

SOVEREIGN WEALTH FUNDS 2023

Investing in a
Different World Order

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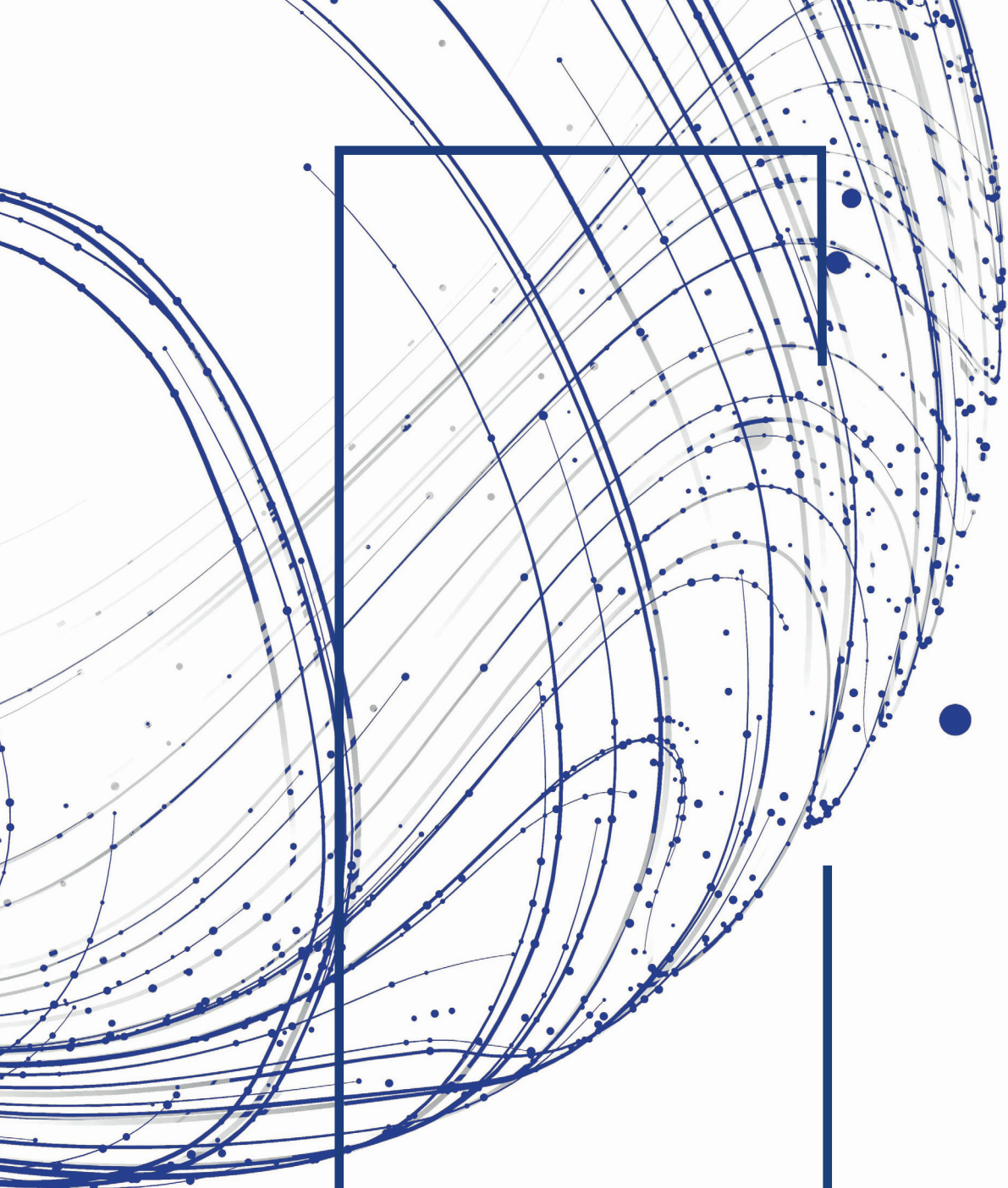
SOVEREIGN WEALTH FUNDS 2023

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PREFACE

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Chief Executive Officer, ICEX

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Preface

It gives us great pleasure and satisfaction to present the 2023 edition of the Sovereign Wealth Funds Report, a key reference for understanding the activity and trends of these important financial investors. This report is the outcome of a partnership between ICEX España Exportación e Inversiones and the Sovereign Wealth Research center of the IE Center for the Governance of Change.

This edition is marked by the extraordinary circumstances arising from the Ukrainian conflict and its consequences for the economy. From this perspective, sovereign fund activity is taking place in a period of great uncertainty in geopolitics and the global economy. The consequences of the war in Ukraine have particularly manifested in a gradual increase in inflation in 2022 and 2023, which is still determining the monetary policy of the major central banks. Benchmark interest rates have thereby been raised across the board, with the goal of containing the inflationary spiral, which is conditioning both global economic growth expectations and the functioning of financial markets. There are other elements of uncertainty of a different, more structural nature that impact markets, such as disruptions in global value chains, the threat of climate change and the rise of disruptive social and political movements.

In this scenario, in a forecast subject to considerable uncertainty, the International Monetary Fund (IMF) estimates that global growth will fall from 3.4% in 2022 to 2.8% in 2023, before stabilising at 3.0% in 2024. It also expects advanced economies to slow sharply, from 2.7% in 2022 to 1.3% in 2023. In such a situation, the US would fall from 2.1% to 1.6% growth and the Eurozone from 3.5% to 0.8%. Emerging economies are expected to maintain their level of activity with 4% growth in 2022 and 3.9% in 2023, with a slower than expected acceleration for China, from 3% to 5.2% in 2023, and a deceleration in other emerging regions such as Latin America

(from 4% to 1.6%) and India (from 6.8% to 5.9%). Moreover, headline inflation should decline from 8.7% in 2022 to 7.0% in 2023 due to the fall in commodity prices, although core inflation should decline more slowly.

The foreign direct investment (FDI) landscape was hit hard by the Russian invasion of Ukraine, rising energy and food prices and debt pressures. This high uncertainty determines a scenario in which FDI operations might be slowed down pending an improvement in the economic situation. In this context, FDI fell by 12% in 2022 to \$1.3 trillion, after the strong recovery in 2021 following the pandemic, according to UNCTAD. The fall was mainly due to lower financial flows and transactions in developed countries and a 37% drop in cross-border operations of multinationals from developed countries. For 2023 in general, this scenario, marked by geopolitical tensions and high financing costs in a context of high interest rates, is likely to continue. Sovereign wealth funds are not immune to these global dynamics, although their evolution is not always predictable. For example, SWFs continued to accumulate more wealth in these months and their assets under management surpassed the \$11 trillion barrier for the first time. This 11% growth in assets had its greatest impetus in funds from the Middle East and East Asia. South American SWFs, though small, almost doubled their AUM, buoyed by rising international copper and oil prices.

The 2023 Sovereign Wealth Funds Report analyzes direct investments by SWFs from January 2022 to March 2023. The study evaluates 376 investments in 2022, with a total transaction value of \$95 billion. Although the current sample size is smaller than its predecessor, it is triple the sample size of the 2020 Report. In 2022, the SWFs focused their activity on technology (they are already seven years of leadership in the tech sector), real estate and the industrial sector. The three sectors accounted for around 66%

