity markets. We hope that this endeavour will help actors in financial markets and the specialist media better understand this diverse and unique group of investors.

Institutional coverage

In our database we include IFSWF members and SWFs that are not members that we believe conform to the definition set out in the Santiago Principles: “special purpose investment funds or arrangements that are owned by the general government. Created by the general government for macroeconomic purposes, SWFs hold, manage, or administer assets to achieve financial objectives, and employ a set of investment strategies that include investing in foreign financial assets.”

It is worth noting that this definition **excludes** foreign currency reserves held by central banks for monetary policy purposes, even those that in some instances manage part of the foreign exchange reserves like a SWF such as the Hong Kong Monetary Authority, China’s State Administration of Foreign Exchange (SAFE), or the Saudi Arabian Monetary Agency (SAMA).

After a rigorous research and assessment process we have settled on a group of more than 60 state-owned investors. These are listed in Table 1.

Table 1: List of SWFs tracked in the Database

Fund	Country
Revenue Regulation Fund	Algeria
Fundo Soberano de Angola	Angola
Future Fund	Australia
Western Australian Future Fund	Australia
State Oil Fund of the Republic of Azerbaijan	Azerbaijan
Bahrain Mumtalakat Holding Company	Bahrain
Fondo para la Revolución Industrial Productiva (FINPRO)	Bolivia
Pula Fund	Botswana
Brunei Investment Agency	Brunei
Alberta Heritage Savings Trust Fund	Canada
Economic and Social Stabilization Fund	Chile
Pension Reserve Fund	Chile
China Investment Corporation	China
Fondo de Ahorro y Estabilización (FAE)	Colombia
Fund for Future Generations	Equatorial Guinea
CDC International Capital	France
Fonds Gabonais d'Investissements Stratégiques	Gabon
Ghana Petroleum Funds	Ghana
Pemerintah Investasi Indonesia (PIP)	Indonesia
National Development Fund of Iran	Iran
Ireland Strategic Investment Fund	Ireland
CDP Equity (formerly Fondo Strategico Italiano)	Italy
National Investment Corporation of National Bank	Kazakhstan
Samruk-Kazyna	Kazakhstan
Revenue Equalization Reserve Fund	Kiribati
Korea Investment Corporation	Korea
Kuwait Investment Authority	Kuwait
Libyan Investment Authority	Libya
Khazanah Nasional BHD	Malaysia
Fondo Mexicano del Petróleo para la Estabilización y el Desarrollo	Mexico

Ithmar Capital	Morocco
New Zealand Superannuation Fund	New Zealand
Nigeria Sovereign Investment Authority	Nigeria
Government Pension Fund Global	Norway
Oman Investment Fund	Oman
State General Reserve Fund of the Sultanate of Oman	Oman
Palestine Investment Fund	Palestine
Fondo de Ahorro de Panamá	Panama
Fondo de Estabilización Fiscal (FEF)	Peru
Qatar Investment Authority	Qatar
National Wealth Fund	Russia
Russian Direct Investment Fund	Russia
Agaciro Development Fund	Rwanda
Public Investment Fund	Saudi Arabia
Fonds Souverain d'Investissements Stratégiques (FONSIS)	Senegal
GIC Private Limited	Singapore
Temasek Holdings	Singapore
Petroleum Fund of Timor-Leste	Timor-Leste
Heritage and Stabilization Fund	Trinidad & Tobago
Turkiye Wealth Fund Management	Turkey
Turkmenistan Stabilization Fund	Turkmenistan
Abu Dhabi Investment Authority	UAE
Emirates Investment Authority	UAE
Investment Corporation of Dubai	UAE
Mubadala Investment Company ¹	UAE
Alabama Trust Fund	USA
Alaska Permanent Fund	USA
New Mexico State Investment Council	USA
North Dakota Legacy Fund	USA
Permanent Wyoming Mineral Trust Fund	USA
State Capital Investment Corp	Vietnam

Institutions in shaded rows are IFSWF members (as of mid-2018) ¹

¹ Also includes transactions from the Abu Dhabi Investment Council (ADIC), and the International Petroleum Investment Corporation (IPIIC), recently merged into Mubadala Investment Company.

It is important to note that our database excludes transactions by SWFs' portfolio companies. This is particularly important for funds such as Kazakhstan's Samruk-Kazyna, Malaysia's Khazanah Nasional, Bahrain Mumtalakat Holding Company and Singapore's Temasek Holdings, whose assets include government holdings in strategic companies. Where relevant, we record the initial capitalisation of the companies and any subsequent investment in them. This not only prevents double counting, but also prevents us from erroneously capturing transactions that are commercial mergers and acquisition activities, rather than investments that are part of the parent SWF's investment strategy.

For example, we would not include any acquisitions carried out by ST Telemedia, a telecommunications and media company wholly owned by Temasek, as this reflects the strategy of the company, not its parent. Neither do we include subsidiaries and/or funds open to external investors, such as Vertex Venture Holdings, a venture capital firm owned by Temasek Holdings, which invests capital provided by external investors as well as Temasek.

This distinction is not often made in commercially available mergers and acquisitions databases, and, therefore, may result in our overall investment values being lower than those reported by these providers.

Asset class coverage

Although we consider all the funds listed to be SWFs not all of them will feature in our data. We have focused our data on direct equity investments in both public (listed) and private (unlisted) markets. Many of the institutions included in our list either have an investment mandate or liability profile that prevent them from investing in equity instruments or require them to use external investment managers.²

Although we track some external investment mandates in our data, we have not yet included them in our analysis. The information on these allocations varies too widely to be meaningful and many contracts with external managers are covered by client confidentiality clauses.

By recording their direct equity investments, we aim to study SWFs' strategic investments and partnerships and capture the nuances of how SWFs structure investments. Consequently, we do not include small open-market transactions that appear to be undertaken as part of a passive equity strategy executed by internal management teams.

We do record the acquisition of convertible securities. However, we record when they were bought, not when they were exercised as several conversion dates maybe included in a single transaction.

In private-market investments we are careful to consider any debt facilities used by sovereign wealth funds to finance their acquisition. This is particularly important in real estate, for example, where the use of mortgages and the issuing for mortgage-backed securities is common practice. As a result, we only record the initial equity portion of the investment, rather than the top-line value of the asset. This means that the hard currency amount we record for each investment may be lower than the volumes suggested by other providers of information about SWF activity.

² An exception to this rule is Australia's Future Fund. Although the Fund's mandate requires it to use external managers to make investments, it often uses co-investment structures to take quasi-direct stakes in private companies, properties and infrastructure assets. We include these stakes in our data where they are disclosed.

In the case of joint ventures or consortium acquisitions where the total amount is disclosed, but individual contributions are not, we estimate the value by taking into consideration the number of investors, financing and typical investment behaviour by the fund in question. For example, several sovereign wealth funds disclose that they do not take stakes over a certain percentage of the equity of a company, so this is an integral part of assessing the size of the investment.

Data collection

We collect data from publicly available sources. However, it might come as a surprise that we do not use any commercial mergers and acquisitions databases to provide us with information. Our team's experience of using these is that they are often inaccurate and/or incomplete as they do not focus on sovereign wealth funds specifically.

Instead, we use a range of online tools to mine data from primary sources such as regulatory and stock-exchange filings as well as press releases. This enables us to assess the real information in the public domain, rather than relying on an interpretation of this information that may have missed vital nuances about the structuring of an investment in the private markets, or may not have noticed that a stake in a public company may have been built up by a sovereign wealth fund over a number of weeks or months, rather than in one go. This is an important nuance as it will generally affect the headline value of the investment.

This is the most accurate way of collecting data in real-time. However, it has provided us with some challenges when creating a database going back more than two years as some filings and disclosures are no longer in the public domain. As a result, we limited our database to starting in 2015, but we may have missed some transactions in the earlier part of our data.

Additionally, each year, after collecting the data, we give IFSWF members the opportunity to highlight any material errors or inaccuracies in the information we have gathered on them. We receive input from a number – but not all – of our members, as some have legal limits on what they can disclose to third parties.

Currency

We report all our data in real US dollars. These are converted from local currency on the date of the completion of the investment, as opposed to the announcement. We use the data from x-rates.com. In the case of slowly built stakes in public companies we use the monthly average value for the share price in local currency and the exchange rate.

Regions, markets and industries

We use the UN classification of global regions in the database to record the country in which the target company primarily operates. This country is not necessarily where it is headquartered or listed. If a company operates globally or regionally we defer to the location of the headquarters.

To offer additional insight into SWF investment strategies we use Morgan Stanley Capital International (MSCI) regional indexes to group investments' target countries by their level of market liquidity.

To identify the industry in which a company operates we follow a customised version of the Industry Classification Benchmark, to classify direct investments into 12 industries and 40 subsectors.

Contributed articles



Coming of age: the evolution of global sovereign wealth fund equity investment¹

Bernardo Bortolotti

Sovereign Investment Lab,
Bocconi University

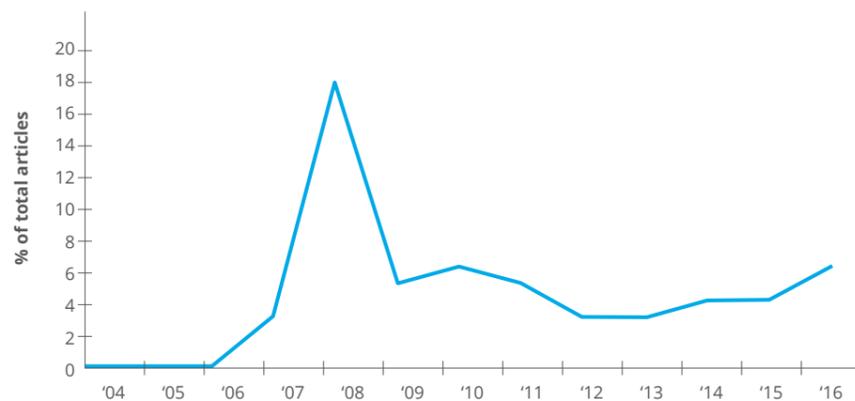
Markus Massi

Boston Consulting Group

Sovereign wealth funds have long been well-known players in global capital markets, but they remained largely unnoticed to the public. The first time a SWF hit the headlines was in 1988, when the Kuwait Investment Office, the London-based arm of the Kuwait Investment Authority (KIA), accumulated a more than 20% stake in the newly privatised British Petroleum and was required to halve this by the UK government. Then, for almost two decades, SWFs remained below the radar. However, in the early 2000s they surfaced again as their assets started to grow due to mounting trade surpluses and commodity prices. They once more became the object of a vibrant debate, media attention, and political fears.

At the heart of the controversy, epitomised by the virulent attack by renowned commentators,² lies the perceived paradox underlining the rise of SWFs. Indeed, from a Western standpoint, one could have hardly discerned that the process of globalisation would have brought state-owned investors from emerging markets to centre stage in global finance. Given the extent of investments abroad, the primary concern was that investors owned by foreign governments could impose non-commercial, political objectives to firms, or even pursue strategic interests jeopardising national security. However, these concerns were grounded neither in proof nor evidence, largely because most SWFs preferred to keep a low profile. Consequently, SWFs remained one of the most controversial and poorly understood phenomenon of the recent financial history.

Sovereign wealth funds coverage in New York Times



Source: The New York Times Chronicle

¹ The views expressed in this chapter are those of the authors and do not necessarily represent the views of the International Forum of Sovereign Wealth Funds, or individual SWFs. Giacomo Loss, Alessandro Scortecchi, Pratik Shah and Nikola Trajkov provided excellent research assistance and insights.

² See Larry Summers, "Funds that shake the capitalistic logic", Financial Times, July 29, 2007

Here, we aim to fill some of this gap, and provide a fact-based assessment of SWFs' behaviour over the last two decades by looking at direct equity investments.³ Direct equity represents only a part of SWF portfolios, and only the tranche that is not invested by external managers. However, assessing the trends apparent in these investments can reveal quite a lot about SWFs' investment preferences as these comprise holdings they choose to own directly. By analysing the evolution of their investments along various dimensions, some interesting patterns surface. The recent history of SWFs' investment unfolded in stages with different characteristics in terms of size, target and models, showing an ability to adjust to changing environments, resilience to adverse market conditions, and progress towards a stage of maturity that allows them to shape the future of global finance.

Beginnings, 2000-2007

In this article, we use the definition of sovereign wealth fund employed by the Sovereign Investment Lab at Bocconi University: (1) an investment fund rather than an operating company; (2) that is wholly owned by a sovereign government, but organised as an independent entity from the central bank or finance ministry to protect it from excessive political influence; (3) that makes international and/or domestic investments in a variety of risky assets; (4) that is charged with seeking a commercial return; and (5) which does not have a stream of explicit liabilities committed to individual citizens, such as pension funds, or to a government, such as stabilisation funds.

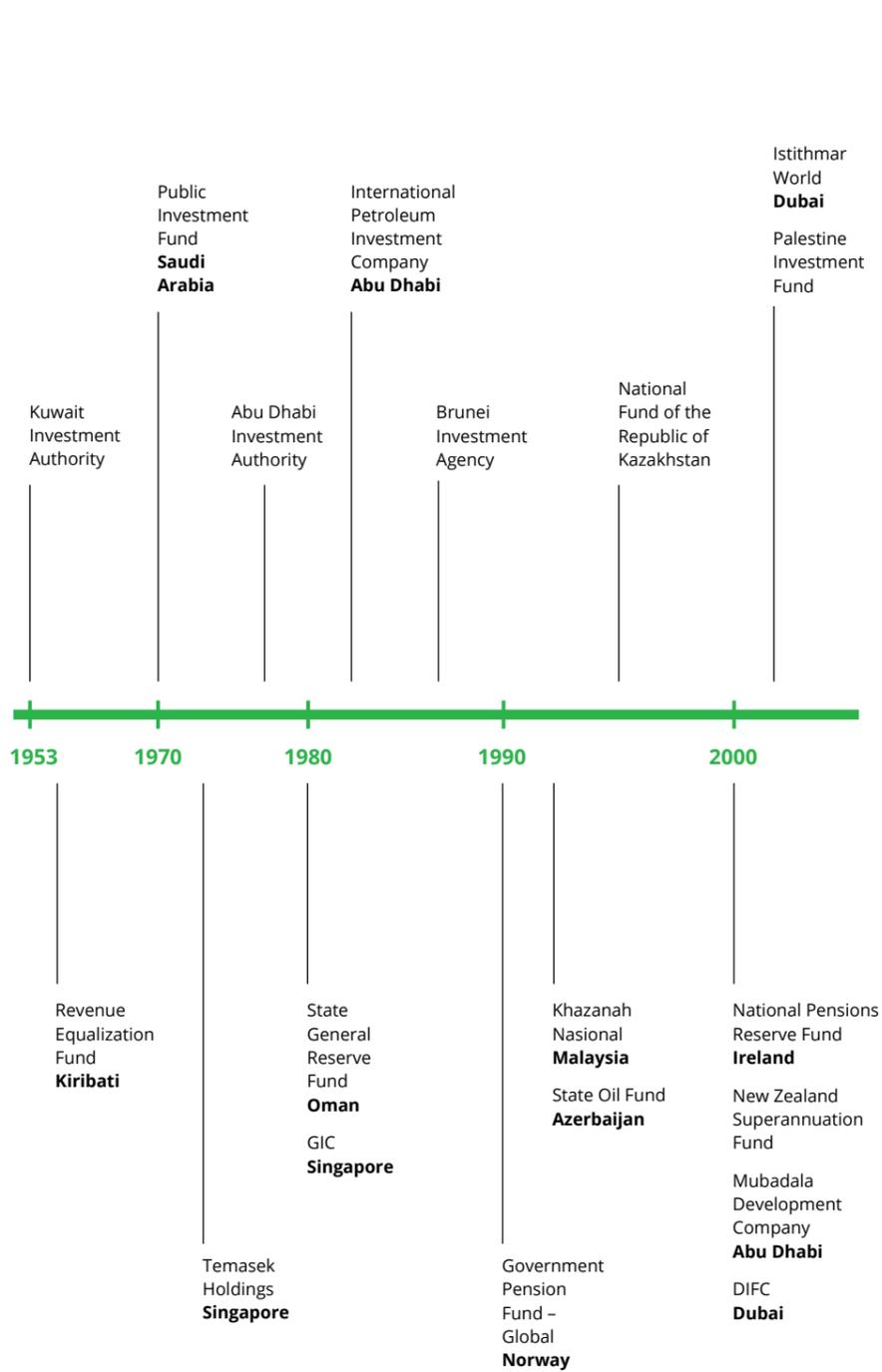
Although sovereign wealth funds have been in existence since the founding of the Kuwait Investment Office in 1953, the golden age of SWFs started with the new millennium. We refer to the period from 2000 to 2007 as "the Great Accumulation", which was characterised by persistent macroeconomic imbalances. Foreign exchange reserves piled up in emerging markets as net exports from Asia more than doubled as a percentage of national wealth and commodity prices skyrocketed, with oil threatening to top \$200 a barrel. According to the International Monetary Fund (IMF), during this period a total of \$3.5 trillion of reserves were accumulated by exporting countries, with an average increase from 12% in 1990 to 40% of gross domestic product by 2007.

As reserves accumulated well beyond the equilibrium level suggested by monetary policy or precautionary motives, exporting countries created SWFs to diversify reserves, to release currency and inflationary pressures and generate higher returns. Unsurprisingly, during this period SWFs were the fastest growing cluster in the global fund-management industry, with an estimated compound annual growth rate of assets under management of 19%, and 71% in equity investment.⁴

³ The analysis is based on the SIL Global Transaction Database, reporting transaction level information for 2204 deals worth in total \$711 billion.

⁴ Elaboration on TheCityUK SWF annual reports and SIL Global Transaction Database

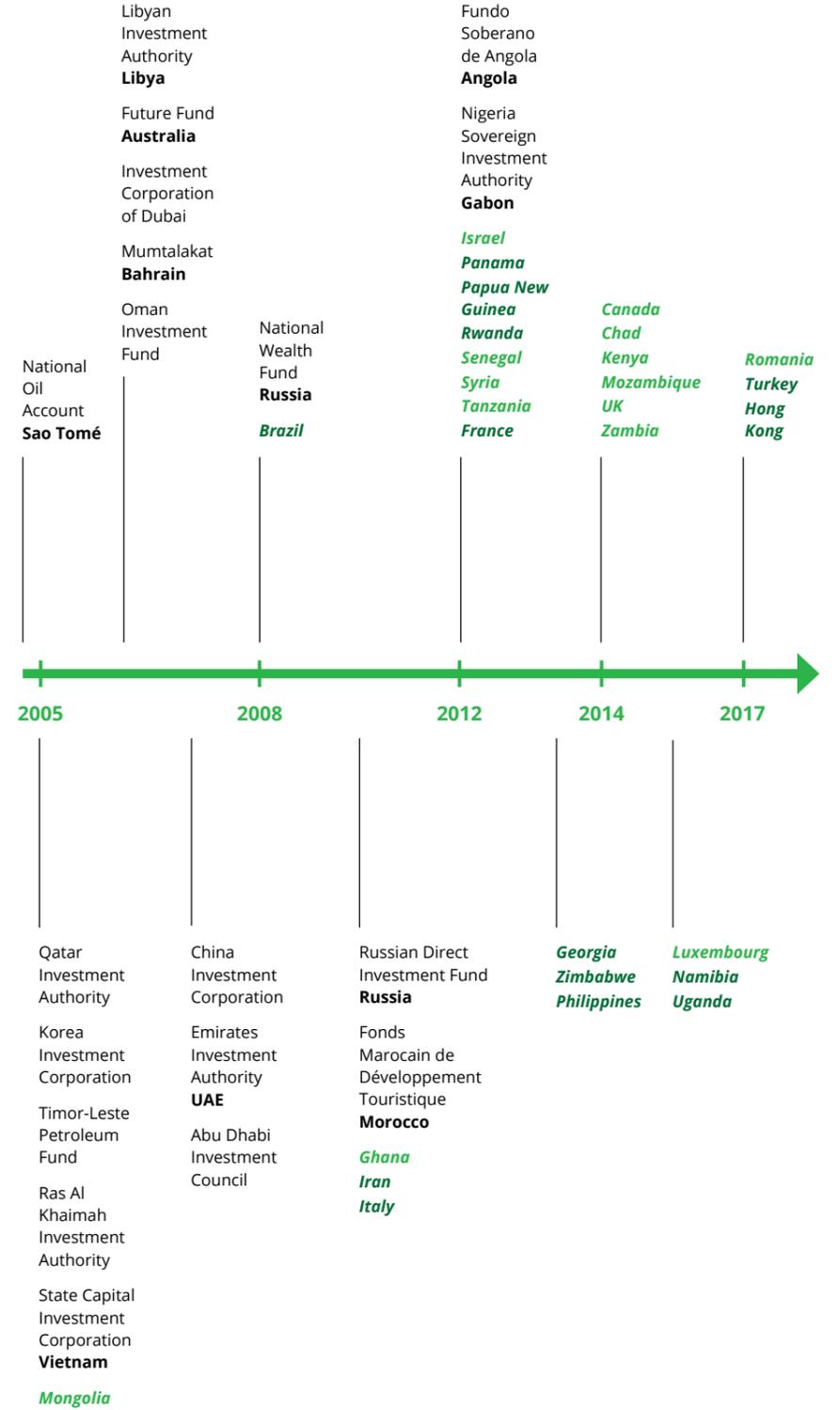
The SWF Timeline



- Countries which have either announced or planned the creation of a SWF
- Countries whose SWF does not fully comply with the SIL's definition of SWF

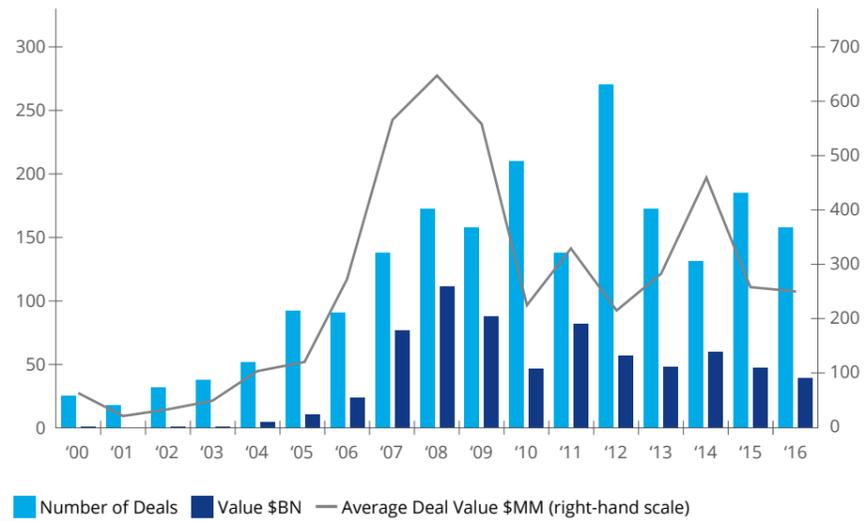
Source: Sovereign Investment Lab

Note: See pages 3-9 for institutions that conform to the IFSWF's definition of a sovereign fund. There will be discrepancies.



The deployment of such vast reserves led to a marked increase in sovereign investment activity. In 2007, SWFs invested around \$78 billion worldwide, according to Sovereign Investment Lab data. This amount was up from only \$2 billion in 2000: an average annual growth of approximately 70%. Not only did the total value of sovereign wealth fund investment grow but so did the average size of their investments, which increased from an average of \$89 million in 2000 to about \$790 million in 2007, an eight-fold increase.

SWF investments



Source: Sovereign Investment Lab

A more detailed assessment of the deals made in the years up to 2007 shows three distinctive elements that indicated how sovereign vehicles had ventured into uncharted territory and risk exposures:

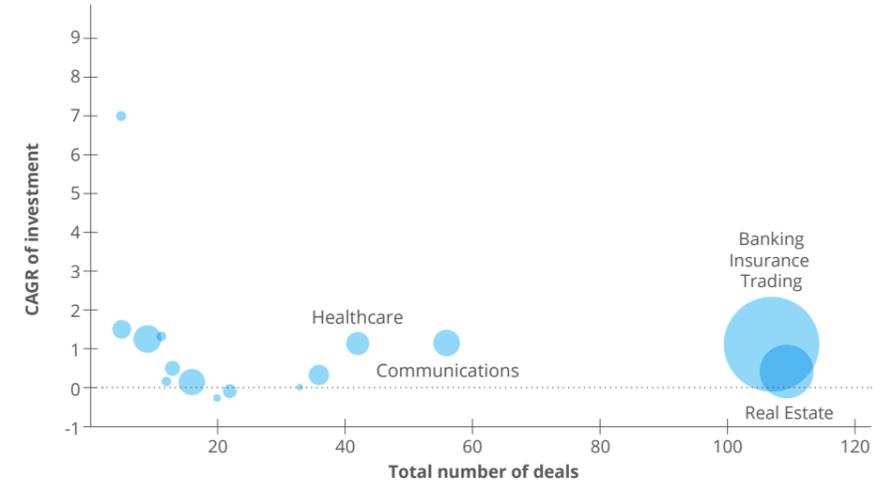
- A predominance of investments in foreign markets
- A focus on financial services and real estate
- A rise in internally managed assets.

A clear majority of investments made by sovereign wealth funds throughout the 2000-2007 period was directed to foreign assets, with an average of about 85% of the total. The need to diversify assets outside of domestic economies primarily drove this trend, as well as an increasing appetite for returns.

SWFs concentrated their direct investments in financial services and real estate during this time, both in terms of number and size of investments completed, covering, respectively, 55% and 20% of total value across the period. Certainly, the sectors' underlying growth drove this choice before the financial crisis, indicating "me too" investment strategies and inexperienced risk management capabilities. In addition, sovereign wealth funds especially those from the Middle East, invested in prominent commercial properties driven by the general affiliation for physical assets, as well as a strong belief that real estate is a safe investment with an ever-increasing capital appreciation profile.

At this time, nearly all sovereign wealth funds leveraged internal capabilities to drive their investment activities. In some circumstances, this over-eager ramping up of internal teams led to suboptimal investment decisions and risk management. As consequence, some SWFs ended up with excessive risk exposure to some assets that could have been mitigated by collaborating with experienced investment teams. However, partnerships with other professional investors only started materialising around 2007, when it was (in hindsight) too late.

SWF Investments by Industry: 2000-2007



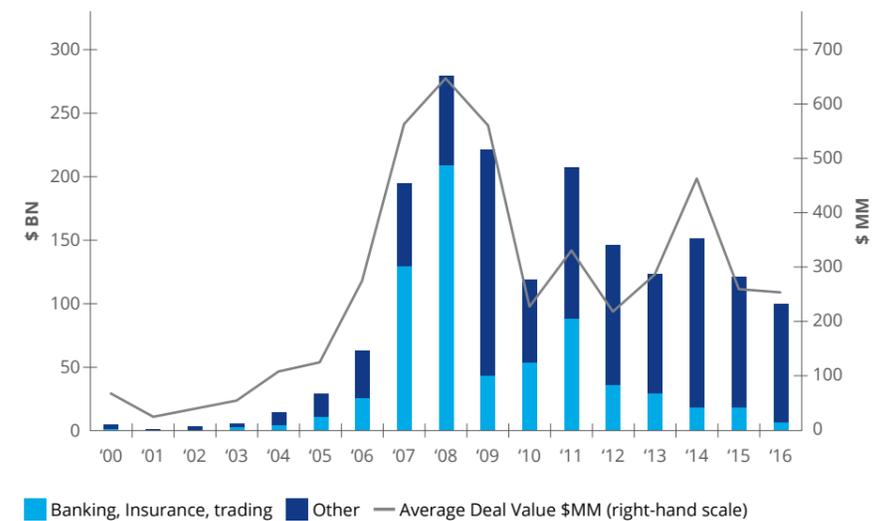
Source: Sovereign Investment Lab

Weathering the storm, 2008-2009

Following the market collapse, governments across the world decided to intervene to prevent a global meltdown. The US initiated a \$700 billion plan to purchase or insure impaired assets, the so-called Trouble Assets Relief Program (TARP), which was followed by the UK and several other European countries. Starting from late 2007 through 2009, sovereign wealth funds stepped into the breach to provide capital injections to Western banks worth in total \$124 billion.

At this stage, SWFs made a number of investments: a total of \$17.3 billion into Citigroup by the Abu Dhabi Investment Authority (ADIA), Singapore's GIC and KIA; \$10.2 billion into Barclays by the Qatar Investment Authority (QIA) and Singapore's Temasek Holdings; \$12.4 billion into Merrill Lynch by Temasek, KIA and the Korea Investment Corporation; \$6.8 billion into Morgan Stanley by the China Investment Corporation (CIC), and \$10.3 billion into UBS by GIC.

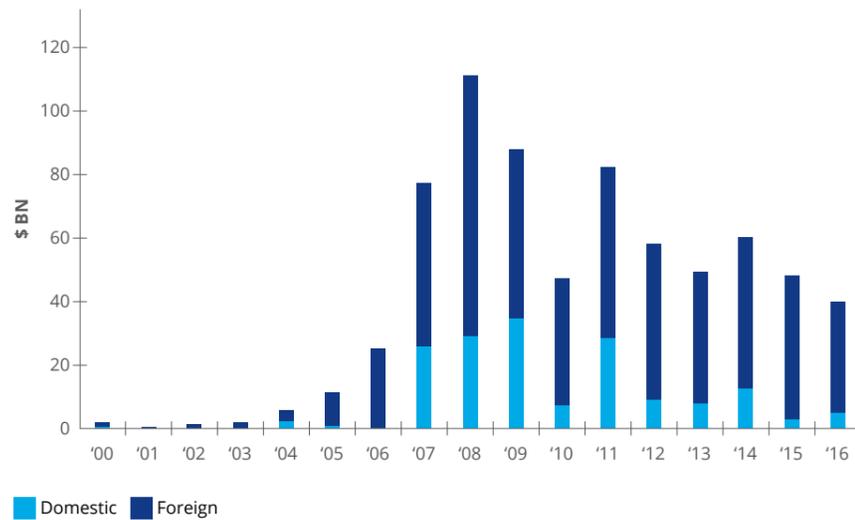
SWF Direct Equity Investment in the financial industry



Source: Sovereign Investment Lab

Conventional wisdom assumes that SWFs primarily invest abroad for diversification purposes. However, when the crisis hit hard the funds were also called upon to support the local economy with targeted investments or to enhance to a certain extent the restructuring of some sectors. Indeed, the share of domestic investments in the 2007-2008 surged to record highs, for example, QIA adopted a \$5.3 billion plan to buy up to 20% of the capital of local banks on the Doha Securities Market, which lost 25% during September 2008.

SWF Direct Equity Investment: domestic vs foreign



Source: Sovereign Investment Lab

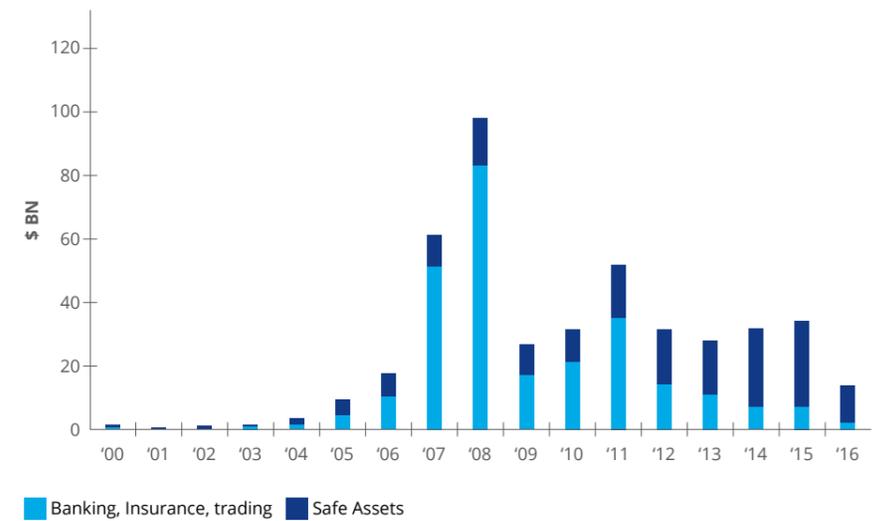
Broadly speaking, the countercyclical, stabilisation role played by governments and sovereign investors as lenders of last resort revitalised the concept of state ownership as a modern version of old-fashioned state capitalism. During the crisis, it was still unclear whether the expansion of the state was temporary or rather a structural change. At any rate, this shift caused a U-turn in perception of sovereign investors in the public and in the policy sphere. From barbarians at the gate attempting to storm the bastions of Western capitalism, SWFs turned into the most-courted “white knights”, responsible investors bringing global finance back from the brink.

In the New Normal, 2010-2013

The expectations of a quick recovery from the financial crisis in developed markets did not materialise. In the absence of any significant coordinated, post-crisis fiscal policy adjustment, all four systemically important central banks adopted unconventional monetary policies, known as quantitative easing. Subsequently, major industrial economies entered the so-called “new normal”, a regime shaped by low interest rates, stagnating productivity, sluggish growth, and private sector deleveraging. In financial markets, the new normal compressed risk premia across asset classes to historical lows as investors searched for returns. During this period, emerging markets, which had enjoyed breakneck growth over the previous two decades, started to close the productivity gap with the more developed economies. But, as the gap narrowed, growth rates declined – and the slowdown of demand from China and India led to lower commodity prices. At the same time, the shale revolution in North American energy markets put downward pressure – and future uncertainty – on the oil and natural gas prices that have underpinned much of SWFs’ growth. Consequently, from 2010 to 2013, the two main sources of SWFs’ growth – exports and high energy prices – turned into spent force, which changed the dynamics of wealth accumulation. Indeed, around 2010, SWFs reached an inflection point, with lower rates of asset accumulation and lower returns on their investments.