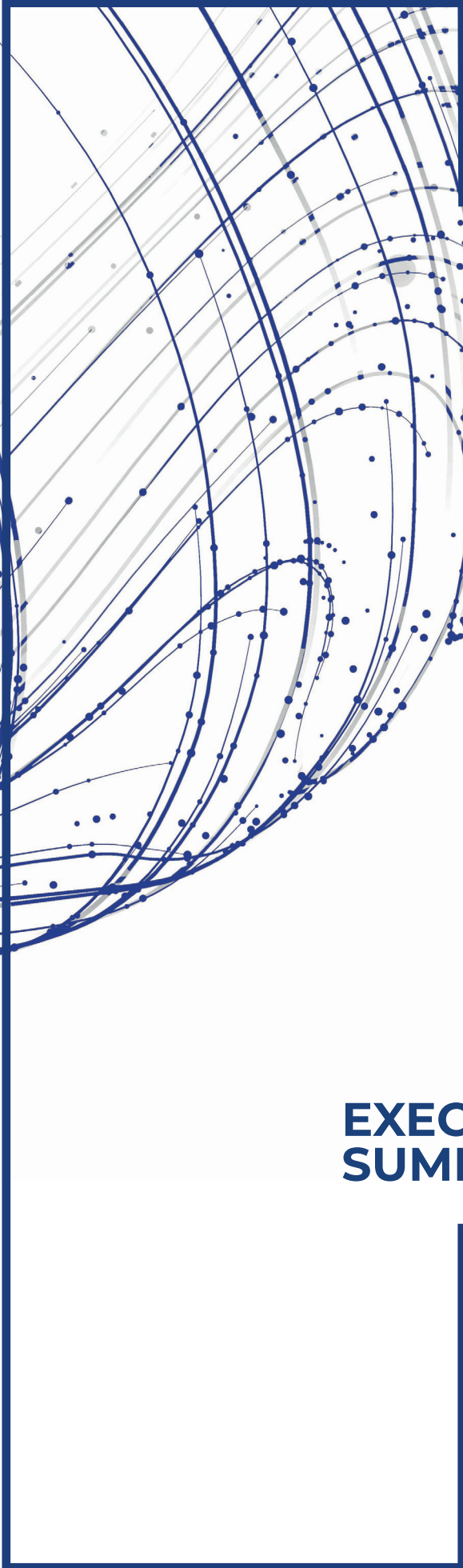
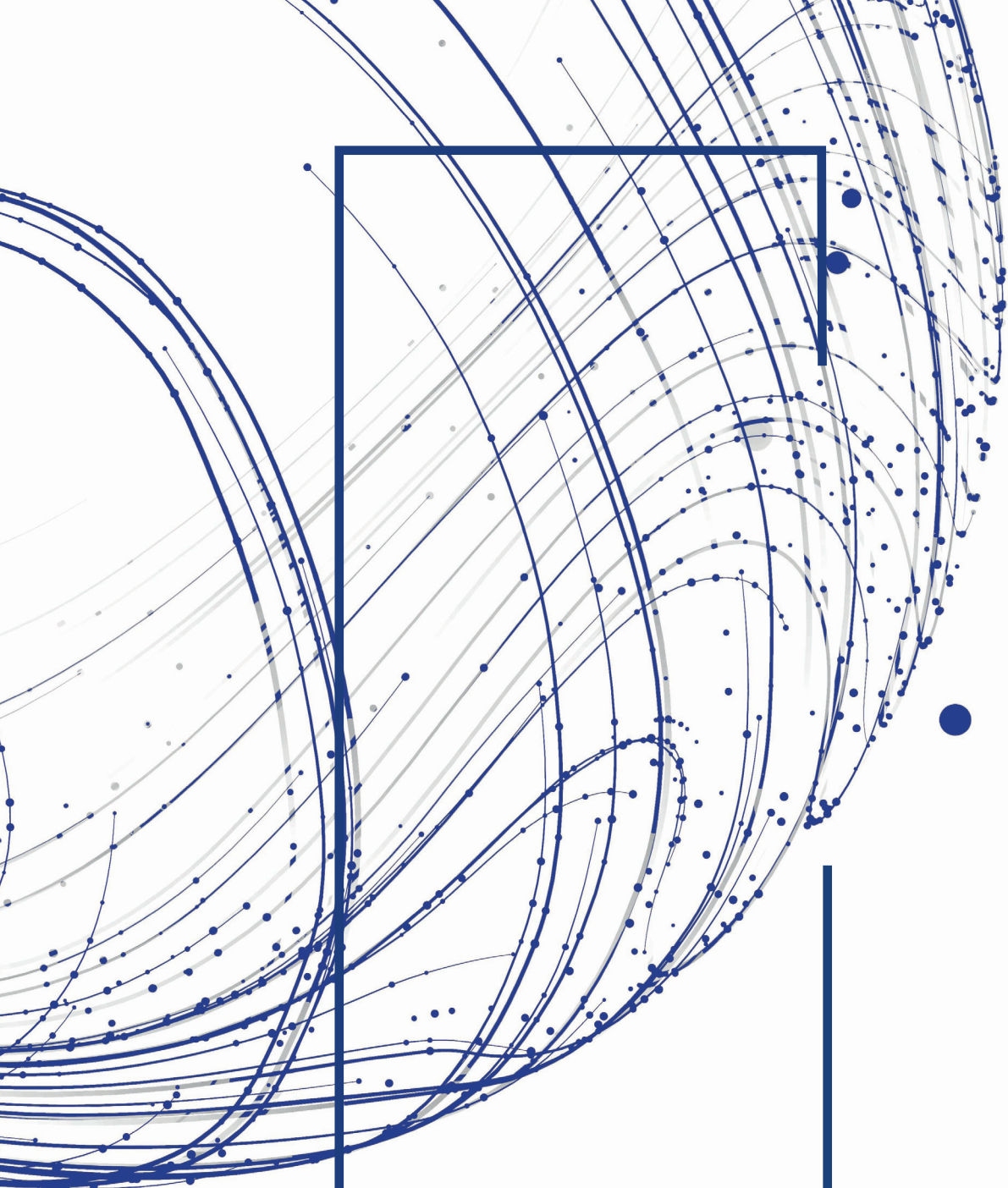
of all investments, each attracting close to \$21 billion. The healthcare sector managed to attract sovereign investments valued at \$9.8 billion and established itself as the sector with the highest number of co-investment transactions between SWFs. The technology sector saw significant transactions in software and e-commerce, while the industrial targets favored climate-related technologies, agritech, and logistics. With just 25 transactions, the real estate sector ranked third in investment volume, buoyed by the funds' search for alternatives to stocks and bonds for long-term growth.

A comparison of data from the current and previous reports provides insight into SWF activity during the pandemic period (October 2020 to December 2021) and the recovery period (January 2022 to March 2023). Top funds such as Temasek, Mubadala, GIC, ADIA, and QIA maintained their leading positions as the most active dealmakers. Yet, for the first time in our Report series, GIC is no longer the second most active SWF to Temasek, but Mubadala. The allocation of investments across sectors transitioned from a primary focus on technology during the pandemic to a more balanced distribution across technology, industrials, real estate, financial, and healthcare sectors during the recovery period. The geographical distribution of SWF direct investment continues to favour the largest economies, but it reveals two incipient trends that could be consolidated in forthcoming reports. First, the US accounted for 59% of global transactions volume in the recovery period (from just 22% in the pandemic period), showing a deep concentration of SWFs deal volume in the country. Secondly, China, whose economy suffered from healthcare-based restrictions and recent geopolitical concerns in the Report sample period, witnessed SWFs investments dropping to half in deal value and the number of transactions. The Report focuses on three other themes this year: the green energy transition, the role played by funds in Latin America and the Caribbean, as well as the

performance of SWFs investing in venture capital. In 2022, no SWFs invested in oil related projects in 2022, showing a credible commitment toward a low carbon economy. The chapter uncovers a systematic approach toward green investment opportunities, beyond renewable energy infrastructure, and includes deals in electric vehicle companies, sustainability businesses, and agritech. Also, the 2023 Report spotlights the activity of the SWFs from the Latin America and the Caribbean. SWFs helped stabilise the fiscal health of governments during the Covid crisis as half of the SWF resources went towards mitigating the economic and social impacts of the pandemic in the region. By 2022, these funds received new deposits totalling \$8.5 billion. Copper and oil prices drove this resurgence. Lastly, the Report delves into the technology sector and analyzes, for the first time, the SWFs' investment performance in venture capital. SWFs have sought to get exposed to innovation and technology for many years. Yet, venture capital is a complex asset class that suffers a severe correction since October 2021 affecting heavily those SWFs that joined late. The chapter identifies round-specific and deal-specific factors that explain SWF performance in this complicated although relevant innovation engine.

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**EXECUTIVE
SUMMARY**

Executive Summary

INVESTING IN A DIFFERENT WORLD ORDER: SOVEREIGN WEALTH FUNDS 2023

The year 2022 saw geopolitical tensions, supply chain disruptions, inflation, weak stock and fixed-income returns, and mixed performance in financial markets. In this turbulent context, Sovereign Wealth Funds expanded their global footprint, with Assets Under Management (AUM) rising 11% in the period from \$10.39 trillion in 2021 to \$11.6 trillion. This growth primarily stemmed from the Middle East and Eastern Asia, which saw increases of 15% and 11%, respectively. While still tiny players, South America's SWFs boasted a near-doubling of AUM, spurred by revenue from copper and oil price tailwinds.

SWFs remained active in 2022 and participated in 376 deals across 354 unique transactions, amounting to \$95.2 billion of investment value. In the first quarter of 2023, SWFs were part of 49 transactions with a combined value of \$23 billion. The top six—Temasek, GIC, Mubadala, Abu Dhabi Investment Authority, Qatar Investment Authority, and Public Investment Fund—dominated the field and were involved in more than 80% of the deals.

The US remained the most attractive destination for SWF investments, taking 60% of the total value of deals involving SWFs, while another 27% was distributed among the UK, India, China, and Saudi Arabia. The Middle East also attracted significant foreign direct investment (FDI) in the post-Covid period, with the UAE, Saudi Arabia, and Qatar becoming leading countries for FDI destinations.

SWFs favoured technology again as their most preferred sector for the ninth year in a row, followed by the real estate and industrial sectors. The healthcare sector also saw significant activity. The two largest deals involving SWF investments were in Store Capital Corp and Emerson Climate Technologies, both US-based, for \$13.8 billion and \$11.8 billion, respectively.

Data comparison between the current and the last report revealed SWF behaviour during the pandemic period (October 2020 to December 2021) and the recovery period (January 2022 to March 2023). Leading funds like Temasek, Mubadala, GIC, ADIA, and QIA consistently keep their lead. The United States solidified its position as the preferred destination, capturing 60% of the deal value associated with SWF investments during the recovery period, compared to 22% during the pandemic period. The sector allocation saw a shift from a dominant focus on tech during the pandemic period to a more even distribution across tech, industrials, real estate, financial, and healthcare during the recovery period.

GROWTH AND GREEN: SOVEREIGN WEALTH FUNDS ENGAGE INTO SUSTAINABILITY

SWFs have shifted their investments from conventional oil-related industries to green technologies. From January 2022 to March 2023, all of the investments in the energy sector were linked to renewables, with no deals in oil and gas, for the first time since the research database was established.

SWFs play a crucial role in the energy transition, now focusing on energy networks and energy storage. SWFs such as Abu Dhabi Investment Authority, New Zealand Superannuation Fund, and Mubadala Investment Company have invested significantly in these areas. SWFs have also diversified their sustainability investments, allocating funds to electric vehicle companies, sustainability businesses, and the agritech sector.

The report further examines the influence of SWFs beyond the energy sector. It discusses the One Planet SWFs (OPSWF) initiative and assesses the substantial progress made by SWFs in recent years, including the establishment of an inaugural internal ESG Report by the Kuwait Investment Authority, the new membership of the SWF of Gabon (FGIS) in the UN-convened Net-zero Asset Owner Alliance, or the pledge by TSFE to invest \$40 billion in green hydrogen projects.