The “new normal” had important implications for the asset allocation of institutional investors, including SWFs. In a quest for higher yields, most SWFs shifted their allocation in favour of riskier assets, significantly reducing their exposure to bonds or increasing the duration of the fixed-income portfolio. In the direct equity space, SWFs tilted their allocation towards larger equity tickets and “safe” alternatives such as real estate, infrastructure and utilities, ending the love affair with the financial services industry.

Financials vs Safe Alternatives



Source: Sovereign Investment Lab

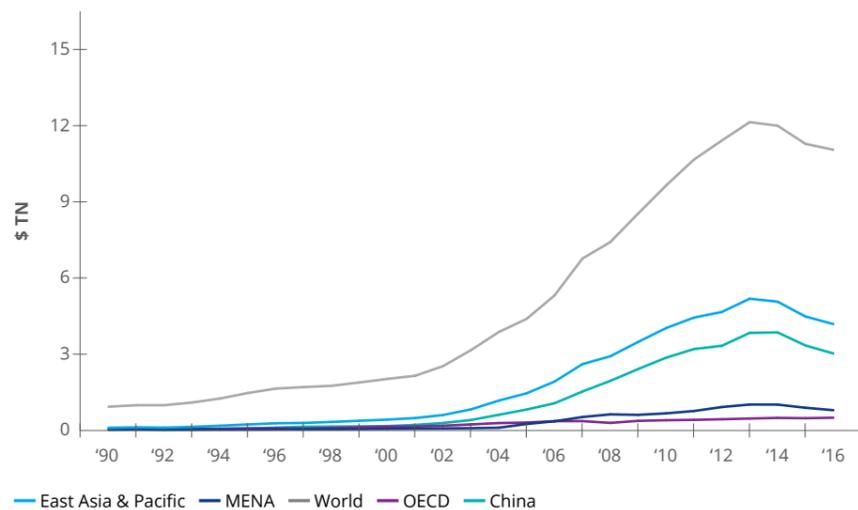
There are tactical and strategic reasons at the root of this shift. The increasing appetite for real assets, primarily property, was certainly driven by the objective to manage the possible inflation impact of the unconventional monetary expansion. At a deeper level, however, some SWFs perceived a structural break in market fundamentals and a need to change strategy to maximise risk-adjusted returns over longer investment horizon. This turning point, was indicated by the decision to leverage the distinguishing feature of SWFs as long-term investors: the ability to harvest illiquidity premia by investing in unlisted, real assets with long holding periods. Notable examples of this type of investments are: the \$4.6 billion development of joint office and residential developments Marina One and DUO on the Malaysia-Singapore border by the countries' sovereign wealth funds Khazanah Nasional and Temasek in 2010; and the \$2.8 billion acquisition of a 50% share in Broadgate, a large office and retail complex in London, by GIC in 2013.

Playing the long game, 2014-2016

The new normal had lingering consequences on large swathes of the global economy. Particularly relevant for the sovereign wealth fund community was the collapse in oil prices from mid-2014, which worsened the macroeconomic outlook of producing countries, where twin surpluses (fiscal and trade) turned into deficits. Pressed by tighter public finance conditions, most countries in the Arabian Gulf launched contractionary fiscal policies, and austerity measures virtually unseen in these economies since the turn of the century. To soften budget constraints, governments also tapped sovereign wealth, using foreign exchange reserves, or drawing down cash from stabilisation, "rainy day" funds.

Indeed, this period marks a structural break in the dynamics of foreign exchange reserve accumulation. After several decades of unstoppable growth, global foreign exchange reserves started to decline. From 2014, central banks liquidated foreign assets worth \$318 billion, 16% of the total, with the drawdown concentrated in oil-producing countries such as Saudi Arabia and Russia, and China, a country acting to stem currency devaluation induced by the capital flight. Stabilisation funds, i.e. funds with a mandate to isolate the budget from commodity price fluctuations, provided another buffer. For example, the Russian Reserve Fund liquidated its entire portfolio and poured the cash in the state coffers. Algeria's Fonds de Regulation de Recettes, directly managed by the central bank, also contributed to support a distressed public budget.

Foreign-exchange reserves by region



Source: IMF

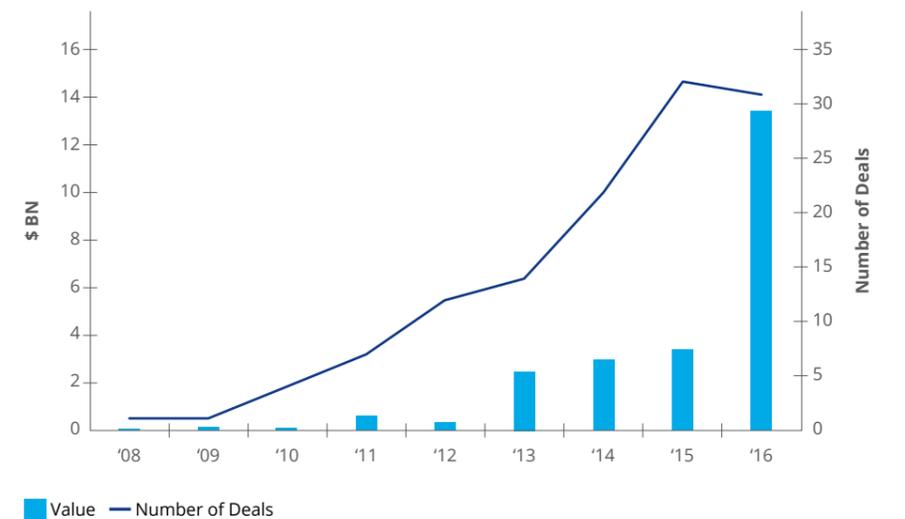
SWFs with a mandate for intergenerational saving included in the SIL list were not severely impacted by the oil crisis, despite panicked reporting and prediction of their demise. Although the Norwegian government did withdraw cash from its sovereign wealth fund for the first time in late 2015 to cover budget holes, and Qatar, a country lacking a stabilisation fund, reshuffled its highly illiquid portfolio on the back of concerns about the oil price. Yet, the reaction by SWFs has largely been more muted than most observers had expected. While the value of SWF investments has declined, deal flow has not dried up. Total assets under management, meanwhile, have increased, albeit at a much slower pace than in the past. In some respect, host countries have shown restraint by not treating SWFs as pure rainy-day funds. While domestic budget smoothing is certainly one of the objective of many SWFs, another primary function of SWFs is to provide a source of diversified revenues for countries overly dependent on natural resource revenues.

In these challenging times, many commodity-producing countries – most notably Saudi Arabia – are seeking to diversify their revenue streams. The Kingdom's plan includes, amongst other provisions, listing state-owned Saudi Arabian Oil Company (known as Saudi Aramco) and allocate the proceeds to the Public Investment Fund, with the mandate to invest them to diversify the economy out of oil. Hence, paradoxically, lower commodity prices in the one of the world's most oil-dependent economies are leading to an increase in assets under management by a SWF.

To some extent, the oil shock was a catalyst for a change of strategy, the harbinger being the increased allocation in illiquid assets of the previous period. After decades of investment activity, surfing the ebbs and flows of market fluctuations, SWFs are now fully aware of their potential – and their limits – as long-term investors. This experience is becoming apparent in their willingness to incorporate disruptive trends in their investment framework.

One of the most striking facts of the activity by SWFs during the 2014-16 period is the increasing appetite for early-stage investments in privately held technology companies and disruptive innovation. During this time, SWF equity investments in high-tech companies reached \$19.8 billion, accounting for 13.3% of investment value and 17.7% of the total number of investments. These investments are diverse, stretching from the \$8 billion acquisition of Veritas Technologies by GIC and Carlyle Group, to the Saudi PIF's \$3.5 billion investment in the ride-hailing app Uber, a signal of direction in which the fund is planning to move in the following years as part of the country's broader "Vision 2030" plan.

SWF Equity Investments in IT-Linked sectors

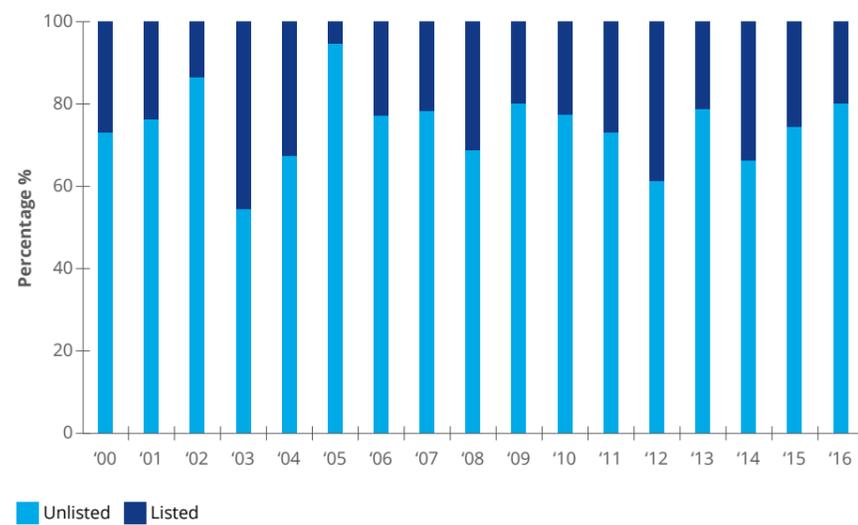


Source: Sovereign Investment Lab

Interestingly, SWFs are not only increasing their investments in IT, but also changing their strategy. More SWFs are opting for direct investments along with private equity or venture capital fund managers, instead of joining these funds as investors. In line with this trend, the most active funds have started to open offices and hiring people with abundant transaction experience, cutting fees and getting closer to action.

The recent trends observed in the IT sector could be the forerunners of seismic changes in the industry in an effort against secular stagnation. SWFs acting in partnership with other like-minded investors could embrace “thematic investment” beyond disruptive innovation and redesign their asset allocation to capture risk premia, riding mega trends including demographic transitions, climate change, urbanisation, fintech, country competitiveness, the rising emerging-market middle class. As in the IT sector, the most likely targets for these investments will be unlisted companies and projects, often associated with high-risk and early-stage financing, consolidating the increasing trend of investment in private markets already visible in the most recent data.

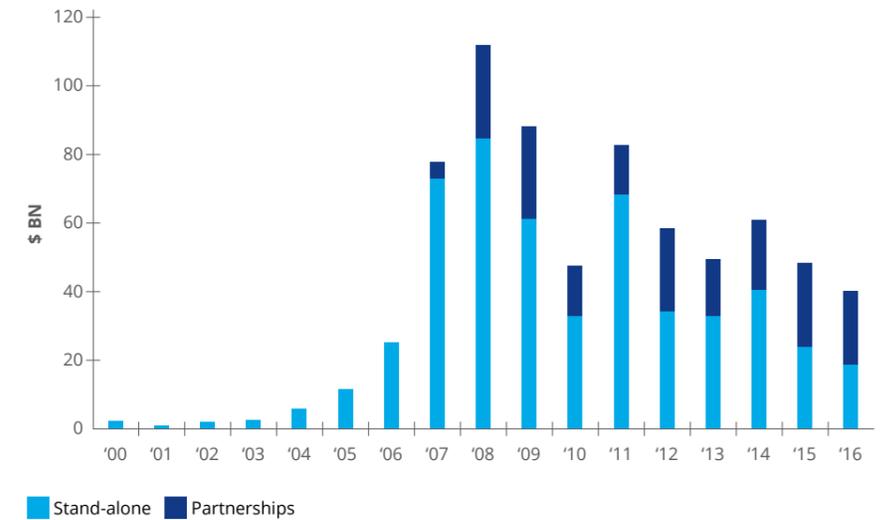
SWF Equity Investment in Listed vs Unlisted targets



Source: Sovereign Investment Lab

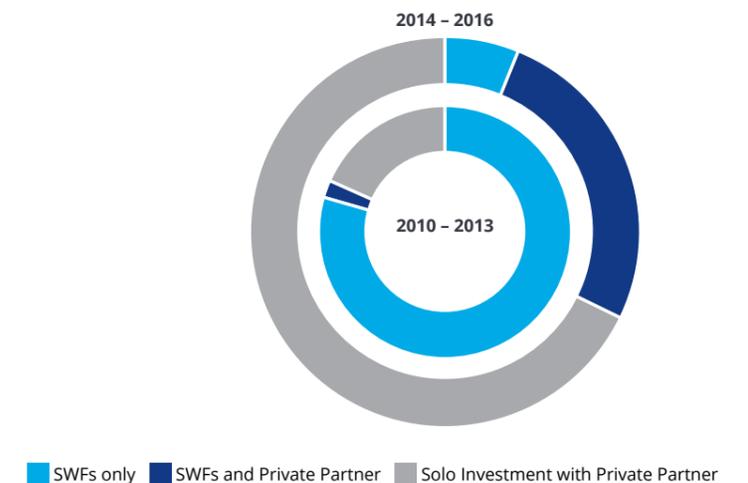
This change of investment strategy will have important implications on SWFs' organisational structures and deal execution. We have already observed a significant increase in deal values broadly related with partnerships, or investment alliances. Recently, the profile of this type of arrangement has changed: while SWFs have previously tended to team up among themselves, we are now observing an increased willingness to collaborate with financial or strategic investors in “Sovereign-Private Partnerships”. We are thus observing a consolidation of the co-investment model across the board, accounting in 2016 for almost half of deal value.

SWF Direct Equity Investment by Type



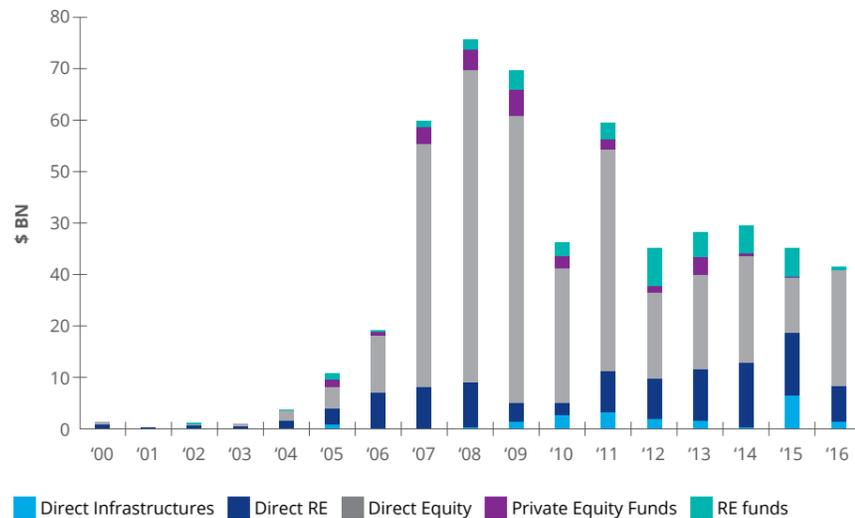
Source: Sovereign Investment Lab

Partnerships



Source: Sovereign Investment Lab

The recent rise of direct equity and co-investments suggests another important theme, namely sovereign wealth funds' enhanced ability to in-source deal making and a more limited willingness to resort to external managers. According to recent surveys, larger funds are putting money directly into specific deals alongside funds in which they have also invested. Institutions have demanded such opportunities both to cut the overall cost of investing via private equity funds and to gain experience that might help them initiate deals of their own in future. The logical extension of this practice will be a progressive reduction of SWFs' role as a passive investor in funds, a trend already visible in the overall data on private markets, showing that investment in real estate and private equity pools has become more marginal over time.

SWF investments in private market

Source: Sovereign Investment Lab

What's next? Characterising SWF v 2.0

SWFs have come of age over the past twenty years, and now display an increased awareness of their potential as long-term investors. Heading to the conclusion, a question arises as to what will be their most likely future. At a broad level, there are three key evolutions that will in many ways be accelerated not only by changes in the domestic (and global) macroeconomic environment, but also by a reformatting of sorts of the internal strategic and operational models employed by funds to drive capital returns.

Evolution 1: From passive observers to direct, active market participants

As we observed earlier, sovereign wealth funds initially took a passive investment approach – they would allocate one member of their investment teams to a board (or board observer) role, have very limited involvement in ongoing strategy and little active management of the investment. That approach worked in an era where generating capital returns was relatively straightforward and corporate value creation was in many ways one dimensional. Nowadays, generating above-market returns requires a much more active management of investments. Sovereign wealth funds are now genuinely participating in, and setting the strategic agenda of, their portfolio companies, using their global influence to drive investment performance and working actively with (and learning from) more experienced joint-sponsors and partners in a deal.

Evolution 2: Taking a deeper role as an “agent-of-change” in the domestic national agenda

As domestic macroeconomic agendas become more global, more diversified and more digitised, sovereign wealth funds are leading the charge to drive tangible progress by undertaking:

More explicit, broad-based knowledge transfer programmes and instituting formal monitoring and reporting measures to assess impact. For example, Saudi PIF's investment in the SoftBank Vision Fund and its impact on the Saudi Arabian domestic diversification agenda or the role of Mumtalakat in building out Bahrain's domestic industry base.

Increased investment in unconventional financing structures, such as the full spectrum of venture capital from seed, Series A and beyond, and greenfield infrastructure and real estate projects, in collaboration with private investors or corporate sponsors. In particular, venture capital investments fit with the knowledge transfer mechanisms that sovereign wealth funds are leveraging. They provide not just a well-structured incubation platform for technologies that could impact more mature industries, but also an exciting new channel for outsized investment returns. Indeed, many well-known, high-performing sovereign wealth funds have established separate teams (in some cases, entities) that focus entirely on early-stage technology investments such as Temasek, Khazanah and KIA.

Evolution 3: Emerging competitors to established private equity and venture capital funds globally

Sovereign wealth funds are becoming increasingly like their private equity and venture capital cousins, with respect to how they view their investments, specifically how long they hold their investments, how they approach composing and building out their teams, and how they compensate and develop skills within their staff. SWFs are also recalibrating their internal governance mechanisms to become more nimble and quicker in evaluating complex investment opportunities. Given the opportunities that they can offer through their global reach, the increasing sophistication of their portfolio value creation teams and their “patient” approach to capital returns, these funds are also being increasingly viewed by exciting businesses as being the strategic partner of choice, over-and-above established funds in the US or Europe.

Given the evolutionary steps as described above, what does the sovereign wealth model of the future look like? We believe that they will, in some way, reflect the following characteristics:

- They will increasingly be perceived as “state-sponsored” investment funds, often sitting in the same entity, combining the best of both investment models to drive domestic and global change. Much like the Canadian pension funds that have transformed their own investment models with great success, we see an equivalent transformation in the sovereign wealth space not too far off. Teams will likely be recalibrated with more focus on skills and experience (than just on “national identity”) especially around digital and technology (and their incubation and application to mature domestic industries), operating models will become leaner and investment decisions will be made quicker.
- They will be viewed by their national governments as being strategic agents for change – an “intellectual trust” rather than just providers of financial capital. They will be often used as global thought partners for the most complex, important and pressing domestic issues and will be used as “accelerators” for domestic industry and sector development – such as Saudi PIF's role in advancing the development of the Saudi SME sector.
- Related to the above, we will likely see a change (albeit over a longer runway) in how sovereign wealth funds determine success – as they evolve and the future-state becomes clearer, such funds are likely to move beyond just financial measures of return as a determinant of success; they are likely to formalise progress against defined ESG metrics and national development in equal measure.

Factors prompting IFSWF members to move into private markets: evidence from an IFSWF member survey¹

William Kinlaw

Senior Vice President, State Street

Kenneth Blay

Vice President, State Street

Brett Moffat

Senior Manager,
Korea Investment Corporation

Joohyung Song

Senior Manager,
Korea Investment Corporation

Why do sovereign wealth funds decide to enter the private equity, real estate, and infrastructure markets? What are the risks and opportunities they see? In a 2016 study for the IFSWF, State Street surveyed 10 IFSWF member institutions, and found that sovereign wealth funds tended to allocate to private markets mainly to enhance returns (alpha), rather than for diversification purposes (beta). Some sovereign wealth funds stated that, due to their long investment horizons (and in some cases, long-dated or non-existent liabilities), they were well suited to bear illiquidity risk inherent in private markets.

Other reasons these sovereign wealth funds cited for investing in private markets included:

- Private markets provide specific exposures that are difficult or impossible to access in public markets. Venture capital provides the opportunity to invest in new innovations in a deeper way than listed securities. Public markets also offer limited opportunities for exposure to infrastructure and real estate. For example, one fund said that real estate investment trusts (REITs) are embryonic in Europe and still developing in Asia. Listed real estate and infrastructure companies also have structural issues that prevent them from providing SWFs with pure exposure to the underlying assets.
- The surveyed sovereign wealth funds also perceived that private-market investments help diversify their portfolios. However, there is a common view that the diversification benefits may be overstated (and risks may be understated) given that not all private-market investments are marked to market, although private equity firms are required to use fair accounting (or mark-to-market valuations) since 2008.

But how do sovereign wealth funds go about investing in unlisted assets? What systems and processes do they have to consider? How do they decide on the size of their allocation?

¹ This piece is adapted from *Comparison of Members' Experiences Investing in Public versus Private Markets* a research paper written by the authors for the IFSWF in 2016

A quick decision or a long process?

Most of the surveyed sovereign wealth funds engaged in an extended period of deliberation and analysis before launching their private markets programmes. This process typically lasted for one to three years. Some funds solicited advice from external consultants or academics to help them evaluate the decision. For example, the Norwegian sovereign wealth fund, the Government Pension Fund Global (GPF) – not included in this survey – is still prohibited from investing in private equity, even after years of intense debate. In April 2018, Norway's Finance Ministry, reiterated its opposition to the asset class in a white paper stating that it did not believe that private equity was transparent enough to fit with the fund's transparent operating model. Norges Bank Investment Management, which manages GPF, has been recommending that the fund should allocate to unlisted equities since 2010 without success.

Before launching a private markets programme, sovereign wealth funds often need to overcome stakeholder concerns about whether the return premium of allocating to unlisted assets fully compensates the investor for the illiquidity and other risks associated with them. Stakeholders usually included boards or government, while sovereign funds can also be subject to media scrutiny. Specific concerns and questions raised by stakeholders included:

- Whether the fund had the required resources to be successful in private markets
- How it would adapt its organisational structure
- How performance would be evaluated and what benchmark would it use
- Whether these investments provided adequate compensation for their complex risks
- The degree of opacity in private markets
- Reputational risk

Sovereign wealth funds have to educate stakeholders on the potential value of private-market investing. In many cases, the funds found real estate easier to explain than private equity and infrastructure. In certain instances, sovereign wealth funds needed to win local support from stakeholders, particularly in the case of major real estate projects.

How much to invest in private markets?

Sovereign wealth funds take a wide variety of approaches to determining an appropriate allocation to unlisted assets. One of the sovereign wealth funds we surveyed said that they had "serious doubts about the ability to determine an 'optimal' allocation," as this was determined by the fund's objectives, particularly around liability profile. Liquidity is a greater concern for investors like stabilisation funds with shorter investment horizons and more imminent cash needs.

Those sovereign wealth funds that have dual objectives of long-horizon capital appreciation and fiscal stabilisation must balance these requirements in their portfolio allocations. "We try to reconcile our ability to withstand a market shock and the liquidity drains that it will impose on us," said another sovereign fund. "We work out what the minimum level of liquidity and the maximum level of illiquidity can be."

Managing illiquidity is also important because it constrains the fund's ability to rebalance its portfolio to its desired asset mix after price fluctuations distorts the allocation. "If you are 70/30 and you can't rebalance when 70 gets to 60, it's harder to benefit from being a long-term investor. This is how we measure the cost of illiquidity in private assets. We all know that rebalancing is a key component of the total return."

Similarly, due to the illiquidity of unlisted assets and the generally large ticket prices, sovereign wealth funds need to create guidelines for the minimum and maximum allocations to any region or industry to prevent unacceptable concentrations in specific sectors or geographies arising in the overall portfolio.

To help set the appropriate allocation, some sovereign wealth funds try to quantify the risk of private-market returns, but this can be a complicated exercise. According to one sovereign wealth fund, volatility can be higher than anticipated after adjusting for the lags in valuations and leverage. The fund believed that “for US real estate, these adjustments can push the volatility into double digits”. “Risk is trickier than returns,” said another.

Most sovereign wealth funds we surveyed agreed that risk management in private markets is largely a qualitative exercise. “We manage risk through diversification, transaction structure and governance. But quantifying the risk using data analysis doesn’t seem to lead to meaningful conclusions.” Consequently, risk management is often a manual exercise: One fund recalled sending an analyst around their offices with a spreadsheet to capture the sector exposure of each of its private investments.

Which unlisted assets to choose?

Another key decision is to which private-market segments should any fund allocate as each fund is different. One fund points out that while these investments might be amalgamated into a single department, they needed to be managed separately. Each sector has its own drivers and expected returns and risks, while investment duration also differs. Infrastructure investments have a seven-to-15-year cycle, while real estate is shorter with five-to-10-year investment horizons, says one fund. “We are puzzled by this move of combining real estate and infrastructure in a single asset class. We tend to think that the risks, drivers, the ways that the markets organise themselves, and the way you access them, are all quite different. You want to have participants in each market rather than trying to bring them both into the same asset class.”

Another difference between the different segments is their cash yield and their ability to provide a hedge against inflation risk. Real estate and infrastructure are seen as fixed income replacements, with the potential to hedge against inflation risk over longer periods. Some sovereign funds have increased their allocation to these segments as fixed-income yields have fallen. Private equity, in contrast, is perceived to be more of a return-enhancing growth driver.

How to choose managers and/or partners in private markets

To maximise the benefits of investing in private markets, sovereign wealth funds need to put the right team in place as this requires different skills and expertise to investing in listed securities. These capabilities need to be built, regardless of the strategy used to deploy capital. Initially sovereign funds need to establish dedicated risk management teams to develop processes and procedures to limit and manage risks relating to excessive leverage of assets, reputation, taxation and regulatory changes, as well as currency fluctuations.

However, it is important to know how to choose the managers or partners. In the words of one of the funds surveyed, “Investing in private markets is like flying a plane. You cannot get out mid-flight, so you really need to know the type of plane you are boarding”. You also need to trust who you are flying it with. Professor Josh Lerner, head of the entrepreneurial/management unit and Jacob H Schiff professor of investment banking at Harvard Business School, believes that manager selection is key. “In all private markets, there is huge disparity between good managers and not-so-good managers. The returns to choosing good managers are really quite high.”

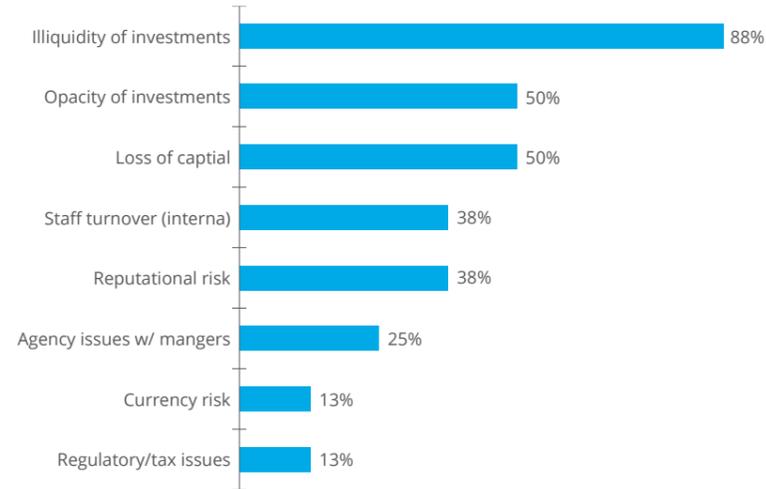
To assess private equity and real estate managers, sovereign wealth funds have developed a range of tools and processes. “We run background checks on deals, organisations and individuals,” said one fund. Another produces a scorecard to evaluate each manager’s people, process, and capabilities. The fund monitors the scorecard over time, assigning managers a green, orange, or red light. Another approach our research revealed is having opportunities evaluated by two independent teams to provide a second opinion.

As part of manager selection, sovereign wealth funds also must consider the relatively high fees that managers charge in private markets. “This is a topic of enormous interest for LPs [limited partners, or investors in private equity funds] around the world. And it is reasonable to see why,” said Lerner. “There are a variety of responses. One is shadow capital: separate accounts where LPs commit more assets in exchange for more favourable economics.” He says that – even over the last five years – fees have become more variable due to investors bargaining harder with their managers.

Lerner also observes that some sovereign funds are deciding to forego paying high fees to develop internal private equity or real estate expertise to invest alone or alongside private-sector partners. He says there’s “a lot of interest in direct investing [among sovereign wealth funds]. It is appealing and has potential for large cost savings. But direct investing is considerably harder than first meets the eye.”

Hiring the right team is vital to success in private markets investing. But investing in private markets “doesn’t mean you can buy anything,” said one fund. “To benefit from being a long-term investor [in private markets], you have to make sure that your assets will survive an economic cycle.” Professor Lerner agrees, “there is a tendency for investors to jump in at the wrong times,” he says, “to invest at market peaks. In all private markets, this is the worst possible strategy! These markets tend to exhibit a ‘boom-bust’ dynamic with tremendous variation in performance across vintage years.”

What are some of the major risks that your fund saw in private market investments at the time the decision was made to enter these markets?*



*Chart shows percentage of SWFs that explicitly identified each risk as a major consideration.
Source: IFSWF

Evaluating performance

To estimate expected returns, sovereign wealth funds often use a building-block approach. They start with the risk-free rate (which is currently very low in most developed economies) and then add in one or more risk premia. For example, one fund expects private equity to generate a 2% or 3% illiquidity premium over public equity over a seven-to-10-year period with an appropriate level of risk. Another approach is to define a fixed hurdle rate of return as well as a benchmark market index. "For infrastructure, we have a real return objective of 5.5% as well as a passive performance benchmark of infrastructure stocks," said one fund. "We would ideally like to beat both benchmarks. If you're going private you need to be earning a return premium relative to passive stock exposure." A third fund set a return hurdle that was linked to inflation: the benchmark is the inflation rate in the G7 countries plus a premium of 4%.

To evaluate performance, sovereign wealth funds rely on a range of benchmarks. Some funds may evaluate any given commingled fund against a group of its peers investing in similar assets. Another approach is to assess the entire portfolio against the private markets portfolio of a universe of endowments or foundations. "It has to be tailored," said one SWF. "You can't compare your venture capital performance to an overall private markets number and reach meaningful conclusions." Compared to public markets, where benchmarks are ubiquitous, there are few benchmarks for private-market investments and these vary between sectors.

Cash-flow issues

Of course, once the target allocation to private markets is determined, the team is in place and the measure of success determined, the SWF must then identify opportunities and begin to deploy capital. "Deploying money in the private markets takes time," said one sovereign fund. "Each year we think through deployment pacing, distributions, and capital calls. Mean-variance analysis concludes that you need much greater exposure to private markets, but in reality we are constrained by the need to not blunder in blindly. If we decided tomorrow that we wanted to allocate 35% of the portfolio to private equity, which is where some university endowments are, we couldn't get there responsibly in two, three, or even five years. The biggest challenge is deploying capital and keeping pace while the fund is growing." A few sovereign wealth funds also talked about the importance of making acquisitions at a balanced pace to ensure the private equity portfolio was appropriately diversified across vintage years.

Conclusions

Although the sovereign wealth funds surveyed had varied mandates and very different experiences, they shared some advice for their peers who are just launching a private markets investment programme or considering doing so.

Start slow

"Go into the market gradually. It takes time to build up a good team with the capability to manage private market investments, especially for direct investing. For us, it made sense to invest in fund of funds for the first few years. You pay high fees which is not attractive, and returns aren't great, but it gives you access to the market... Then you can understand how those markets behave and inform how your fund is going to build the programme. You have to go in with that mindset and be willing to stick it out through long periods and be consistent in your deployment. You can't slam on the brakes in bad times and then accelerate in good times." Professor Josh Lerner agrees: "The longer you've had a private equity programme, the better your returns. Private markets are not an area where you can just go from 0 to 60 miles per hour overnight. You have to look at it as a longer run kind of process."

Private markets are local markets

"Local knowledge is essential, so have a presence on the ground. Be close to deal creation, identification, and sourcing. Where it makes sense, consider joint ventures to tap the local presence of other investors. If you bring a generalised view that is inconsistent with a particular market, you will not succeed. You have to be flexible about how you actually integrate your programme and ensure it reflects differences in different markets. The US, European and Asian markets are quite different. Flexibility is essential."