SWFs have emerged as significant drivers in the transition towards renewable energy and broader sustainability. Their investments not only attest to the growing importance and potential of renewable energy but also illustrate the commitment of SWFs, as government-owned institutions, to considering climate and transition risks as part of their long-term investment philosophies and modus operandi.

SWFS IN LATIN AMERICA: THE POST-PANDEMIC SCENARIO

The region, hit hard by a significant GDP loss in 2020 due to the Covid-19 pandemic, saw substantial growth rates in 2021 and 2022. SWFs helped stabilize the fiscal health of governments during the crisis. Half of the SWF resources went towards mitigating the economic and social impacts of the pandemic. By 2022, these funds received new deposits totalling \$8.5 billion. Copper and oil prices drove this recovery, especially in Peru, Chile, and Guyana. Yet, SWFs in other parts of the region struggled with rising interest rates, receiving no new deposits since 2019.

Major oil discoveries drastically changed Guyana's economic fate. Growth in Guyana's SWF, driven by oil revenues, places Guyana uniquely within Latin America. A per capita analysis identifies it as the largest in the region.

Despite political instability, the partnership between SWFs and development banks and institutions offers a significant opportunity for sustainable economic growth. The chapter explores the potential for creating enduring relationships between SWFs and development finance institutions. By combining their resources and expertise, these alliances can finance vital infrastructure projects and promote sustainable growth in line with their growth objectives. This synergy holds promise for the future, potentially transforming the economic landscape of Latin America.

SOVEREIGN WEALTH FUNDS IN VENTURE CAPITAL: A SUCCESSFUL ADVENTURE?

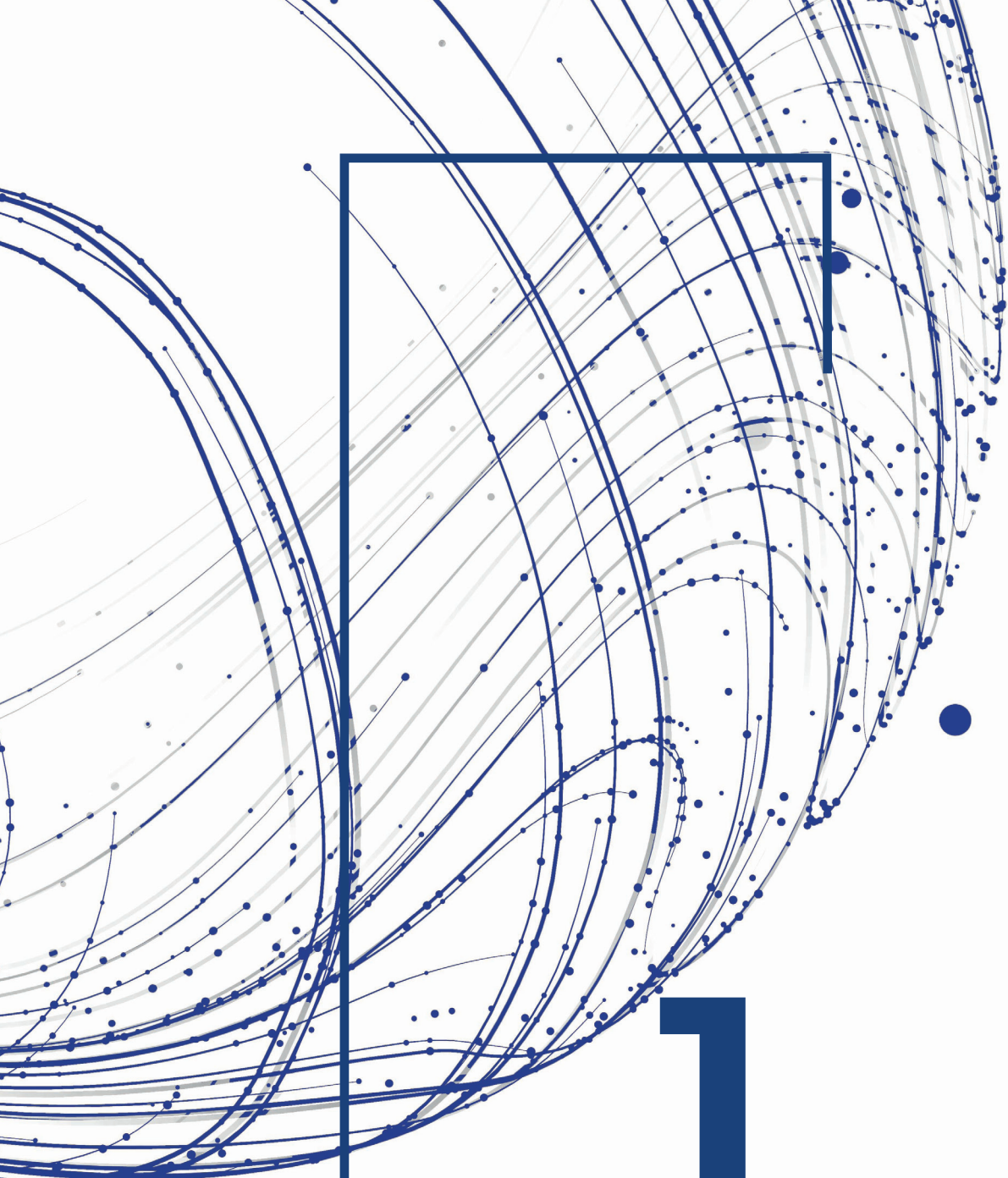
Over the last decade, SWFs' asset allocation has shifted towards riskier alternative assets in private equity and venture capital, particularly in the most innovative sectors. SWFs have used multiple strategies to attract innovation to their economies and have followed different paths to get exposed to the fastest-growing companies disrupting incumbent industry players.

This chapter focuses on one typically under-explored dimension: the investment performance of SWFs in the technology sector, particularly on their venture capital deals. The report analyses first the severe correction of the VC industry, which started in the last quarter of 2021. With that scenario in mind, a novel database of relevant direct investment transactions by SWFs into private technology companies made during the "boom VC years" is introduced and analysed.

The analysis provides a list of the relevant deal and round-specific factors that can help explain differences in investment performance. On average, the chapter finds that targets which were Asian-based, within the delivery sector, in earlier stage rounds tended to outperform their peers within the time frame of the analysis. Digital "bit" businesses had stronger returns in the short run; however, the performance of physical "atom" businesses was more resilient over time. Follow-on investments had similar returns to one-off investments. And finally, while investment rounds led by SWFs were less successful than those from other institutional investors, the performance gap has decreased over time. All of these factors appear to be relevant even when accounting for selection bias in the sample, indicating that they can be complementary to the existing theoretical framework that understands SWFs as learning organisations.

The technology investment process has enhanced capabilities, opened new markets and provided a more balanced portfolio to SWFs. The risks, though, of investing in companies with inflated valuations and cash-burning business models are not exempt from serious risks. Which SWFs will conti-

nue their VC strategies after this painful collapse? Only those SWFs with the appetite for that kind of risk, a long-run investment plan, with capabilities and specialised teams in place, and also those with the ability to transform tech investments into strategic economic advantages. The insights provided in this chapter around deal- and round-specific factors can provide grounds to gain a deeper comprehension of what makes the SWFs' investment strategies in tech successful and potentially benefit a wide range of sovereign stakeholders.



1 | INVESTING IN A DIFFERENT WORLD ORDER: SOVEREIGN WEALTH FUNDS 2023

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1. Investing in a Different World Order: Sovereign Wealth Funds 2023

The year 2022 was marked by a series of significant geopolitical events that had a profound impact on the global financial landscape. The most notable events of the year included Russia's invasion of Ukraine, the outbreak of a new variant of COVID-19, and the escalation of tensions between the US and China (particularly the export controls launched on semiconductors by the US on October 7, 2022)^[1]. Meanwhile, the global supply chain crisis continued to impact economies, with supply bottlenecks accelerating inflation worldwide. These events caused a great deal of uncertainty in the markets, with the return of central bankers to the main stage and investors looking for safe-haven assets.

The year 2022 witnessed a slow but uneven recovery from the pandemic, with technology and communication services companies registering one of their worst yearly results, while traditional sectors like energy and utilities performed better than expected^[2]. Climate change emerged as a key investment theme, with an increasing focus on renewable energy and ESG investing. However, investors faced challenges in both the equity and fixed-income securities markets, with the underperformance of historical averages due to increased market volatility and dampened investor sentiment caused by the Federal Reserve's monetary tightening to curb inflation. Despite strong corporate earnings and robust economic growth, the bond markets were rocked by a series of geopolitical events and rising interest rates. The FTSE World BIG, an index that provides a broad-based measure of the fixed income markets around the world, returned -17% in dollars, while the S&P 500, a typical representation of the stock market sentiment, lost close to 20% of its value in the same year.

As a result, 2022 was a year marked by geopolitical tensions, supply chain disruptions, inflation, weak stock and fixed-income returns, and mixed performance in financial markets. Investors were looking to diversify their portfolios and find safe-haven assets amidst the ongoing geopolitical uncertainty.

Sovereign Wealth Funds (SWFs) expanded their global footprint, with Assets Under Management (AUM) rising from \$10.39 trillion in 2021 to \$11.6 trillion. This 11% total growth primarily stemmed from the Middle East and Eastern Asia, which saw increases of 15% and 11%, respectively. While still tiny players, South America's SWFs boasted a near-doubling of AUM, spurred by revenue from copper and oil price tailwinds and a low baseline.