Do your due diligence

"In the private markets, you need to commit to understanding your manager and your underlying investments. You can't sell tomorrow, so you must understand the risks and consequences associated with them. Spend a lot of time on due diligence. Do it up front, and then stay glued to the company you're invested in. This is the best risk control there is in private markets! You need good relationships with management and other investors. We have an entire team who just follow the existing investments. With public market investments, you often don't want to appear too close to management. In private markets, it's the opposite." Professor Lerner expanded on this concept. "You really need to build relationships and understand the lay of the land," he said. "Too often we see investors taking shortcuts... there is no real substitute for building a variety of relationships, digging in to understand different market segments, and developing that experience. This process isn't easy, but it rewards those who spend time developing relationships, visiting groups, and understanding them."

Governance and decision-making structures

"The more diverse the information sources that inform a decision, the better it is! For example, you need a framework to compare private-market opportunities with public-market opportunities. Sometimes the public markets are a better way to access specific risk premium. You have to understand relative prices, risk-adjusted pricing, across the largest opportunity set you can. It's very hard to do." Professor Lerner agrees that governance is important. "When you interview private markets investors and talk to CIOs about what made them successful, certainly governance is one of the points they emphasise. The successful investment committees seem to be willing to largely delegate decisions about which funds to select to the staff. What they are doing is providing broader insights into market trends and strategic input, without micromanaging the staff about individual investment decisions."

Managers: quality over quantity

"By allocating more capital to fewer managers, you will realise more efficiency in monitoring your investments. By awarding larger mandates, you also gain leverage in negotiations with managers. Negotiate lower fees, deeper access, and the option to commit more capital (or dial down commitments) in the future. There are also some patterns in the performance data that can aid in manager selection," said one fund. "If you look across private equity funds, the very smallest funds do poorly," said Lerner. "But once you get above a threshold there is relatively little difference in performance due to the size of the funds. That said, when you look at the largest deals being done by a particular fund, whether the fund is big or small, they tend to do worse than a fund's typical-sized deal. Why? With larger deals, it may be that you have a situation where the deal takes on momentum of its own and becomes a runaway train, and is harder to stop. With a smaller deal, when questions are raised, it might be easier for people to halt the deal. There is also the fact that most large deals tend to be done around market peaks and we know that market peaks tend to be the worst time to invest."

Be long term

To be successful in private markets you need a long-term investment horizon. "This can be done, for example, in the way that information is measured and reported as well as in the financial incentives that are offered to staff. Most successful private markets investors have had continuity of staff; in many cases, you see a successful team that has stuck together for multiple years. This helps a lot in terms of making subjective investment decisions, as well as being effective in getting access to the most desirable funds."

Invest in your team and develop the right corporate culture

Developing skills and commitment is challenging. Sometimes it is not enough to build a team of superstar ex-pats who will only stay for a few years. Josh Lerner believes "One thing that is important for SWFs – and this is true regardless of location – is the need to build up internal capability. You want to find young people who are willing to stay and invest time, rather than someone who will parachute in for a couple of years before retiring." One fund suggested seconding employees to private institutions to build their skillsets. "This has proven effective in developing the in-house expertise that we need."

To build skilled teams that will stick with the SWF for many years building a favourable corporate culture is crucial, as it encourages staff to stay. Compensation is an important factor, but sovereign wealth funds also need to build an organisation with a sense of mission.

Managing sovereign asset and liability: An integrated approach for sovereign wealth funds¹

Michael G. Papaioannou

Visiting Scholar and Professor at the LeBow College of Business, Drexel University

Bayasgalan Rentsendorj²

In this article we present the rationale for the need for and benefits of applying a sovereign asset and liability management (SALM) framework in an environment of low commodity prices and emerging fiscal deficits that necessitates using sovereign wealth fund (SWF) assets. We discuss the implications of using such a framework for the institutional and policy coordination among fiscal, monetary and SWF authorities, as well as for SWF management. Finally, we provide models and recent examples of countries that have adopted an SALM framework and offer some broad considerations and recommendations.

Rationale

Prolonged declines in global commodity prices between 2015 and 2017 led to large fiscal shortfalls in many resource-dependent countries. In response to growing fiscal deficits, several countries such as Russia, Azerbaijan, and Timor-Leste used sovereign wealth funds as the important source to finance the budget. If such assets were unavailable or inadequate, authorities resorted to issuing debt and, in some cases, to drawing on savings SWFs or official reserves that could have been avoided if responses had been systematic and inside a well-coordinated SALM framework.

A multi-government agency coordination effort was clearly evidenced in Azerbaijan when the country was hit hard by the commodity price drop. Azerbaijan is highly dependent on oil and gas extraction. The sector represents close to 90% of its goods exports, or close to 30% of its GDP, and more than 6% of government budget revenues. Consequently, the manat depreciated against the US dollar by 49.6% in 2015 and over 50% in 2016. Commercial banks stopped selling foreign currencies, which resulted in extensive dollarisation of the economy (75% of local bank deposits). Ten commercial banks also entered bankruptcy. In response to the macro-financial crisis, the State Oil Fund (SOFAZ) played an important role of lender of last resort and provided necessary financing to the Ministry of Finance and central bank. SOFAZ had to transfer \$4.7 billion in 2016 and \$3.4 billion in 2017 to the state budget. Further, SOFAZ transferred over \$3.2 billion in 2016 and \$4.2 billion in 2017 to official reserves. As the central bank's assets under management fell from \$15 billion in 2014 to \$4 billion at end-2016, SOFAZ had no choice but to support it by providing necessary liquidity. SOFAZ sold \$1.3 billion at currency auctions organised by the central bank and over \$4.9 billion to commercial banks.

¹ This note describes research in progress by the authors, published to elicit comments and to encourage debate. The views expressed are those of the authors and do not necessarily represent the views of the IMF, International Forum of Sovereign Wealth Funds (IFSWF), or individual SWFs.

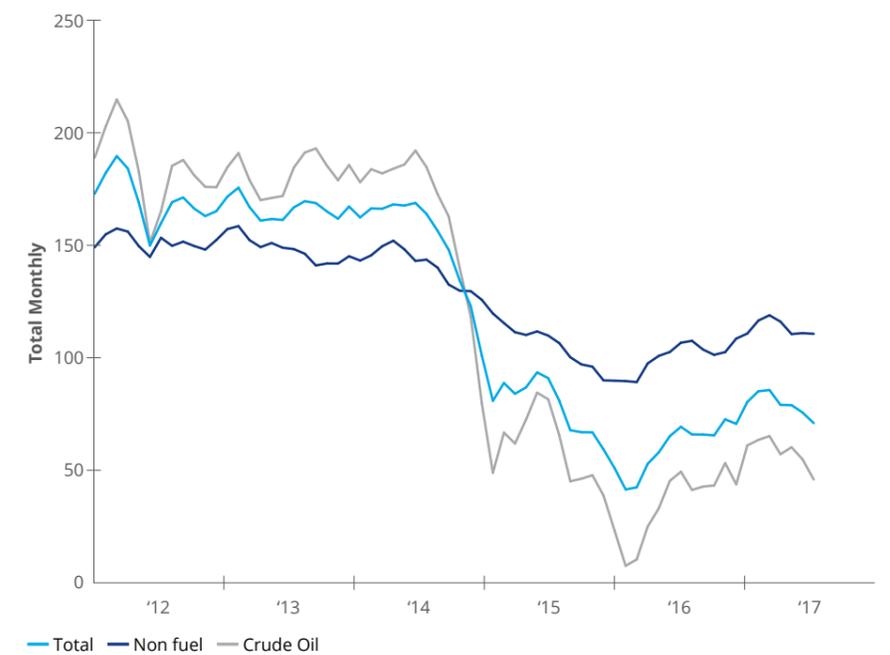
² The authors can be reached via email michaelgpapaioannou@gmail.com and br@ifswf.org, respectively. The authors would like to thank Duncan Bonfield and Victoria Barbary for valuable comments and suggestions.

As commodity price fluctuations are inevitable, embracing an SALM approach becomes essential for effective and cost-effective sovereign policy responses (IMF, 2012).³ The unpredictable nature of the international capital markets requires flexible SWF investment management solutions that should be broadly consistent with the owner country's sovereign liability structure. For countries with sizeable sovereign assets, such as a SWF, developing a sovereign balance sheet is particularly important for efficiently managing individual sovereign assets and the sovereign portfolio's consolidated risks. A comprehensive and integrated SALM approach is, therefore, crucial in defining a better SWF asset management that effectively supports optimal macro-fiscal policies.

Commodity-price falls and soaring debt deficits test the resiliency of SWFs

From their peak in 2012 to the end of 2017, global commodity prices declined by 57%. Energy prices were particularly badly hit, falling by over 70%, while non-energy commodities dropped by 29% (shown in the chart below). As a result, most commodity-funded SWFs experienced lower inflows, as well as pressures to liquidate part of their assets to finance growing fiscal deficits and prevent SWF owner countries from issuing more debt, particularly Russia and Saudi Arabia. In response, some SWFs including Norway's Government Pension Fund Global, reportedly started exploring the potential of issuing debt instruments to meet fiscal demands rather than disturbing their existing investment structures and anticipated investment performance.

Global Commodity Prices

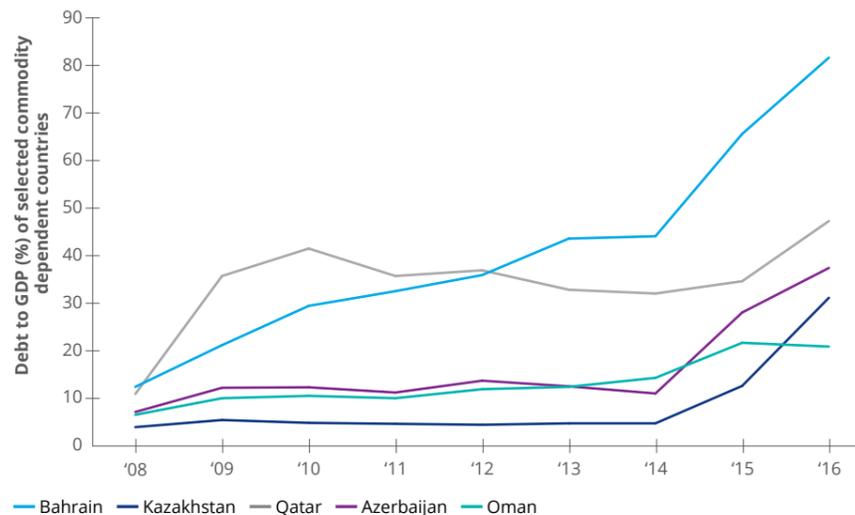


Source: IMF

³ Note that the SALM framework at the governmental level should not be confused with a SWF's own asset and liability framework, which reflects its objectives and structure.

Conventionally, only budget stabilisation funds are designed to be drawn on in response to adverse global commodity prices or macroeconomic crises. However, the prolonged commodity-price drops during 2015-17 also affected the broader use of long-term savings, central bank reserves and other types of sovereign funds, in effect turning them to important vehicles of SALM. For example, Saudi Arabia's economy was hit hard by the more than 50% drop in global oil prices, as close to 90% of its budget revenue is dependent on oil proceeds. As a result, the Saudi Arabian Monetary Authority (SAMA), the central bank, sold more than \$70 billion of its assets in global financial markets to meet immediate fiscal needs and satisfy its debt obligations in 2015. SAMA's international reserves were reduced by about 10%, to \$661 billion from their peak of \$737 billion, within a few months in 2015. The country issued over \$50 billion worth of debt at the international markets – the first time it had ever done so – to fill gaps in its macro-fiscal balance.

Debt-to-GDP Ratios of Selected Commodity-dependent Countries (in %)



Source: Central Banks, MoFs, IMF, WB, Tradingeconomic.com

The extent of the impact of lower commodity prices on commodity-dependent countries' debt is shown in the chart above where the debt-to-GDP ratios of many of these countries increased dramatically during from 2008 to 2016. Several developing economies, such as Bahrain, reached their perceived debt ceilings. This challenge led existing SWFs to play a crucial role in their countries' macro-financial management. However, in most of these countries, their SWF involvement was rather ad hoc – often determined by authorities as an arbitrary proportion of their assets, rather than on the basis of a systematic SALM framework.

SWF Challenges from Institutionalising SALM

Introduction of an SALM approach will undoubtedly create many new challenges to SWFs, including possible institutional and policy adjustments that need to be appropriately integrated within their countries' asset and debt management frameworks. Implementing an SALM structure would likely require governments to quantify the correlations between SWF and sovereign liabilities and incorporate these effects into SWF asset management optimisation (Brown, Papaioannou, and Petrova, 2010).

Institutional requirements for the operations of an SALM framework, including sovereign balance sheet consolidation and policy coordination, could also pose risks to SWFs' independence of investment and operating at arm's length from the respective

government's budgetary process and other development agendas. These issues should be carefully examined by SWF authorities, in conjunction with fiscal and monetary policy authorities involved in the design and operation of an SALM framework, so they do not become a hinderance in the specific SWFs efficiency and performance.

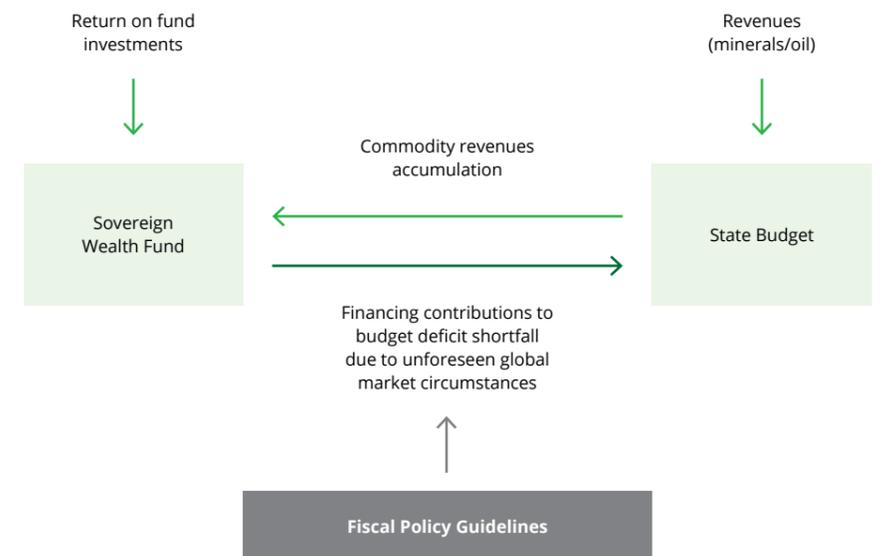
However, as establishing a SWF is frequently viewed as a cornerstone in implementing national development agendas, adopting a SALM approach, particularly by resource-rich countries, tends to be an important element in their macroeconomic policy setting. For example, Saudi Arabia announced that its Public Investment Fund (PIF) will finance large-scale government-owned industrial projects. This is in line with the government's "Vision 2030" that envisions extensive use of debt and equity instruments. Meanwhile, Saudi Arabia's debt-to-GDP fiscal deficit level soared to 13.1% in 2016 from 1.6% in 2014. These developments highlight the importance of developing an integrated SALM policy for SWF management, along with a necessary government monitoring of the sovereign portfolio's risks and returns.

Benefits of Adopting a SALM Approach for SWFs

A SALM framework will help SWFs optimise their asset management and investment performance. It will also help owner governments to manage their portfolio risks effectively, eg, its net foreign exchange exposure and interest-rate mismatch, especially during adverse macro-financial conditions. Thus, the role of SWF participation in such a framework becomes evident as it will help decrease the cost of public sector debt, reduce financial risks, and strengthen the owner country's overall macro-financial stability conditions.

To play their role during extraordinary fiscal circumstances, such as periods when commodity prices are low, governments will need to adjust the funding rules of natural resource-funded SWFs, so a higher percentage of commodity export proceeds goes to the government budget and a smaller proportion to asset accumulation. Withdrawal rules will also need to become more flexible, so asset liquidations can address immediate debt obligations. In general, using an SALM framework would allow more accurate calculations of the needed adjustments to SWF fiscal (funding and withdrawal) rules for financing unexpected fiscal deficits and associated risks.

Typical Flow of Fund Arrangements



Source: Das, Lu, Papaioannou, and Petrova (2012)

For example, Norway's macro-fiscal policy framework envisages a well-integrated SALM approach, by ensuring a consistent accumulation of windfall oil revenues and allowing only spending of the expected GPFG return, in inflation-adjusted terms, which permits consistent long-term investment strategy. Specifically, according to Norway's current "spending rule," the non-oil budget deficit should be on average 3% of the GPFG over time, which corresponds to the estimated real return on the fund. However, in 2016, after 20 years of sustained GPFG asset accumulation, the Norwegian Ministry of Finance started a series of withdrawals to meet public fiscal demands and support the weakened economy after the decline in global oil prices. Hence, the 2016 budget funding was supported by a \$12 billion (101 billion kroner) withdrawal from the GPFG, while its asset return was around \$52 billion (447 billion kroner).