Among the largest funds, the Norwegian SWF, Government Pension Fund Global, remained the world's biggest, boasting \$1.4 trillion in AUM. Chinese funds—China Investment Corporation, CIC, and the State Administration of Foreign Exchange, SAFE—emerged as the second and third largest, respectively, marking 13% and 27% growth. In the Middle East, the Public Investment Fund of Saudi Arabia stood out, growing by a remarkable 45%, thus solidifying its position among the top global players.

On the individual fund level, the Gabonese and the Peruvian SWFs recorded the highest growth in 2022, fueled by a rise in copper and oil prices and post-pandemic capital injections. Also, in South America, the Guyanese SWF, bolstered by significant oil discoveries, rose to become the largest per capita fund in Latin America. In Europe, both COFIDES (Spain) and CDP Equity (Italy) saw a notable rise in AUM in the last 15 months due to new capital infusions. This expansion not only aims to invest in and develop local industries but also to generate global relationships with other SWFs. Ireland also announced plans to establish a multi-billion SWF, leveraging a surplus forecasted to reach €65bn over

[1] Rodger Baker, "The Most Geopolitically Significant Events of 2022", Worldview powered by Stratford, Dec 30 2022, <https://worldview.stratfor.com/article/most-geopolitically-significant-events-2022>, (accessed May 15 2023).

[2] Tom Lauricella, "Just How Bad Was 2022's Stock and Bond Market Performance?", Morningstar, January 3 2023, <https://www.morningstar.com/markets/just-how-bad-was-2022s-stock-bond-market-performance>, (accessed May 15 2023).

the next four years. This move comes after ultra-low tax rates attracted some of the world's largest companies, transforming the country's public finances. Lastly, Ethiopia's Investment Holding, created in 2021, consolidated diverse government-owned assets under one umbrella, managing an impressive \$46 billion. In the Philippines, the government began establishing its SWF, Maharlika Investment Fund, with an initial AUM of \$8.9 billion. Funded by the central bank's dividend and local development bank resources, this fund is expected to become a vital player despite current political controversies.

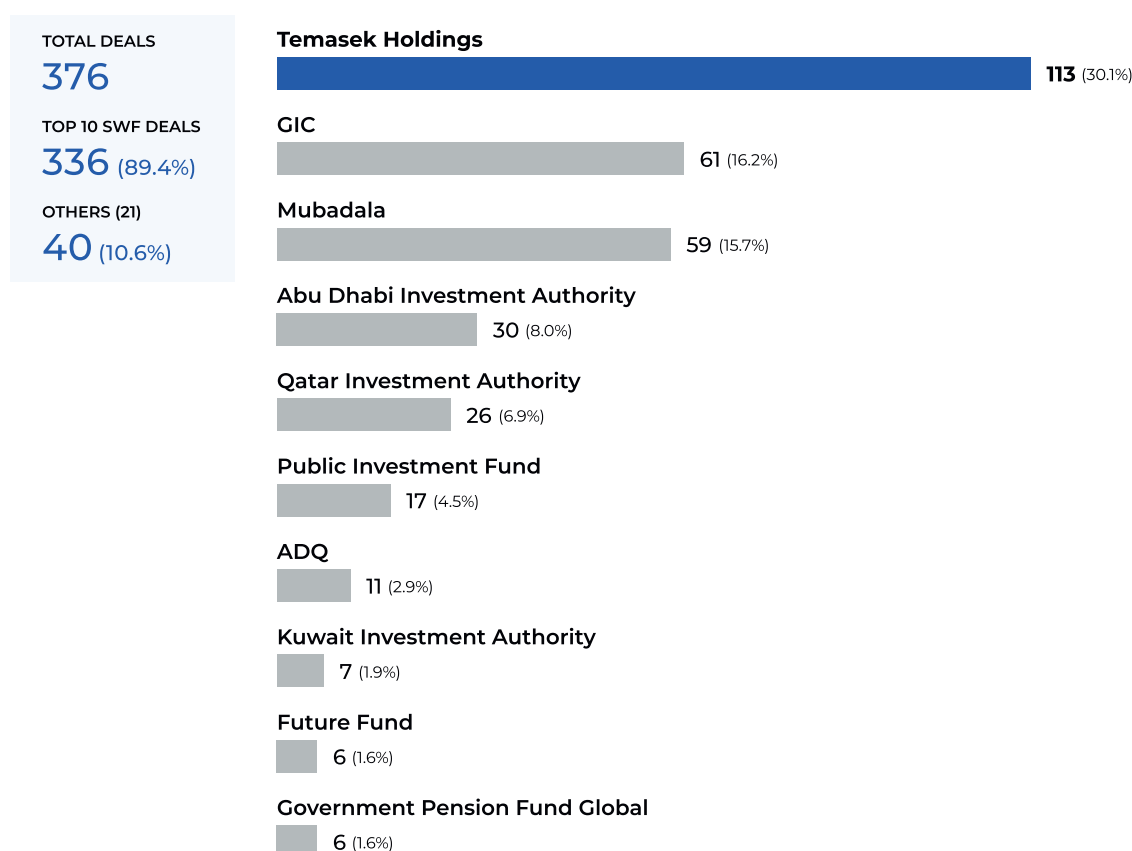
POST COVID AND THE SURGE OF SWF

The geopolitical events and uncertainty in the markets set the stage for a challenging year for SWFs. They navigated the turbulent waters with strategic investment decisions. Our current analysis concentrates on direct sovereign equity investments announced from January 2022 to March 2023. Only in 2022, it scrutinised 376 investments across 354 distinct transactions, with the discrepancy attributed to different sovereign funds participating in the same deals. While the present sample is slightly smaller than the previous one, it is three times greater than our 2019-2020 sample. As is typical of our sampling, discrete capital commitments or funds deployed are generally difficult to source or estimate for every deal. Rather we report aggregate deal volumes when available. For our current sample, for deals with available data, SWFs participated in 354 transactions whose aggregate transaction value was approximately \$95 billion.

Figure 1

The most active Sovereign Wealth Funds (2022)

Deal count. In brackets, percentage of total deals.



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

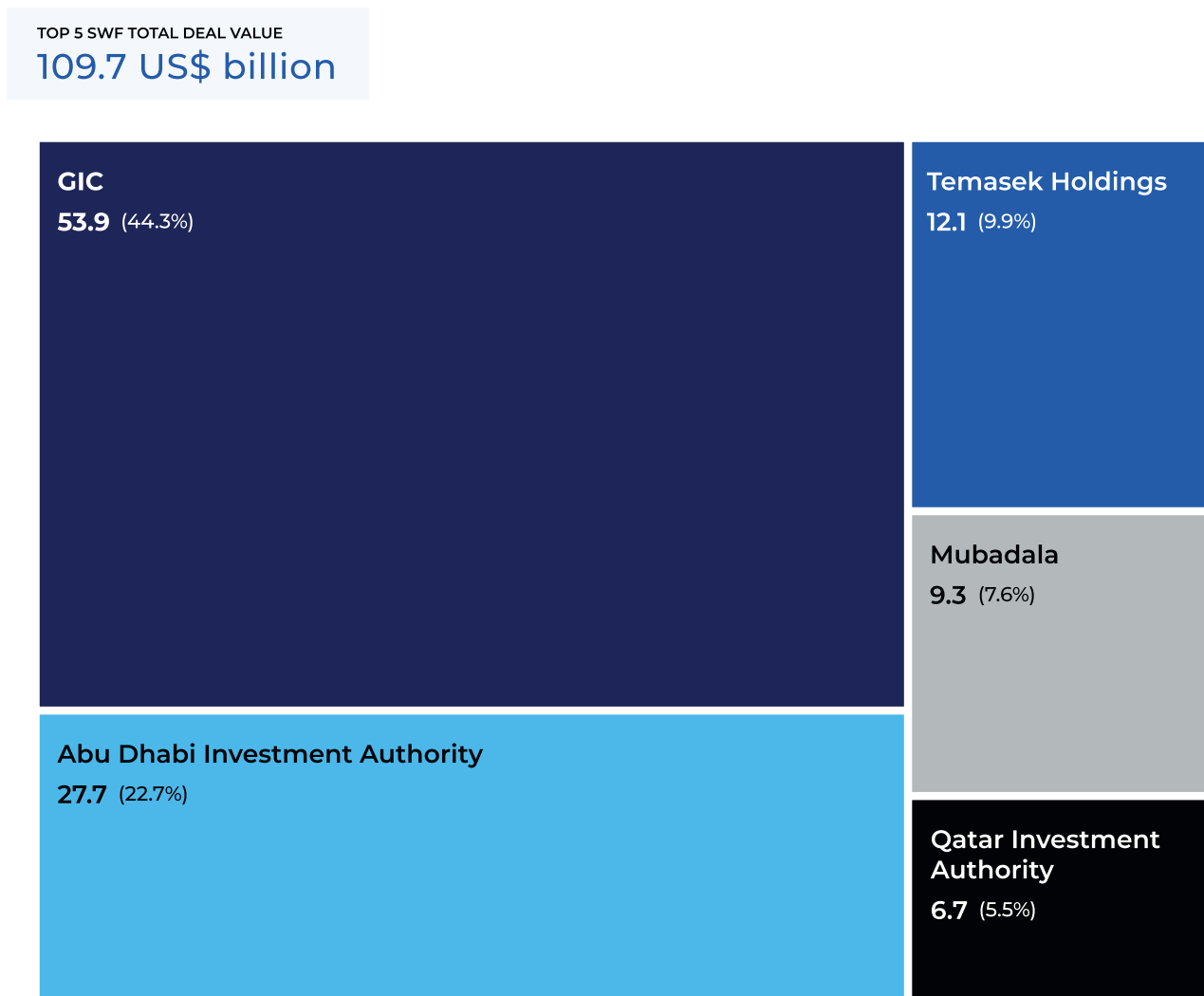
The report uncovers patterns similar to past trends: 31 SWFs were active during the period, with the top six—Temasek, GIC, Mubadala Investment Company, Abu Dhabi Investment Authority, Qatar Investment Authority, and the Public Investment Fund—controlling the field. These funds represent 81% of the investment activity and approximately 93% of the volume participated by SWFs during the 2022 period.