The SWF that is part of the sovereign balance sheet needs to institute a prudent asset and liability management for a successful SALM application. A robust institutional case is the New Zealand Superannuation Fund (NZSF), with rapid wealth accumulation, while observing a clear mandate to reduce future liabilities. Thus, NZSF's assets under management rose from \$8 billion to \$34 billion between 2008 to 2018, with an impressive average annualised return of 14%. As indicated in Hansen (2003), the success of NZSF in meeting its objectives and simultaneously contribute to eliminating potential liability pressures can be summarised as follows:

- Established to eliminate future liability pressures by building an opportunistic, value adding asset accumulation strategy, supported by a successful adoption of portfolio tilting, and reference portfolio strategies;
- Ensured independent management of operations, with clear mandate, that allows frontier investment management practices that helped exceptional performance compared to peers;
- Provided disciplined asset building by not allowing any withdrawal from the fund before 2020, supplemented with optimal risk management, which minimised efficiency risk.

Indicative SALM Framework – Government Budget and SWF Contributions

In principle, a SALM framework provides a comprehensive tool to optimise SWF management within the owner country's asset and liability structure and macro-fiscal setting. As mentioned, it could also help an SWF to optimise its investment strategy choices and investment horizon selection for best performance. This framework allows an integrated calculation of optimal sovereign asset and debt portfolio compositions and structures.

Applying an SALM framework requires comprehensive information on the owner country's macro-fiscal policies, financial positions, internal and external risks, management of liability exposures and risk exposures of various sovereign instruments appearing in the sovereign balance sheet (Lu, Papaioannou, and Petrova, 2007; and Al-Hassan, Brake, Papaioannou, and Skancke, 2018). SWF assets and liabilities should be an integral part of the country's SALM framework, as depicted in the stylised sovereign balance sheet as shown below.

Stylised Sovereign Balance Sheet

Asset	Liability	Equity
International reserves (Central Bank)	External debt	Domestic public and publicly-guaranteed debt
International assets under management (e.g., SWF)	– External public and publicly-guaranteed debt	Domestic issuances on SWF balance sheet Base Money
Net assets under management (e.g., Pension Fund)	– External issuances on SWF balance sheet	
Net fiscal assets (discounted value of primary fiscal surplus/deficit)		
Value of money issuance		
Other assets less guarantees		

Source: Adapted from Merton (2007)

A well-coordinated SALM framework is also important in maintaining the independence of a SWF while providing necessary extraordinary contributions for overcoming macro-fiscal policy challenges. However, for benefits to be realised from implementing an integrated SALM policy, governments must be prepared for the challenges of extensive coordination between the various government entities, from the Ministry of Finance to SWFs. Clearly, potential efficiencies will depend on and be determined by the individual country's institutional development, rule of law, and developmental stage. For efficient implementation of SALM strategies and policies, a decision-making structure – an agency or a committee with such responsibilities – needs to be established by the government and preferably be approved by parliament.

Kuwait's adoption of a comprehensive SALM framework in 2016, which is well-coordinated among the Ministry of Finance, Central Bank of Kuwait and the Kuwait Investment Authority (KIA), is a notable example. The instituted arrangements solidified KIA's governance and clarified that KIA assets can only be called in macro-financial emergency situations. Such integrated SALM approach allows KIA to optimise its strategic asset allocation in line with the sovereign's liability characteristics, including the duration of public debt-portfolio characteristics and currency composition.

Further, as active asset managers, SWFs are continuously reassessing their strategic asset allocation and leveraging their existing assets when market conditions are favourable. Enhancing their liability frameworks has recently been broadly observed due to the historic lower-rate environment in developed markets, while allocations to emerging markets have also increased. Although many SWFs are established at arm's length from the government, in an SALM set up, their assets will constitute an integral part of the owner country's balance sheet, especially those of strategic investment funds.⁴

It should not escape us that an SALM framework would also be more suitable for monitoring sovereign risks in cases of commodity-based SWFs that are mandated to use their asset and liability structures to support fiscal purposes (in excess of assets from budget stabilisation funds), thus avoiding disruption to ongoing national development programmes because of adverse global commodity price fluctuations.

⁴ For instance, the IFSWF's recent members are mostly strategic investment funds, such as the Russian Direct Investment Fund, JSC Samruk Kazyna of Kazakhstan, Ithmar Capital of Morocco, CDP Equity of Italy, while many other countries are on the way of setting up strategic investment funds, such as Senegal and Rwanda, among others.

Further Considerations and Recommendations

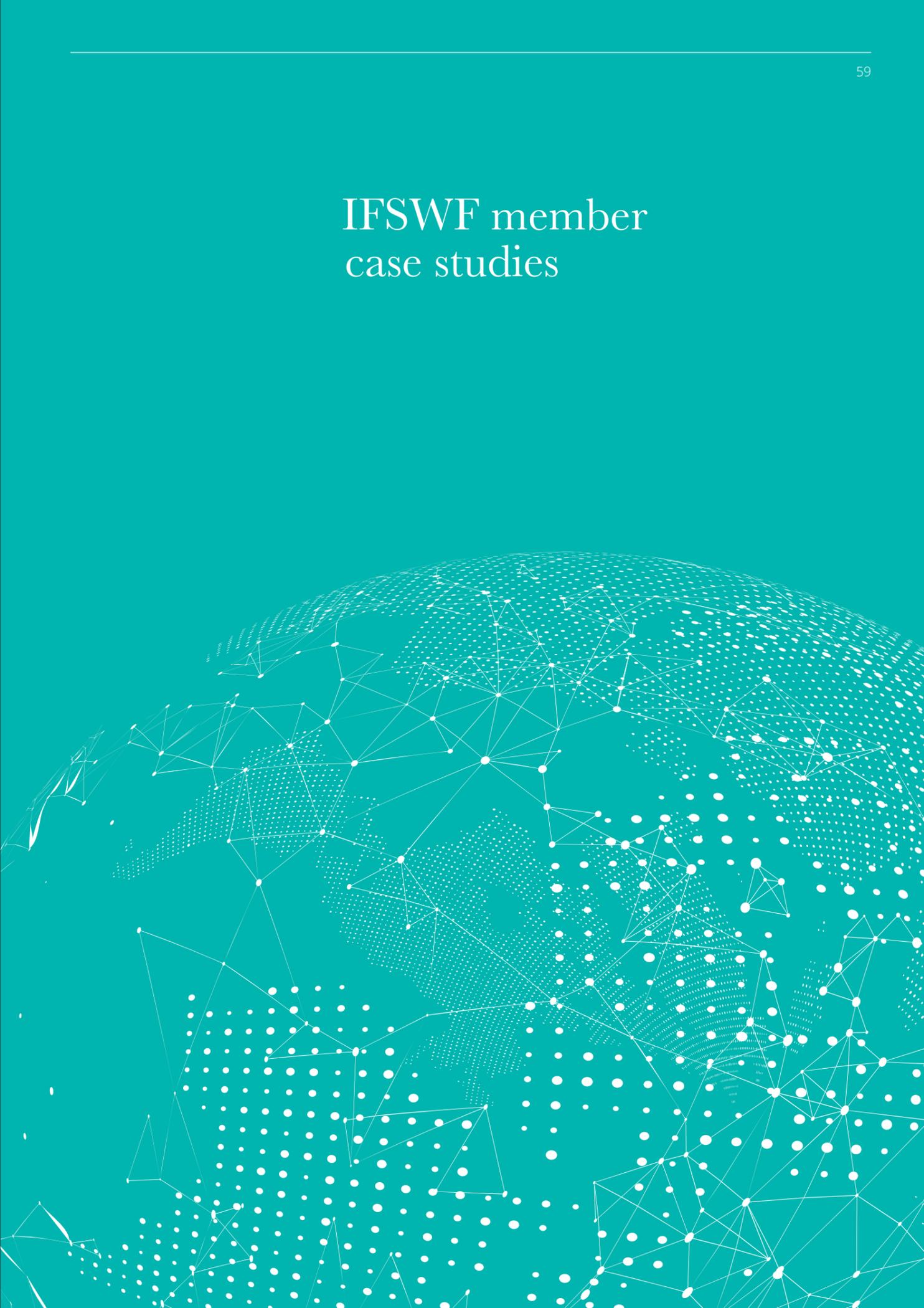
Implementing an integrated SALM policy requires extensive coordination among state entities. The efficiency of this policy will be determined by the specific country's government system, rule of law, and institutional structures. An SALM approach will better define and appropriately design a coordinated sovereign policy that will ultimately increase the efficiency of SWF investment management, along with maintaining effective fiscal, public debt management, monetary and exchange rate policies. Such an integrated approach ensures cross-checking of policies for efficacy and timeliness. Clearly, the more comprehensive SALM policy framework requires more rounds of deliberations among involved policy entities to ensure macroeconomic policy consistency.

As a matter of good practice, the dynamics of a commodity-based country's SALM framework should be incorporated in the respective SWF's liability strategies and investment policies. This can take the form of sovereign risk management scenarios or other risk structures. While helping protect SWF investment strategies from abrupt commodity price drops and consequent fiscal difficulties, adoption of an SALM framework (with the participation of the owner country's SWF) will also help reduce the country's vulnerabilities to exogenous shocks, including global commodity price drops and respond in a systematic manner, thus helping prevent financial crises and growth turmoil.

References

- Al-Hassan, Abdullah, Sue Brake, Michael G. Papaioannou, and Martin Skancke, 2018, Commodity-based Sovereign Wealth Funds: Managing Financial Flows in the Context of the Sovereign Balance Sheet, IMF Working Paper No. 18/26 (Washington, DC: International Monetary Fund).
- Brown, Aaron, Michael G. Papaioannou, and Iva Petrova, 2010, Macrofinancial Linkages of the Strategic Asset Allocation of Commodity-Based Sovereign Wealth Funds, IMF Working Paper No. 10/9 (Washington, DC: International Monetary Fund).
- Das, Udaibir, Yinqiu Lu, Michael G. Papaioannou, and Iva Petrova, 2012, Sovereign Risk and Asset and Liability Management – Conceptual Issues, IMF Working Paper No. 12/241 (Washington, DC: International Monetary Fund).
- Hansen, Eric, 2003, Objectives, Targets and Instruments for Crown Financial Policy, New Zealand Treasury Working Paper 03/21 (New Zealand: The Treasury).
- International Monetary Fund, 2012, Macroeconomic Policy Frameworks for Resource-Rich Developing Countries, August 15 (Washington: International Monetary Fund).
- Lu, Yinqiu, Michael G. Papaioannou, and Iva Petrova, 2007, "Sovereign Asset and Liability Management," IMF 7th Debt Managers' Forum, November 5-6, 2007, (Washington, DC: International Monetary Fund).
- Merton, Robert C., 2007, "Observations on Sovereign Wealth Fund, Reserve and Debt Management: A Country Risk Management Perspective," Luncheon Address at the First IMF Annual Roundtable of Sovereign Asset and Reserve Managers, November 15-16.

IFSWF member case studies



The China Investment Corporation's Asset Allocation Journey

For large institutional investors, asset allocation is the most important determinant of overall return profile of its portfolio, therefore, the China Investment Corporation (CIC) has always been highly focused on its asset allocation. We have studied the asset allocation framework of other institutional investors such as pensions, endowments and sovereign wealth funds, thought through CIC's comparative advantages and limitations, then designed and implemented our own asset allocation.

CIC was established in 2007 as a vehicle to diversify China's foreign exchange holdings and seek maximum returns for its shareholder within acceptable risk tolerance. It manages a large pool of money with no explicit liabilities. CIC's deep pocket plus long investment horizon allowed us to gain access to, and partner with, top-tier asset managers around the world. Since the fund was established just before the Global Financial Crisis, we were able to attract a group of professionals with global market experiences. However, the team was young and inexperienced, it was also working together for the first time, so we set up a modest long-term real return target, measured in US dollars, with specific risk tolerance. CIC's board accepted the proposal and authorised the management team to manage the portfolio accordingly.

Our investment beliefs are:

Investment Beliefs
1. We hold risky assets to obtain risk premiums. As a long-term investor, CIC should have the risk appetite to tolerate asset-price fluctuations over the short term and illiquidity while trying to achieve long-term goal.
2. We believe diversification is the only "free lunch" in investment. CIC should build a well-balanced asset mix, from risk factor perspective, to better achieve sustainable risk-adjusted return.
3. The investment return comprises "Beta" and "Alpha" components. CIC should use its risk budget effectively by allocating capital to the active strategies in which CIC has advantages.
4. As a US dollar-denominated global investor, CIC should manage non-USD currency exposure appropriately.

From 2008 to 2010, CIC implemented a two-layer asset allocation framework, comprising Strategic Asset Allocation (SAA) and Tactical Asset Allocation (TAA). The SAA is the optimal portfolio based on long-term capital market assumptions and traditional mean-variance optimisation with capacity constraints. The TAA aims to capture short- or medium- term market opportunities dynamically allocating between asset classes. Influenced by the Yale endowment model, CIC set a relatively high target weight for alternative assets in the first asset allocation plan, sacrificing liquidity to achieve higher expected returns and better portfolio diversification. Then CIC formulated a series of exposure management policies, including rebalancing, liquidity management, and currency management policy, with specifications on the limits how far the actual portfolio may deviate from asset allocation plan.

In 2012, CIC reviewed its asset allocation practices. One big challenge was our relative high allocation to alternatives. Alternative assets take time to implement, especially given our large fund size. For example, we could plan our commitment speed to private equity, but could not control the timing and size of capital calls made by general partners. Unlike in the public market, most alternative assets don't have investable passive instruments. We decided to deploy capital prudently within the practical business constraints of resources and cost. Therefore, the policy portfolio was introduced as the middle layer asset allocation plan to improve the stability of total portfolio management. Then the asset allocation framework became a three-layer model: SAA plays the role as a long term investment guidance. The policy portfolio focuses on medium-term (three years), taking into account economic cycle judgement and asset valuation analysis. The policy portfolio also acted as an anchor for exposure management, such as rebalancing. TAA aims to tilt from the policy portfolio, driven by relative short-term market views.

At the CIC International Advisory Council meeting in 2015, the former CEO of CPPIB, Mr. David Denison, presented the reference portfolio approach which was considered as best practice for large institutional investors. CIC quickly embraced this idea and further expand it with CIC characteristics. At the beginning of 2016, CIC implemented the current asset allocation framework, consisting of three layers: a reference portfolio, a three-year policy portfolio and the annual policy portfolio. The reference portfolio serves as the risk target and risk-equivalent benchmark for the actual portfolio. The reference portfolio comprises 70% global equities and 30% global bonds, in which CIC could invest passively at very low cost. This concept not only avoids the subjectivity embedded in our old risk-tolerance measure, but also helps to define the portfolio risk level dynamically (as comparing to constant volatility approach which leads to pro-cyclical behaviour, which is less suitable for large long-horizon investors). The three-year policy portfolio still represents CIC's asset allocation plan over the medium-term. Currently, the three-year policy portfolio comprises eight asset classes and is expected to generate superior returns and diversification, keeping the same total absolute risk as the reference portfolio. In practice, a "funding mix" system is used when CIC makes investments, which is not represented in the reference portfolio, so that the total portfolio's risk will be maintained at the target level. This approach clarifies the opportunity cost of owning alternative assets (especially after the hefty fees). The annual policy portfolio defines the asset mix target for the current year, and could deviate from the medium-term asset allocation plan because of market views or pace of alternative assets investment. Under the new framework, CIC's portfolio has been well managed over the past two years and attribution analysis has become more transparent and intuitive.

Over the years, CIC has been continuously improving the approval framework to enhance the efficiency and transparency of the investment process. This framework also means the accountability is clearly stated.

Governance Structure	
1.	The Board is responsible for approval of the reference portfolio, return target and risk tolerance.
2.	The Investment Committee (IC) consists of senior executives who are responsible for investment and head of each investment departments. The IC is responsible for approving the policy portfolio, such as asset class allocation, strategy allocation and portfolio implementation.
3.	The asset allocation team is responsible to propose asset allocation at strategy level.
4.	The investment departments assign Portfolio Managers (PMs) to each strategy. PMs are responsible for designing the sub-strategy structure and implement the strategy within the relevant Investment and Risk Guideline. PMs can implement the strategy by hiring external managers or managing internally, by active or passive managers. <ul style="list-style-type: none"> The internal/external decision should be based on net investment results. There is specific criteria for internal manager strategies, comparable to external managers. We prefer internally managed strategies which can be institutionalised (less dependent on star PMs) and have large capacity. The active/passive decision is based on the capacity and capability of alpha managers, plus liquidity needs to manage the total portfolio.
5.	Exposure management team is responsible to manage the total portfolio to our target allocation.

Besides disciplined portfolio management, we also realised that seeking traditional alpha was becoming more difficult, so we need to be nimble. We keep some opportunistic buckets in each asset class, with the purpose of investing in opportunities off-benchmark or in between asset classes, where money is less crowded. We have been using risk factors to analyse the portfolio. The next step would be using risk factors (e.g. smart-beta type factors) as building blocks to allow more efficient risk diversification.

As a global investor from China, CIC also makes full use of the advantage of its local knowledge and partners in Chinese market. CIC has been actively exploring investment opportunities with "China Angle", which refer to the overseas investments with a strong potential synergy with Chinese market from commercial perspective. CIC believes that this strategy could create win-win situation for both China and the world.

Looking forward, CIC recognises that the global market environment has changed significantly comparing to the past 10 years. The ample liquidity provided by central banks is diminishing. Boosted asset valuations imply much lower expected returns over the next decade. In addition, higher risk and uncertainty and unstable correlation all create a more significant challenge for all institutional investors. CIC will focus on finding sustainable alphas, lowering cost and improving active risk budgeting and try its best to build a well-balanced portfolio with better risk-adjusted returns. As we stated in the core values: we are committed to fulfilling our responsibilities to shareholder, encourage synergy and teamwork, adhere to professionalism and aspire to excellence in managing financial assets for our country.

National Development Fund project facility process

The Case of 'ABC' power plant¹

The National Development Fund of Islamic Republic of Iran

One of the National Development Fund's (NDF) two mandates is to support the development of domestic industries by providing loan facilities at competitive rates, particularly in the up-and-coming sectors such as renewable energy. This case study will review the process through which NDP provided financing for a Solar Energy Plant.

As the fund's articles of association (AoA) requires the fund to disperse all of its loan facilities through agent banks, NDF has agency contracts with selected banks benefit from each bank's expertise and avoid concentration risk in terms of bank allocation and sector allocation. NDF's loan facilities are governed by several regulations, laws, and by-laws. These are either drafted in the parliament or by NDF's board.

The main sets of laws and regulations overseeing the foreign currency allocation are:

- NDF Articles of Associations,
- Fiscal Budget Guidelines,
- Foreign Currency Loan Agency Contract,
- Foreign Currency Loan by Law.

Of these, NDF's Foreign Currency by-law (FCB) is the ultimate guideline for beneficiaries to determine their eligibility.

The process

1. The applicants approach the agent banks and submit their request.
2. The banks review the feasibility studies and will approve them if they meet defined criteria and comply with the FCB. The banks then refer the applications to the NDF for further inspection.
3. Agent bank's notes along with project's specifications are reviewed by NDF and submitted to the relevant committee within NDF for approval

Foreign Currency Loan: Main provisions

Who can apply?

The NDF will only grant loans to entities in which the government holds a maximum stake of 20%. Thus, all individuals or entities that the Central Bank of I.R of Iran deems eligible for receiving any loan facilities and are below the 20% maximum state shareholding may apply for NDF loans. Non-governmental public institutions and cooperatives that undertake development activities may apply for NDF loans, provided that the total portion of NDF's allocations to these entities never exceeds 20% of all assets held.

The by-law also covers foreign investors and permits NDF to grant loan facilities to entities that are established in Iran and have direct cooperation with foreign companies. Also, foreign entities that purchase goods and services from Iranian companies may also apply to the NDF for financial support.

¹ Due to confidentiality agreements name of the project and pertaining details cannot be disclosed

Which projects are acceptable?

The FCB outlines its support for sectors that are important to the fund and the country. These include power plant projects, which are a priority for receiving financing.

As a rule of thumb, all projects that seek the funding from the NDF must be exporters or generate foreign currency revenue to enable them to repay all their foreign-currency loans and shield them against currency fluctuations.

Furthermore, the environmental criteria are set out by NDF and kept in check for each project.

- Accordingly:
 - The project's nature, and its compliance and categorisation under accepted fields was reviewed and approved by the agent bank
 - The management summary of the project included: the purpose, general specification (plus EPC breakdown), possibility of exports, previous records of applicant's filings with the NDF, total FCB compliance are provided to the NDF Investment Committee for review and a decision.
 - Forecast export revenues that will yield FX revenues and protect the company against FX fluctuations were reviewed.
 - Checks that the project had obtained certification from the Department of Environment.
 - Checks that the project had the Ministry of Energy's priority approval.
 - Checks that the project's equipment procurement processes and that these were not available in the local market had obtained Ministry of Industry, Mine and Commerce approval.
 - A breakdown of the capital utilisation must also be provided to NDF to ensure that the FX loan is not converted to local currency and used only for the purposes permitted by NDF.

What is the expected rate of return? Duration? Repayment guarantees?

Relative to the project type, the FCB requires projects to have a minimum IRR which ranges between 10 to 15%. The FCB also required a maximum duration for the different phases of a project including commencement, development, repayment and grace periods are foreseen. The NDF's by-law requires all repayment to be made over a period of five years, with a possibility of justifiable extension to a maximum of eight years including grace period, construction, implementation.

- The solar plant project was independently studied by the agent bank and the results of the IRR calculation, NPV, Forecasted Completion, ROE, D/E Ratio were provided to NDF for review and re-examination which ultimately were up to par with NDF criteria.

What is the financing cost for using NDF's facilities?

The FCB defines different preferential interest rates to cover its opportunity cost and remain prudent in safeguarding the wealth of future generations. The lending costs are divided by sector and region, where sectors and regions that are less developed enjoy discounted rates. The rates range between 3.5% to 8%.

- Accordingly, the Project under study here due to the location of the project and the nature of the project has been able to obtain a preferential rate.

Te Puia Tapapa

*New Zealand
Superannuation Fund*

At IFSWF's eighth annual meeting in Auckland in November 2016, member funds heard about the unique roles that Māori organisations play as providers of capital and as sources of investment opportunities. The annual meeting also sparked a conversation between the attending leadership of the various Māori organisations on the benefits of co-investing domestically. Following eighteen months of design thinking around purpose and practice, the New Zealand Superannuation Fund is proud to be part of Te Puia Tapapa – a novel New Zealand co-investment platform. This article describes the imperative and the ambition for the platform, as well as the governance structure set up around the platform to ensure its long term commercial success.

Background

As we heard at the eighth annual meeting, The Treaty of Waitangi is [one of] New Zealand's defining constitutional document[s]. Following the signing of the Treaty between the colonising power, the United Kingdom, and the Maori peoples, land and other assets that were traditionally under Maori ownership were transferred through appropriation and acquisition into Crown ownership, and then transferred further to arriving colonists. From almost immediately after the Treaty was signed grievances arose. The English and the Maori translations of the same document differed in their meanings: for Maori, the concept of a transferable 'ownership' of land was unknown. Tribes have traditionally only exercised guardianship over land.

Over the past twenty-five years, a settlements process has attempted to redress these historical grievances by transferring land, other assets or cash back to various Maori tribes, or iwi. In many instances, the assets are now managed by professional investment organisations for the benefit of the sponsoring iwi. The fundamental problems faced by many iwi investment organisations include: achieving scale and skill, and access to diversifying opportunities.

Te Puia Tapapa

A new co-investment platform attempts to resolve these problems. The name – Te Puia Tapapa – makes reference to a cluster of seed beds used to grow kumara (sweet potato), symbolising the creation of a co-investment fund for better growth and returns. Part of what makes this fund stand out is that it presents an opportunity for Maori to invest in a fund with values and tikanga (customs or etiquette) that are important. And related to these are concepts associated with investing over inter-generational time horizons and addressing investment through guardianship (kaitiakitanga) and self-government (mana motuhake) lenses.

The Fund has been set up with the purpose of growing the economic well-being for future generations in accordance with the respective endowments of various iwi groups. The focus is primarily on investments that are long-term, local, significant, and scalable, and targets companies that have good long-term prospects and a desire or need for long-term partners. The projected investment horizon for these particular companies is roughly 15-20 years.

The fund will be overseen by a board, who will be appointed by the co-investors. The board selection process currently entitles any investor who invests 15% or more of the total fund to appoint a board director. The Board will then appoint an Investment Committee based on skill and experience in direct investments. The Investment Committee will be responsible for investment decisions and (with some support) undertake due diligence on investment opportunities on a deal-by-deal basis, and oversee the investments.

The synergy in values and the Fund's attractive investment nature has been a driving force behind a strong close with an indicative commitment of about NZ\$110 million (\$73 million) from over 35 different iwi and Maori groups throughout New Zealand. This far exceeded the minimum target of NZ\$60 million, gauged necessary for the fund's viability at the outset.

Partnership with New Zealand Superannuation Fund

As a sovereign wealth fund investing for the long-term, the New Zealand Superannuation Fund shares similar goals with iwi investment organisations, but also brings differing sources of access to investment opportunities and different skills. Therefore, we perceive value in the NZSF partnering with *Te Puia Tapapa*.

Te Puia Tapapa is independent. The NZSF will not manage the fund or even invest directly in it. Instead, the NZSF is identified to be a preferred partner. The preferred partnership means that both parties will generally notify the other of opportunities that may be suitable to the other party, even if it is not suitable for the introducing party. This is in line with the co-investment principle of mahitahi, or working together. While both parties will strive to ensure that this principle is met, they also explicitly acknowledge that not every potential investment opportunity is appropriate for co-investment or disclosure. When assessing the opportunities, each investment will be negotiated on an individual basis and it is expected that the investments will maintain the highest standards of corporate governance and ESG, and operate on a commercial basis with the goal of maximising shareholder value for the long term.

Why do we need a Maori Investment Fund?

The creation of Te Puia Tapapa is timely given some local New Zealand developments.

First, limited scale means iwi investment organisations or Maori business groups typically invest via private equity firms that target smaller transactions over shorter horizons. However, we find that, in New Zealand, the most compelling direct investment opportunities are likely to be

- at the larger end of mid-market buyout (enterprise value NZ\$150 million – NZ\$300 million), or
- large opportunistic deals above \$300million (with preferred partners like NZSF), or
- potentially expansion capital for smaller, fast growing firms.

These transactions would likely be in the order of NZ\$15-30 million equity per investment. Further, they are likely to be sourced in businesses with substantial Maori ownership. At the same time, they are also likely to be difficult for other investors to access. To truly take advantage of these types of transactions, a fund with scale is more likely to be invited to participate as compared with a smaller iwi organisation or Maori business.

Second, the inception of the fund is well-timed as the demand for capital in New Zealand is increasing. This has largely been the function of a few factors including:

a) Ownership Change

Around 40% of businesses in NZ expect a change of ownership over next five years. This translates to potentially 500 acquisition opportunities per year with perhaps 50 of these being large companies.

b) Fast-growing exporters

NZ Trade and Enterprise, a government export-promotion and facilitation agency, is giving 'high intensity' support to 700 companies with the aim of boosting their exports. Most of these companies are privately owned, mid-market in size, and growing rapidly.

c) Private equity exits

Transaction opportunities will also come from older private equity funds that are looking to exit investments and wind up a fund.

d) Supply of Capital is scarce

The NZ IPO market is small, debt finance is dominant (given the outsized role of New Zealand banks) and domestic private equity funds in NZ are too small to fill in the gap. (In a typical year, New Zealand private equity funds buy 15 to 20 companies, with a median equity investment of \$10 million to 15 million. Overall, private equity accounts for 3-7% of all transactions by value over the past few years.)

e) The supply of like-minded investment partners is limited.

As a result of these factors, we expect that the private market returns will exceed public market benchmarks by 2-3%.

Conclusion

The New Zealand Superannuation Fund is looking forward to partnering with a new Maori co-investment platform. The Fund resolves many local issues of size, capability and access. Both parties can look forward to introductions to investment opportunities that they may not have otherwise become aware of to the benefit of all New Zealanders.

The evolution of the Heritage and Stabilisation Fund's Strategic Asset Allocation

Heritage and Stabilisation Fund, Trinidad & Tobago

Trinidad and Tobago is highly dependent on the energy sector for its growth and development. The country's past experience with energy price shocks prompted the creation of a stabilisation fund. Further, since natural resources are not renewable it was also important to ensure that a portion be saved and invested for future generations. As a result, in 2007, an Act of Parliament established the Heritage and Stabilisation Fund (HSF).

Strategic Asset Allocation (SAA)

The SAA is a process of allocating funds to permissible asset classes in specific proportions to achieve the investor's long-term goals. As such, the process integrates a specified return objective, risk tolerance and investment constraints. In the case of the HSF, the strategic objectives are as follows:

- To maintain sufficient liquidity to meet potential withdrawals from the Fund;
- To preserve the real value of the Fund by achieving a long-term real-rate of return of 3.5% over a period of five years;
- Constraining the risk of not meeting its performance objectives over the rolling five-year periods.

In deriving the SAA, consideration was given to a range of asset classes including publicly traded developed-market equities, investment-grade fixed income, emerging-market equities, hedge funds, real estate, private equities and commodities. However, given the relatively small size of the HSF at the time, and the relatively short period of existence, the eligible asset classes were reduced to those that were typically held by institutional portfolios and carried low to medium risk. As such, the broad asset classes for the HSF were developed market equities and investment grade fixed income securities. After analysing the asset classes' historical returns and volatility, further consideration was given to country and currency allocations and the potential diversification benefits that can be derived. The SAA contained some constraints related to investing in energy-sector stocks, emerging markets and in the domestic economy. In 2007, the SAA for the HSF was finalised and approved. The table below shows the approved SAA and the mandates' benchmarks.

Strategic asset allocation for the HSF

Asset Classes	Allocation (%)	Benchmarks
Fixed Income	65.0	
US Short Duration Fixed Income	25.0	BoFAML US Treasuries 1-5 yr Index
US Core Domestic Fixed Income	40.0	Barclays Capital Aggregate Bond Index
Equity	35.0	
US Core Domestic Equities	17.5	Russell 3000 ex-energy Index
Non-US Core International Equities	17.5	MSCI Eafe ex-energy Index

Note: Potential withdrawals were capped at 25% of the Fund.

Post SAA Approval

In early 2008, the process to select external asset managers and a global custodian commenced. However, later that year, the Board of Governors of the HSF agreed to delay the implementation of the SAA due to the global financial crisis, with a view to examining whether risks, expected returns and correlation among asset classes had changed or were no longer consistent with the capital market assumptions of the SAA. By August 2009, financial markets had stabilised somewhat, so the HSF began its transition to the SAA, a process which was carried out over a period of two and a half years.

Ten Years Later

In March 2017, the HSF achieved its tenth year of existence and by 30 September, 2017, the end of the 2016/2017 financial year, the HSF had grown from \$1,402.2 million at inception to \$5,762.5 million. This increase in value was attributed to net contributions¹ to the Fund by the Government of Trinidad and Tobago as well as the returns generated by the portfolio. Net contributions have been a function of the performance of energy markets given that energy revenues constitute a significant portion of government revenues. On the other hand, portfolio returns can be largely attributed to the strategic asset allocation (SAA) which up to this time had remained unchanged. The annualised returns of the HSF and its SAA benchmark are shown in the table below.

¹ Net contributions refer to Deposits into the Fund by the Government less Withdrawals from the Fund. Over the review period, the Government made 14 contributions and 2 withdrawals. The drawdowns occurred in each of the past 2 financial years amounting to \$627.6 million.

Heritage and Stabilisation Fund

	Annualised Returns %				
	1 yr	3 yr	5 yr	10 yr	Since inception (10.5yr)
HSF	8.25	5.49	6.54	5.64	5.64
SAA Benchmark	6.55	4.62	5.34	5.02	5.05
Excess	1.70	0.86	1.20	0.62	0.59

Looking at the HSF performance over a period of five years and ten years, it can be concluded that the real return objective for the Fund of 3.5% has been met given that US inflation averaged below 2% in both instances. The equity and fixed income portfolios both contributed positively to the returns generated by the HSF. While equity markets have generally trended upwards since the SAA was implemented, periods of volatility in returns were cushioned by the fixed income portion of the Fund, underscoring the benefits of diversification for the HSF.

Changing Dynamics for the HSF

From 2014, there was a marked decline in global energy prices which adversely impacted government revenues. Consequently, the government suspended contributions to the HSF for the 2013/2014 financial year unlike the case for the previous four years when the government generated a surplus. Since then, no contributions have been made but instead the government made a withdrawal in each of the past two financial years. Since 2015, there has also been a public debate about separating the HSF according to its objectives, that is, (1) Stabilisation and (2) Heritage. Regardless of the outcome, the changing dynamics of the Fund suggest that the current SAA needs to be reviewed to determine its continued relevance.

As the HSF continues to evolve, SAA considerations can be viewed in the context of (1) the size of the Fund which can impact the ability to assume risk, (2) the increased liquidity needs and (3) the changing economic environment. The former suggests that there is an increased likelihood for asset classes with medium to high risk and return characteristics to be included among the eligible assets. For instance, real estate investments are characterised as high risk and high return but can provide a high level of diversification benefits when combined with traditional asset classes.