GIC stood out with participation in 61 deals, with a total value joined equal to \$53 billion, or 43% of the total volume joined by all SWFs during this period. ADIA and Temasek followed, participating in deals worth \$28 billion and \$12 billion, respectively. The distribution changes when considering the number of deals. Temasek and GIC, the active Singaporean funds, still lead the pack, with involvement in 113 and 61 deals, respectively. This may not last much,

Figure 2

The most active Sovereign Wealth Funds in 2022

Total deal value joined per SWF and percentage of total value. US\$ billion.



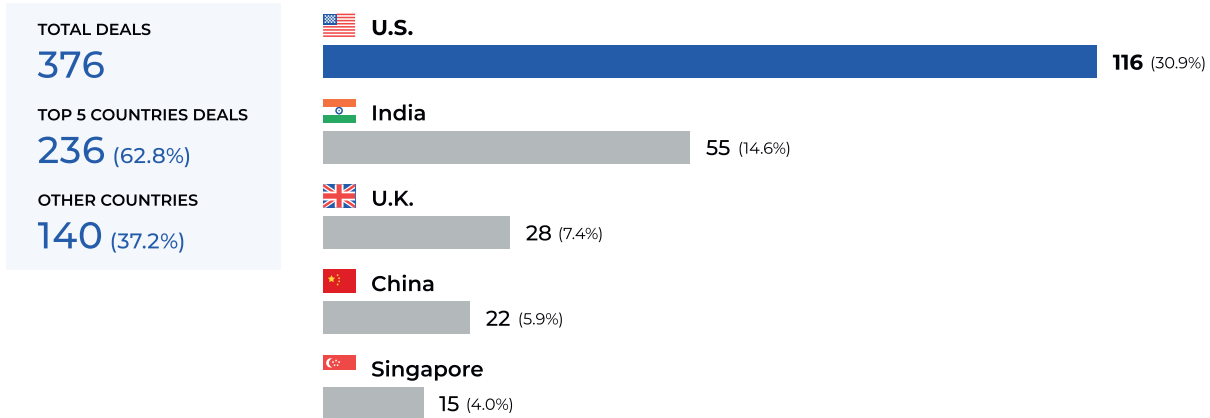
Note: The total deal value here also includes deals involving 2 or more SWFs and that explains a higher total than unique transactions (\$95bn).

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

Figure 3

Top 5 destination countries in 2022 by deal count

Deal count. In brackets, percentage of total deals.



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

given they are closely followed in 2022 by Mubadala, with 59 deals. ADIA, Qatar Investment Authority, and Saudi’s Public Investment Fund also showed robust activity, partaking in 30, 26, and 17 deals, respectively. These top six SWFs contain 81% of the deals. It is remarkable the deal activity of Mubadala.

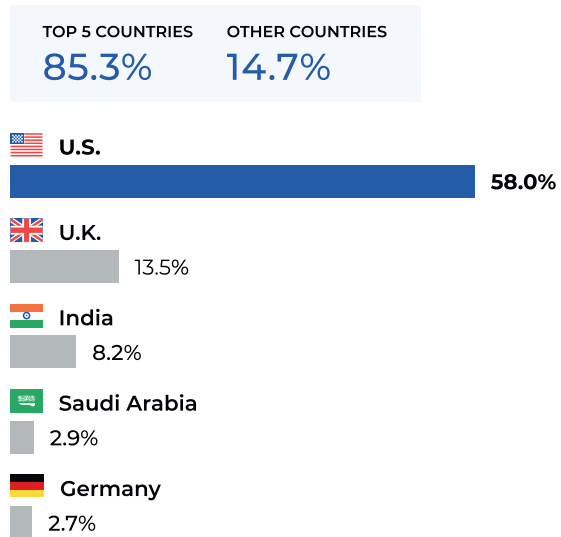
The geographical distribution of SWF direct investment retains its traditional pattern, with the largest financial markets and economies capturing the greatest shares. The US held 58% of all global transactions (valued at \$55 billion), while the UK, India, Saudi Arabia, and Germany combined to claim 27% (\$26 billion combined). In the US, the top 3 sectors (industrials, information technology, and real estate) received a combined total value of \$43 billion, while in the UK, the top performing sector was real estate; in India, health care; in Saudi Arabia, financials; and in Germany, information technology.

The Middle East region warrants specific attention. The region not only hosts the most sizable and active SWFs, but it has also attracted significant foreign direct investment (FDI) in the Post-Covid period. The UAE, Saudi Arabia, and Qatar became leading countries for FDI destinations in the post-COVID period, with the number of projects exceeding that of European counterparts, according to fDi Intelligence^[3]. In this report, the UAE and Saudi Arabia collectively drew nearly \$5 billion in investment, more than European countries or China’s total, and

Figure 4

Top 5 destination countries in 2022 by deal volume

Percentage of total deal volume.



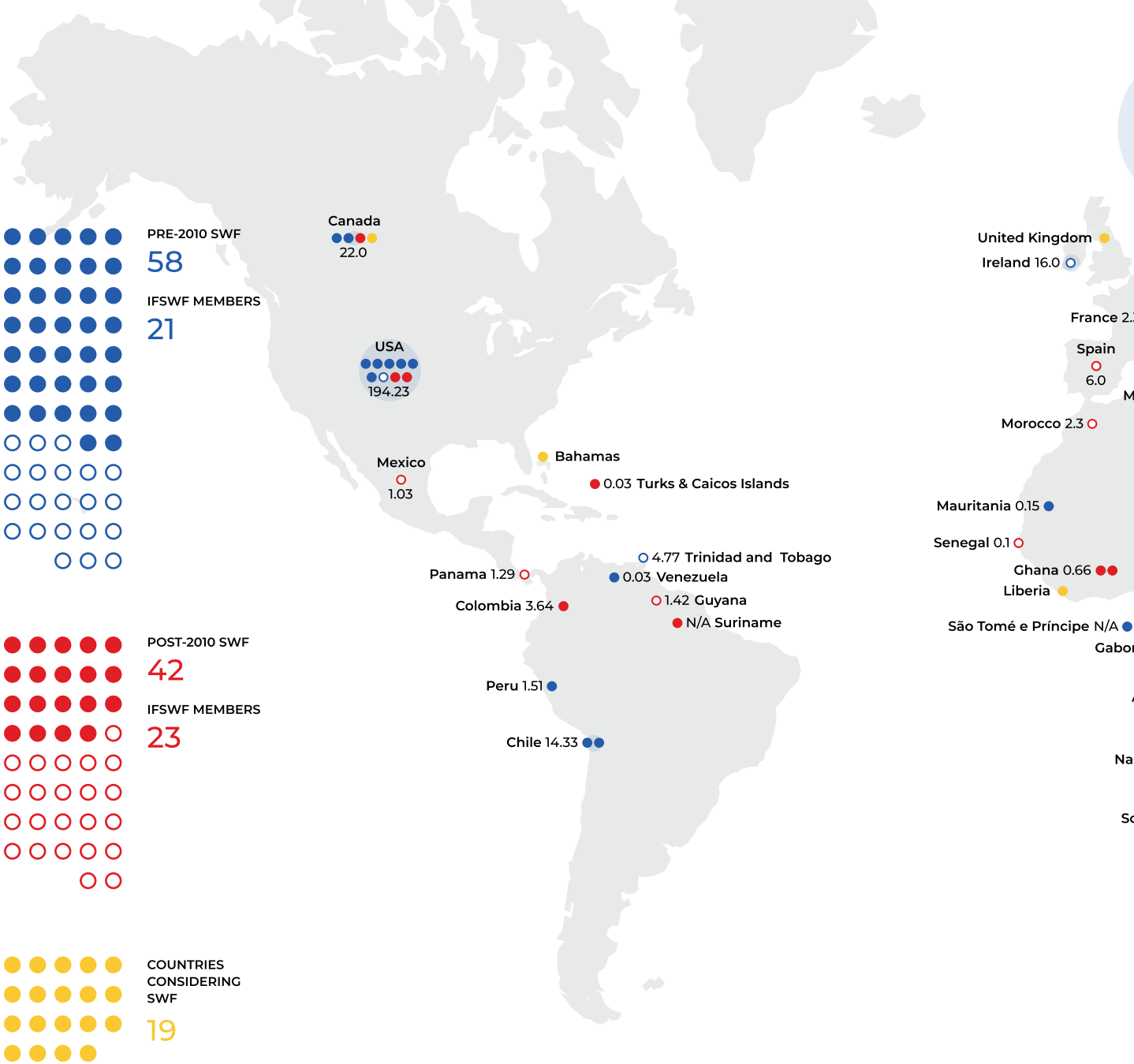
Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

[3] Alex Irwin-Hunt, "Middle East countries lead post-Covid investment rebound", fDi Intelligence, May 10 2023, https://www.fdiintelligence.com/content/data-trends/middle-east-countries-lead-postcovid-investment-rebound-82470?xnpe_tifc=4knZOiz7bDnpblh_4lV7OMpsafeWaelWhFW5b-MhWbdeXbMBSnkEAbfs3tu4vaMXp4uQLxlojx.QsblLLx.su&utm_source=expona&utm_campaign=Graph%20Time%2010.5.23&utm_medium=email, (accessed May 20 2023).

Infographic 1

IE Sovereign Wealth Research Ranking 2023

- Pre-2010 SWFs
 - IFSWF members
 - New SWFs (2010-2023)
 - IFSWF members
 - Countries considering SWFs
- Assets under Management (US \$billion)





At present, the number of active sovereign wealth funds stands at 100, two more than in our 2021 Ranking.

60 countries have established at least one SWF. The Middle East, China, Southeast Asia, and Norway are still the four most relevant poles for SWFs.

Assets under management totaled \$11.5 trillion. SWFs have widely spread in recent years, and since 2010 there have been 40 newly formed funds. Another 19 countries are actively contemplating establishing an SWF.

Debates over new SWFs are growing in Africa, Central Asia and Eastern Europe. As of 2022, the total count of operating or prospective SWFs has reached 119. Of these, 44 are either full or associate members of the International Forum of Sovereign Wealth Funds.

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

played significant roles in the Green Energy Transition.

Other countries where SWFs deals total volume exceeded a billion dollars included China, Singapore, Switzerland, Australia and France. These Top 10 countries accounted for 95% of the total sample value.

DRIVING SECTORS OF 2022

Drilling down into the specifics, SWFs demonstrated a clear preference for certain sectors. Their investment activities were particularly notable in technology, real estate, and industrials; in addition, healthcare was the second most active in terms of the number of deals, although the average amount per transaction was not as big as the other sectors. The Covid-19 pandemic has steered FDI activity toward specific sectors such as semiconductors, renewable energy, electronic components, biotech, communication, and minerals. These sectors have gained increased attention due to their relevance in addressing the crisis and the subsequent recovery and also affected SWF decisions during 2022.

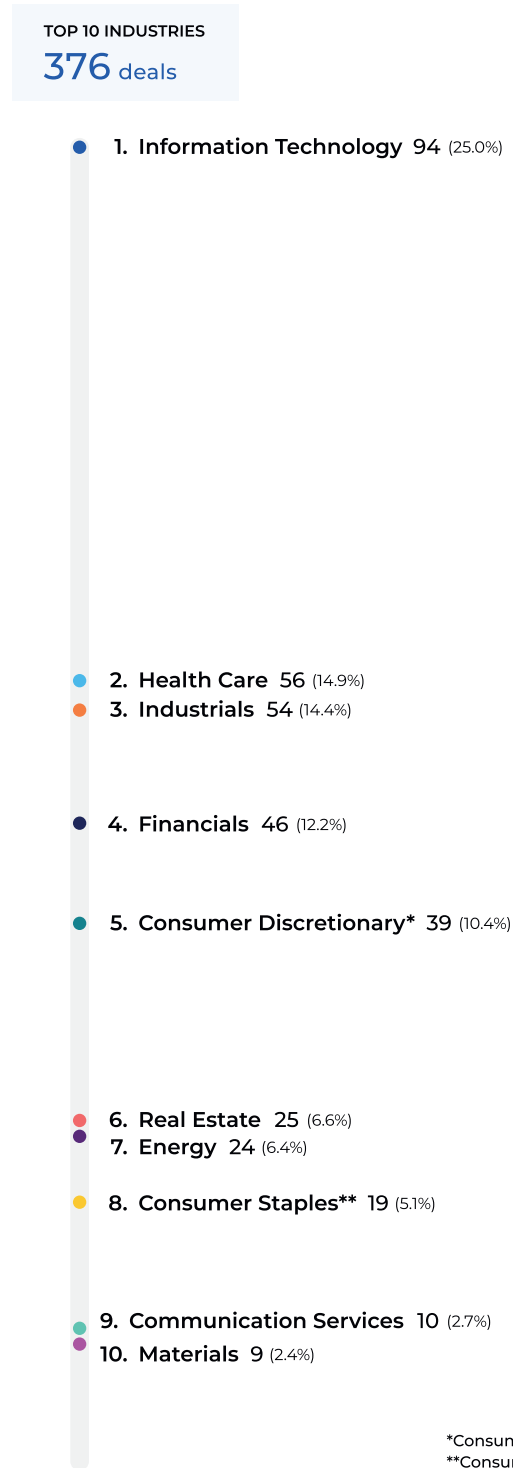
SWF direct investment activity usually aligns with global M&A trends, showing a proactive approach to medium and long-term sector growth. Industrials, information technology, and real estate made up approximately 66% of these investments. Each sector attracted close to \$21 billion in investments in 2022, accounting for 204 out of 376 total transactions. The most significant transactions in the technology sector revolved around computer software and e-commerce. Within the industrial sector, SWFs showed a preference for climate-related technologies and had an increased focus on agritech, environmental engineering, and logistics. The real estate sector ranked third in investment volume, implying higher transaction values, despite engaging in only 25 transactions. The healthcare sector emerged as the second busiest sector. SWFs concentrated on 56 transactions worth \$9.8 billion and saw the highest number of co-investments between SWFs.

The two largest deals in which SWF was involved were the investment in Store Capital Corp for \$13.8 billion and in Emerson Climate Technologies for \$11.8 billion, both located in the US. On the

Figure 5

Top 10 industries in 2022 by deal count

Deal count. In brackets, percentage of total del count.



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

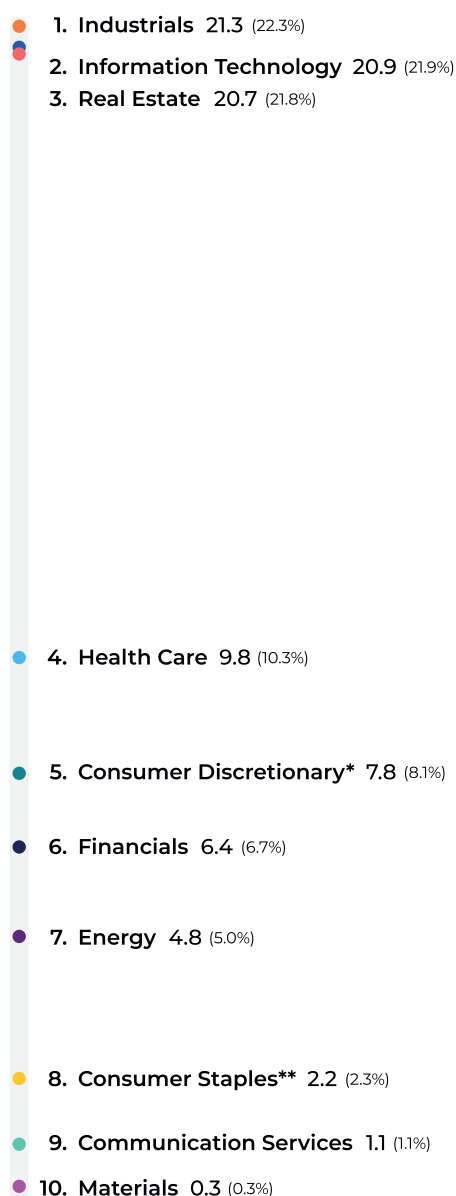
Figure 6

Top 10 industries in 2022 by deal volume

Deal volume in US\$ billion. In brackets, percentage of total deal volume.

TOP 10 INDUSTRIES TOTAL DEAL VOLUME

95.2 US\$ billion



*Consumer Cyclical
**Consumer Defensive

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

one hand, Store Capital Corp, a rapidly expanding net-lease REIT in the US, marked one of GIC's largest M&A transactions in the country. On the other, Emerson Climate Technologies is a significant player in the climate technology sector, providing heating and air conditioning solutions. This market niche is projected to witness a compound annual growth rate (CAGR) of 24% over the next decade, and both GIC and ADIA, alongside Blackstone, participated in this deal.

SOFTWARE, E-COMMERCE, AND THE CRYPTO WAVE

The Information Technology sector accounted for 22% of the total transactions. Consistent with 2021, SWF investments in regional e-commerce leaders aligned with a long-term outlook rooted in global shifts in consumer behaviour. Three principal deals, valued together at \$11.5 billion, involved computer software and e-commerce companies in the U.S. and the U.K. - Zendesk, The Access Group, and Checkout.com. These transactions mostly aimed to privatise the target companies (in these cases requiring a minimum 33% premium on the final stock closing price) or to join late-stage venture rounds amid a promising investment landscape shaped by global economic recovery post-pandemic.

GIC and ADIA formed part of a consortium led by Hellman & Friedman, which took private the San Francisco-based software company Zendesk in an all-cash deal worth \$10.2 billion. Following pressure from Jana Partners, a 2.5% stakeholder, to consider a sale, Zendesk accepted the deal, thus preventing a potential proxy battle at the forthcoming annual meeting. The deal represented a 33% premium on the last stock closing price.

GIC participated in a \$1.2 billion private placement in The Access Group, a business management software provider in the UK, Ireland, and Asia Pacific. This investment formed part of a larger investment by Hg and TA Associates and will support Access Group's growth strategy and product development, particularly focusing on its SaaS platform.

Finally, GIC and the Qatar Investment Authority joined other investors which collectively raised \$1 billion for Checkout.com in a late-stage venture round. The funding will aid the payment solutions provider's U.S. expansion, technological advance-

ment, and focus on Web3. Checkout.com intends to increase its U.S. presence and enhance payment solutions for online marketplaces, a sector witnessing increased transaction volumes due to digital shifts during the pandemic and the growth of the gig economy. Future offerings will include identity verification technologies, split payments, treasury-as-a-service, and existing payout capabilities.

GIC's active participation in this deal further illustrates its role as one of the most relevant SWFs and its significance as a primary actor in global mega-deals (joining or leading deals worth more than \$ 11 billion). This status is sustained by its formidable dealmaking and due diligence capabilities, in addition to the long-run partnerships it maintains with top-tier private equity firms.