Investing in a highly uncertain environment

GIC, Singapore

The current investing environment features considerable uncertainty. GIC's response has been to build a diversified and resilient portfolio to ensure capital and returns can be best protected over the long term.

This case study contrasts the environment of heightened uncertainty with apparent investor complacency as judged by current market pricing. While the current investment environment is one that features considerable uncertainty, valuations in equities and bond markets are high. This implies expected returns may be inadequate to compensate for the uncertainty in the environment. GIC's investment response has been to build a resilient and diversified portfolio to ensure that capital and returns can be best protected over the long term.

Risk and Uncertainty

Risk is fundamental to investing. Poorly managed, risk can lead to adverse investment outcomes that ultimately result in failure to achieve investment objectives. But in dealing with risk today, investors are confronted with profound questions. Statistical measures of volatility, the conventional definition of risk, are extraordinarily low by historical standards. And yet, global political, economic and social developments signify a highly uncertain, unpredictable future.

How should investors measure and manage risk and uncertainty in this environment? How can they achieve their investment objectives in an age of uncertainty?

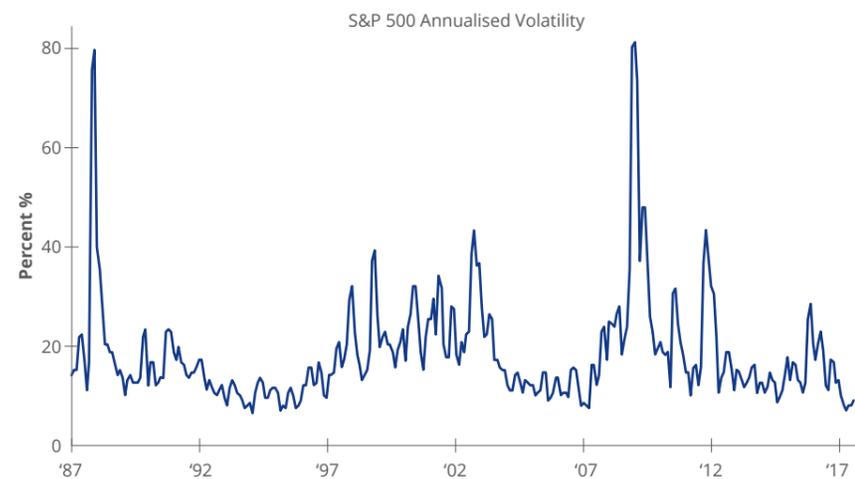
It was Frank Knight, an American economist, who made the distinction between risk and uncertainty. Knight defined risk as applying to situations where, while the outcome is unknown, the likelihood (or probability) of possible outcomes can be quantified through standard statistical computations such as averages, standard deviation (or volatility) and correlations. Uncertainty, on the other hand, as conceptualised by Knight, was drastically different from risk. For him, uncertainty applied to cases where the outcomes were unknowable. Correspondingly, their probabilities cannot be computed.

Knight's distinction between risk and uncertainty is particularly germane for investors today. Recent history covers some notable market situations where the reliance on standard measures of risk has fallen short.

An example of the limitations of standard risk analysis was the Global Financial Crisis (GFC). During the run-up to the GFC, quantitative risk models were typically used to price complicated financial securities. While seemingly sophisticated, these mathematical models failed to capture important correlations, and possible changes in such correlations. The outcome was that risk was seriously mispriced, resulting in defaults and losses. For example, the Chief Financial Officer at a major investment bank said in August 2007 that the losses suffered on one of their hedge funds were “25-standard deviation moves, several days in a row.”¹ Based on standard distributions of risk, such moves in prices should only have occurred about once every 13 billion years. The fact that such price moves were observed was a sign that the models of risk had grossly underestimated the true degree of risk and its price impact.

The current market environment features abundant liquidity and low yields, which have contributed to the suppression of volatility across equity markets (shown in the chart below). This does not mean that uncertainty has been removed from the environment.

**Expected volatility of the S&P500 is low:
Bloomberg data**



Source: Datastream

¹ Financial Times, August 14 2007

An Uncertain Environment

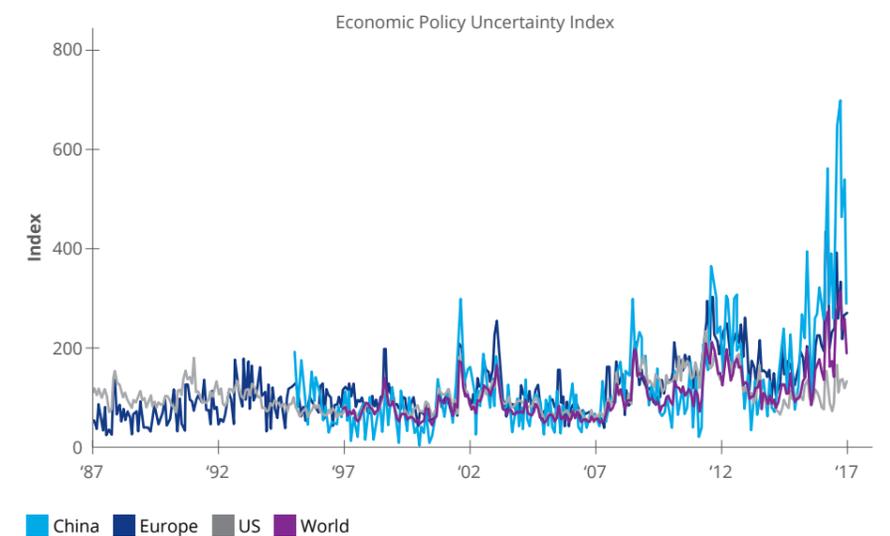
Developments such as Brexit, the US Presidential elections and heightened geopolitical tensions belie the sanguine view of market risk as conveyed by standard risk measures. In addition, there is great uncertainty in how technology is altering labour markets, driving income inequality and fueling the rise of populism, for instance. These potentially disruptive forces in the market place further suggest that conventional risk measures may not adequately guide investors. The concept of uncertainty needs to be taken into account. For example, a policy uncertainty index developed by Baker, Bloom and Davis indicates that such uncertainty is the highest over the last 30 years (shown in the chart below).

Past patterns will likely not be a useful guide. Trends related to populism, geopolitics, disruptive technology, even monetary policy, have raised fundamental questions about the future macroeconomic and investment environment. The normalisation of monetary policy from extraordinary levels of policy accommodation similarly has no historical precedent. Standard risk models given these uncertainties are thus insufficient.

In theory, higher risk goes hand in hand with higher expected returns as investors expect to be compensated more for investing in an asset for which the payoffs are less definite. For example, investors expect to earn a “risk premium” or excess return by owning equities over bonds.

The outlook for risk assets at the current juncture, however, does not only feature low returns, but also heightened uncertainty, amidst low measured volatility. (See the Investment Chapter’s section on “Managing the Volatile Path to Lower Long-Term Expected Returns” for a discussion on low prospective returns.) The combination of low returns with high uncertainty is particularly challenging for investing.

**Increased economic policy uncertainty:
<http://www.policyuncertainty.com/index.html>**



Source: Datastream

The GIC Portfolio is diversified across multiple dimensions, kept within the overall risk tolerance thresholds, and has an asset mix that enables it to harvest risk premiums over the long run.

How should we respond to such an environment?

A key part of GIC's strategy to deal with an environment that features not only low returns, but also high uncertainty is to ensure that our portfolio remains robust across a range of plausible scenarios. Scenario analysis embraces the inherent uncertainty by considering alternative environments to "stress test" the performance of the portfolio.

The GIC Portfolio is diversified across multiple dimensions, kept within the overall risk tolerance thresholds, and has an asset mix that enables it to harvest risk premiums over the long run. It is important that we keep to our discipline of long-term value investing and reduce exposure when the risk-reward trade-off is less favourable over the long term. At its heart, this approach embodies one of our five investment principles – "Prepare, don't Predict".

Behavioural issues are also important when dealing with an environment of heightened uncertainty amidst low volatility. Experience has taught us that a low-volatility environment is not to be confused with a low-risk environment. Indeed, it is precisely this environment that tends to lead to excessive risk-taking behavior that can in turn result in mispricing of assets, according to the Financial Instability Hypothesis of late US economist Hyman Minsky.

Managing investment risk goes beyond relying on standard measures of volatility. It requires an emphasis on assessing uncertainty, particularly in the current environment. Strategies of scenario analysis, diversification and guarding against complacency due to the phenomenon of low-volatility are important.

Investing in disruption

The Future Fund, Australia

It is a difficult time to be an investor. Even 10 years after the collapse of Bear Stearns the world continues to feel the effects of the Global Financial Crisis and the long-term outlook remains challenging. The global economy faces structural challenges including demographic shifts and high levels of debt, further compounded by risks associated with growing populist movements across the world.

At the same time, it is an exciting time to be an investor. The world is changing and there are two macro-economic changes which are likely to increase in importance over coming years: generational change and technological change.

Generation Y – the 'millennial' generation – will displace other generations in the decades ahead. In Australia, they are currently one-third of the workforce and in less than 10 years – together with their younger siblings, Generation Z – they will make up two-thirds. The situation is similar globally. These generations work, interact and consume differently to their parents. They are comfortable with technology, and want experiences, collaboration and technological enablement – and are less interested in material possessions.

Technological disruption means that business models must evolve. Technology will erode margins and returns unless businesses can reinvent themselves to remain relevant to their customers. Investors and businesses that can't adapt to the changing environment will be left behind and replaced by a new generation of winners.

At the Future Fund, we are putting considerable effort into both understanding what these changes mean for our investment portfolio, and how we will respond to them.

A closer look at disruption

Technological disruption is not new – and is not confined to any particular sector or investment asset class.

The auto industry is an interesting study in disruption that helps explain why investors need to think about disruption and its broader impacts, even before the introduction of electric vehicles. Detroit, Michigan grew from a population of 285,000 in 1900 to reach a peak of 1.9 million in 1960. Since 1960 the number of cars and vehicles in the US – and the world – has increased, significantly. Despite this, between 1960 to now, Detroit's population has fallen to 700,000 as auto manufacturers moved out of Detroit over the last 50 years and as manufacturing evolved to be less labour intensive.

This hasn't just affected those who invested into Detroit's automotive and related companies. An investment in property – whether residential, commercial or industrial – in Detroit in the 1960s has been a far worse investment than property investment in Sydney, as an example, where population increased from around 2 million to more than 5 million between 1960 and today.

By their nature, these types of changes are hard to predict, and come on suddenly. And by then it may be too late to change your positioning, especially if your holdings are illiquid.

Incorporating thinking about disruption into our process

At the Future Fund, we are actively incorporating the current innovation wave and risk of technological disruption into our investment decision making and portfolio construction decisions.

We think of disruption through three lenses:

- Offence – this is investing into disruption, principally through the venture program where our multi-billion dollar program gives us access to innovative, high potential companies;
- Defence – thinking about whether there are investments we should avoid; and
- Application – are there lessons we can learn from investments in our portfolio that we can apply to how we operate as investors, as we think about our own portfolio and activities.

To put this into effect our Investment Stewardship and ESG team, led by Joel Posters, is working alongside our Sector Teams as a centre of excellence on disruption, to share insights across asset classes.

We can look at an electricity network as a practical example of how we would put our thinking into action. In this case, our approach to thinking about disruption means we would seek to fully consider the impact of technological change and distributed generation such as rooftop solar PV if we were looking to invest in a regulated electricity network. It doesn't mean we wouldn't look at such an investment, but we would think about the payback period and we probably wouldn't include an assumption that the experience of the last 30 years continues into perpetuity as our base case.

This approach of looking at technological change and disruption could apply equally to thinking about the impact of driverless cars on car-park assets, of fintech developments on banks, and of changes in the retail sector on shopping centres.

Looking forward

We are living through an age of extraordinary technological progress and innovation, which is changing the way we live our lives. These developments will deliver opportunities and challenges to investors like the Future Fund.

Long-term investors, including the sovereign wealth fund community, need to think about the impacts of disruption and generational change, continue to innovate and be open to the changing world we live in and the changing investment environment we operate in.

Disruption will create winners and losers – investors who are open to change will be rewarded in this environment and those who fail to engage with the changes that are occurring will risk failing.

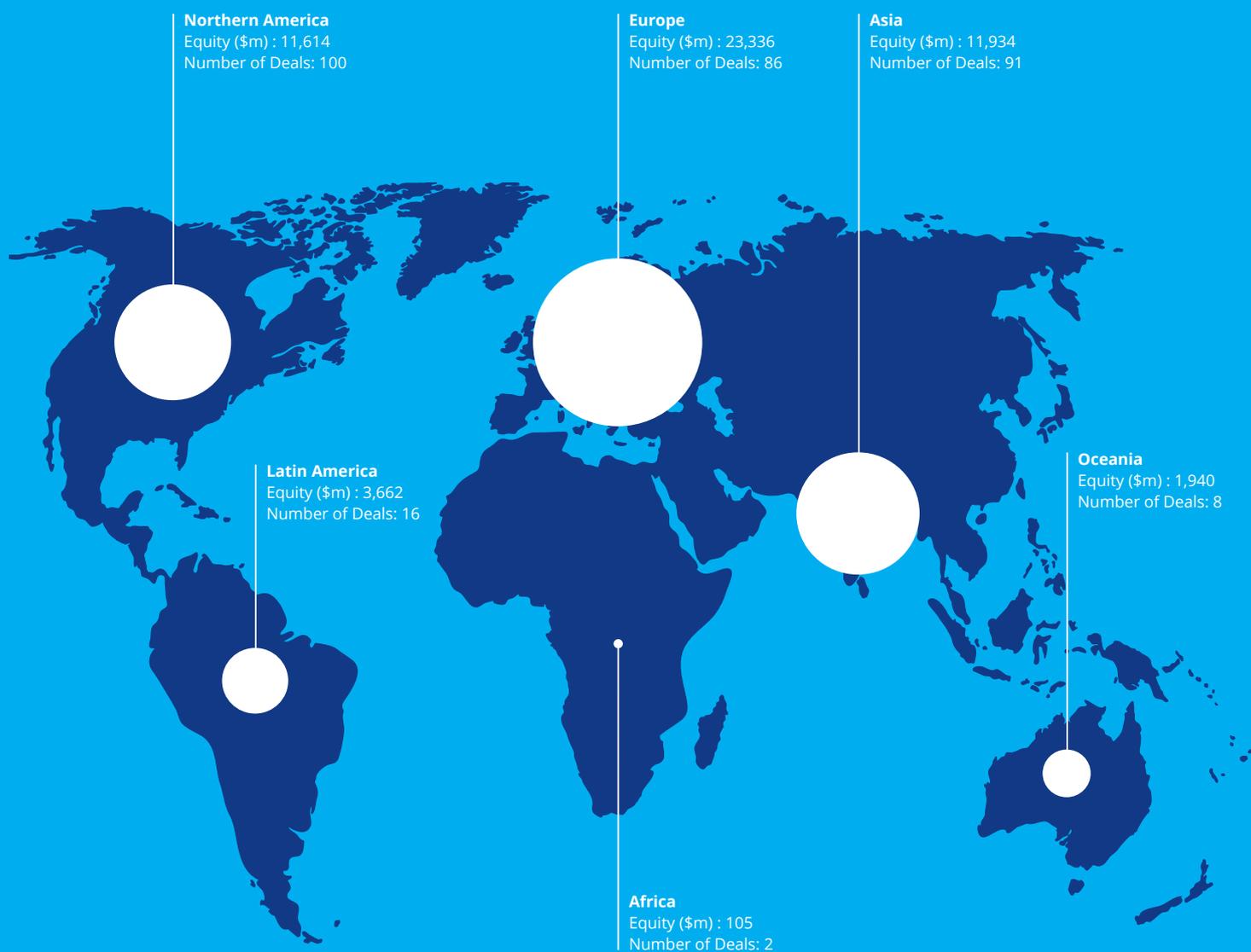
Produced in association with
the Sovereign Investment Lab,
Bocconi University



**Università
Bocconi**
BAFFI CAREFIN CENTER
SIL Sovereign Investment
Lab

The Lab is sponsored by:





Industry Sectors	Number of Deals			Equity (\$m)		
	2015	2016	2017	2015	2016	2017
Basic Materials	17	17	17	3,602	864	936
Consumer Goods	10	16	19	517	1,791	3,439
Consumer Services	47	30	22	7,502	8,576	2,930
Energy	12	11	12	5,660	819	5,151
Financials	25	33	56	10,632	4,111	7,777
Healthcare	25	15	38	4,542	667	3,084
Industrials	23	34	33	3,562	6,025	2,551
Infrastructure	17	33	28	18,650	7,662	7,998
Real Estate	75	76	42	34,251	17,555	15,574
Tech & Telecom	20	25	36	1,331	3,357	3,148
Grand Total	271	290	303	90,249	51,427	52,589