Cryptocurrency, blockchain, and application software trends in 2022 saw significant activity. On the one hand, application software investments reached \$2.7 billion across 19 deals. On the other, blockchain and cryptocurrency secured close to \$1.7 billion across eight deals. Crypto world issues became apparent with the FTX collapse, a major cryptocurrency exchange. FTX struggled to handle withdrawal requests, tallying an estimated \$6 billion within three days. This struggle led to a liquidity crisis; FTX could not meet these requests. In November 2022, FTX declared bankruptcy; its CEO stepped down. This event occurred shortly after Binance, the top global crypto exchange, abandoned plans to purchase FTX. The bankruptcy paperwork revealed several corporate failures, including software misuse to hide misappropriation of customer funds. As reported by Coindesk, FTX's fall in November erased approximately \$183 billion in digital asset value. In contrast, ten months before the scandal, in January 2022, FTX had secured an extra \$400 million from 12 investors. Notably, Temasek and SoftBank contributed to this financing round.

The Temasek case serves as a poignant reminder of the risks inherent in investing in new sectors and emerging technologies. Some new markets or emerging startups lack transparency and accountability, as seen with the FTX debacle. Temasek publicly expressed its disappointment over its FTX investment, citing the detrimental impact of the crypto exchange's fraudulent conduct on its reputation. Despite the fallout from the FTX collapse, those

involved at Temasek held themselves accountable, accepted reduced compensation, and continued to uphold their charter obligation^[4].

The tech sector witnessed an escalating interest in Artificial Intelligence (AI), with SWFs participating in six deals amounting to \$700 million in 2022. Among those transactions, Singapore's SWF, GIC, in collaboration with Tiger Global Management and three other co-investors, committed \$350 million in post-IPO equity funding for Pagaya. This company leverages its AI network to enable financial institutions to broaden their reach to more customers. Temasek was not far behind, engaging in four deals that totalled nearly \$300 million. The SWF invested in SparkCognition, an innovative startup using machine learning software to streamline processes, predict future scenarios, and thwart cyberattacks. Brightseed, a bioscience and AI startup; Soul Machines, a New Zealand-based leader in autonomous animation; and V7, an AI engine helping manage datasets, were also recipients of Temasek's funding. Meanwhile, Mubadala participated in a modest early-stage funding round of \$50 million for Unlearn. AI, a startup integrating AI, digital twins, and statistics to facilitate smaller and more efficient clinical trials.

Interestingly, these investments came amidst a surge in AI enthusiasm, a trend triggered in part by the launch of ChatGPT. According to data from CB Insights, funding in the generative AI space alone achieved a record of \$299 million in 2022, with the momentum carrying into 2023 as the sector attracted \$155 million within the first few months. This trend underscores the significant role AI is beginning to play in the technology and investment landscapes^[5].

[4] Sharwood Simon, "Singapore's sovereign wealth fund regrets investment in crypto-villain FTX", *The Register*, May 30 2023, https://www.theregister.com/2023/05/30/temasek_ftx_chairman_investigation/, (accessed June 22 2023).

[5] CB Insights, "Character.AI sees millions of installs as generative AI companions gain traction", *CB Insights Research*, June 6 2023, https://www.cbinsights.com/research/character-ai-generative-ai-companions/?utm_source=CB+Insights+Newsletter&utm_campaign=c9a6397029-newsletter_general_thurs_2023_06_08&utm_medium=email&utm_term=0_9dc0513989-c9a6397029-92316569 (accessed June 22 2023)

THE BRICK-AND-MORTAR RESILIENCE

The bond and equity markets struggled in 2022. According to Morningstar, in 2022, the largest bond funds experienced their worst decline in the 23-year history of the benchmark. During that period, those funds lost close to 15% of their value. Similarly, the equity market benchmarks registered one of the worst years of performance. The Morningstar US Market Index lost 19.4% in 2022, and technology stocks, measured by the US Technology Index, declined 31.5%^[6].

Given its low correlation with the broad market, SWFs significantly focused on the real estate sector, directing 21% of the total SWF deal activity to it. Real estate attracted 25 transactions, amounting to \$20.7 billion. Real Estate Investment Trusts (REITs) and portfolios featuring office properties, guestrooms, and student housing complexes comprised the targeted assets. GIC, a traditional leader in real estate, emerged as the most active SWF in this sector, participating in multiple large-scale deals. One such transaction involved the Student Roost, the UK's third-largest student accommodation platform, capitalising on the post-COVID resurgence in student housing demand. The acquisition, valued at \$4 billion, incorporated a portfolio of over 23,000 beds and a development pipeline guaranteeing 3,000 additional beds in key UK university cities.

Yet, the hallmark transaction of 2022 was GIC's acquisition, in partnership with Oak Street, of Store Capital Corp, a rapidly expanding net-lease REIT in the US. This transaction, valued at \$13.8 billion, ranks among GIC's largest M&A transactions in the US, according to Lee Kok Sun, GIC's CIO of real estate.

SUSTAINABLE INDUSTRIAL SURGE

The industrial sector drew substantial activity, particularly in sustainable trends such as agritech, climate technologies, and logistics. In 2022, SWFs participated in 54 transactions worth \$21 billion in this sector. Not surprisingly, now, GIC led investment activity in this sector, participating in 80% of the transactions, and again, two of the most significant transactions in the sector involved GIC. By October's end, GIC, along with Blackstone and ADIA, announced an \$11.7 billion investment in Emerson Climate Technologies, now rebranded as Copeland. This company, a key player in climate technology, supplies heating and air conditioning products and services across industrial, commercial, and residential markets. Future Market Insights (FMI) predicts a 24.2% compounded annual growth rate (CAGR) for the climate technology market between 2022-2032^[7], spurred by new pollution monitoring technologies. GIC, ADIA, and Blackstone's investment strategy capitalise on the anticipated rapid growth of energy-efficient heating and cooling equipment within consumer and business carbon-reduction initiatives.

Another significant investment was GIC's \$3.6 billion acquisition of Direct ChassisLink, a US chassis provider. GIC executed this transaction in partnership with OMERS Infrastructure and Wren House, a Kuwait Investment Authority subsidiary. Direct ChassisLink boasts a fleet of over 151,000 marines and 1,000,000 domestic chassis. Both GIC and KIA's investment strategy reflects an intent to capitalise on the rising trend of intermodal transportation, which companies increasingly adopt to reduce transport costs and carbon footprint.

Finally, the agritech and agricultural operations sectors also drew significant SWF investments. These sectors participated in nine deals totalling nearly \$600 million. Temasek figured prominently in seven of these transactions, investing in firms such as Wildtype (a cell-based sushi-grade salmon producer), EFishery (an aquaculture tech startup that provides feeding devices, software and financing for fish and shrimp farmers), and Agriconomie (an agricultural supplier and e-commerce platform). ADIA also made a substantial \$194 million investment, along with TPG, in UPL Sustainable Agri Solutions, one of India's leading agtech platforms.

[6] Tom Lauricella, "Just How Bad Was 2022's Stock and Bond Market Performance?", Morningstar, January 3 2023, <https://www.morningstar.com/markets/just-how-bad-was-2022s-stock-bond-market-performance>, (accessed May 15 2023).

[7] Future Market Insights, "Climate Tech Market Outlook (2022 - 2032)", FMI, August 2022, <https://www.futuremarketinsights.com/reports/climate-tech-market>, (accessed May 20 2022).

HEALTHCARE: AS BUSY AS TECH

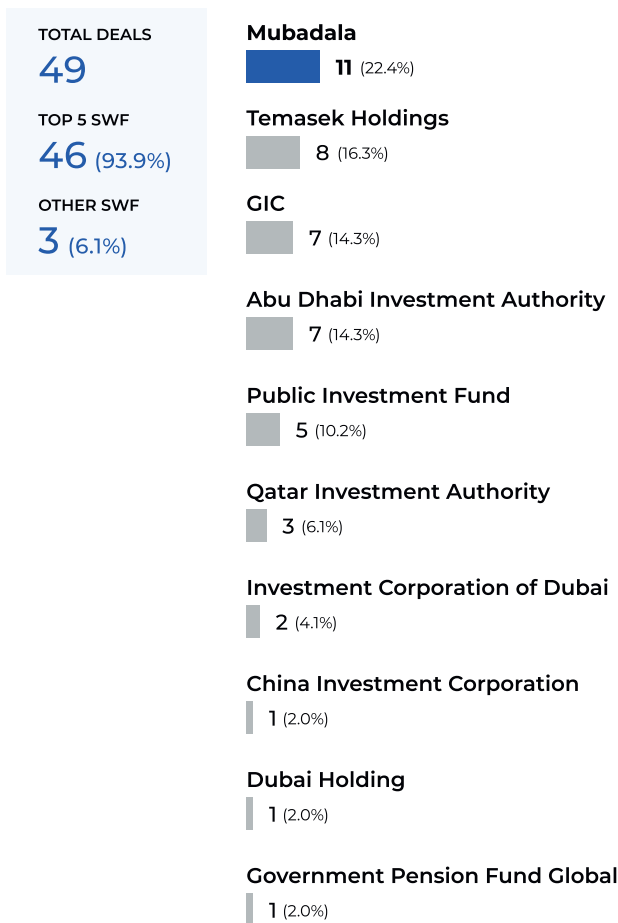
After technology, the healthcare sector emerged as one of the busiest sectors in 2022. It saw 56 transactions amounting to \$9.8 billion. The US, the UK, and India were the main recipients, attracting investments worth \$3.5 billion, \$2.7 billion, and \$1.6 billion, respectively, which represented 80% of the sector’s investment. Mubadala partnered with Warburg Pincus to acquire Pharma Intelligence, a company that provides specialist intelligence, data, and software for clinical trials, drug development, and regulatory compliance. The acquisition rationale

posits that demand for the company’s services will increase in an increasingly data-driven world that relies on predictive analytics for health issue resolution. In India, GIC joined a syndicate of investors to acquire KKR’s equity share of Max Healthcare Institute, a deal valued at \$1.1 billion. Max Healthcare Institute operates 17 facilities across major Indian cities, providing more than 3,400 beds.

Figure 7

The most active Sovereign Wealth Funds in 2023

Deal count. In brackets, percentage of total deals.



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

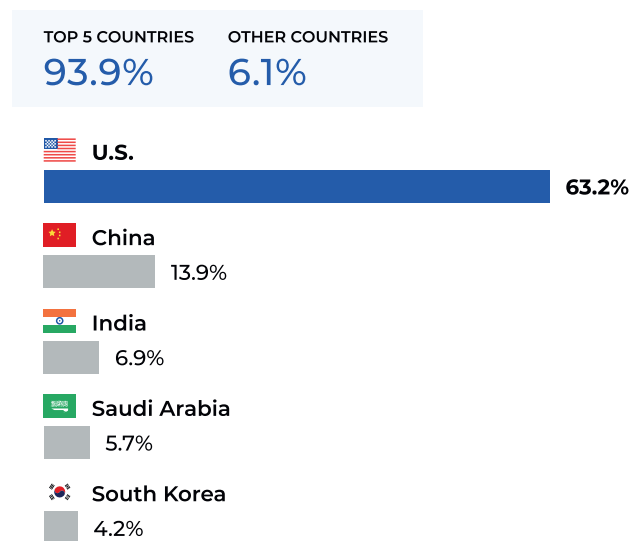
Q1 2023: MEGA DEALS AND THE RETURN OF FINANCE

The opening quarter of 2023 recorded 49 transactions with a combined value of \$23 billion. Mubadala was the most active fund with 11 deals, while Temasek, GIC, and ADIA took part in more substantial transactions totalling \$10 billion, \$8.6 billion, and \$5.6 billion, respectively. Despite the number of deals, 77% of the total investment was concentrated in just five transactions. These significant transactions accounted for \$17 billion and included Stripe’s \$6.5 billion fundraising, Cvent Holding’s \$4.6 billion private acquisition with ADIA’s involvement, and a \$3.1 billion investment in Cooco Fortune led by Temasek and China Investment Corporation. Mubadala also invested with Stone

Figure 9

Top 5 destination countries in 2023 by deal volume

Percentage of total deal volume.

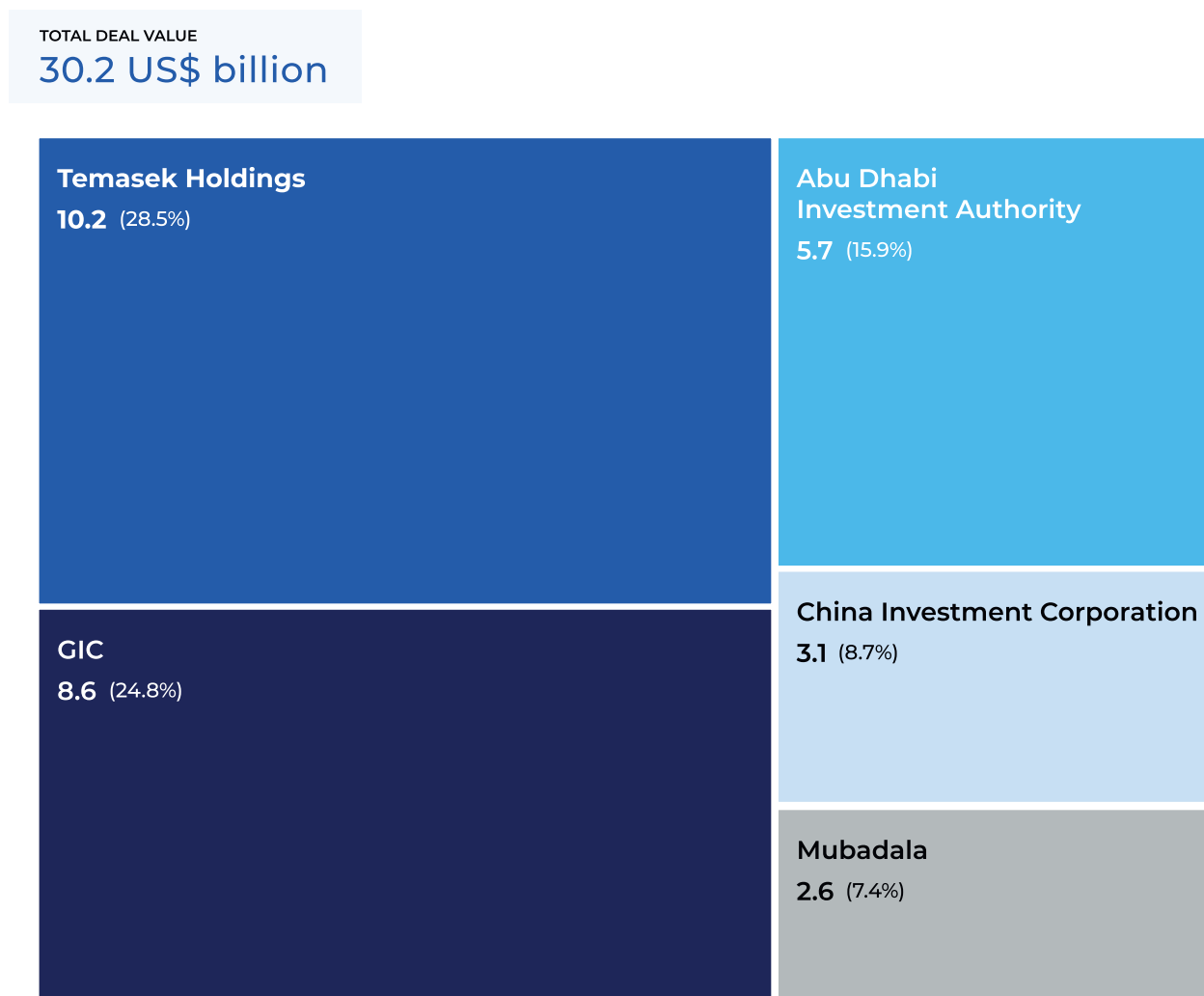


Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

Figure 8

The most active Sovereign Wealth Funds in 2023

Total deal value joined per SWF and percentage of total value. US\$ billion.



Note: The total deal value here also includes deals involving 2 or more SWFs and that explains a higher total than unique transactions (\$95bn).

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

Point Capital nearly \$2 billion in Truist Insurance Holdings, the sixth-largest insurance broker in the US, and the Public Investment Fund of Saudi Arabia invested \$1.3 billion in four construction firms.

The US remained the most attractive destination for SWF investments and took 63% of the total value with SWFs participation. However, China came in second due to the \$3.1 billion COFCO deal. India and Saudi Arabia also drew significant investments, receiving deals worth \$1.5 billion and \$1.3 billion, respectively. In India, ADIA spearheaded two significant deals involving stake acquisitions in Greenko

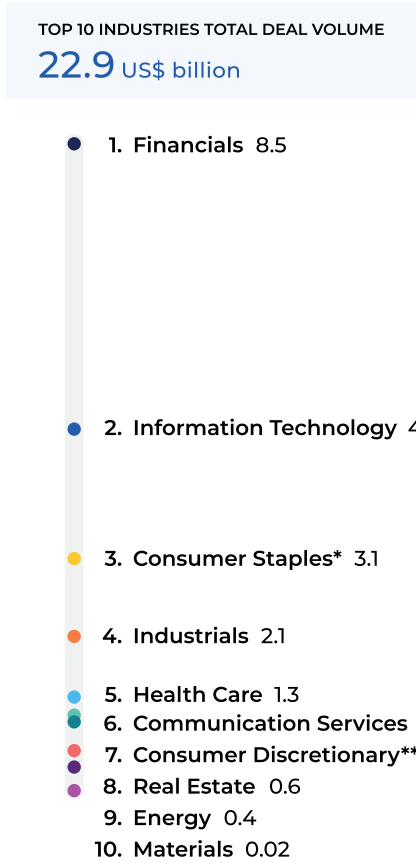
Group, a biotech firm, and Lenskart, an eyewear retailer. Conversely, Saudi Arabia's Public Investment Fund invested \$1.3 billion in four local construction firms through a single deal.

In a substantial transaction worth around \$4.6 billion, ADIA teamed up with a Blackstone affiliate to privatise Cvent Holding Corp. Cvent, a technology solutions provider for the meetings, events, and hospitality sector, suffered financially due to widespread event cancellations during the COVID-19 pandemic. However, with an anticipated global economic recovery on the horizon, particularly in the

Figure 10

Top 10 industries in 2023

Total deal value joined by SWFs by industry. US\$ billion.



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

*Consumer Cyclical
**Consumer Defensive

entertainment sector, Blackstone and ADIA found a promising investment opportunity. Following the deal, Cvent will operate as a privately-held company.

The financial sector rose to prominence, largely due to the Stripe and Truist Insurance Holdings transactions. GIC and Temasek were part of Stripe’s \$6.5 billion fundraising initiative, primarily aimed at providing liquidity for current and former employees and fulfilling tax obligations related to equity awards. Meanwhile, Mubadala joined forces with private equity firm Stone Point Capital to purchase a 20% stake in Truist Insurance Holding, the sixth-largest insurance broker in the US.

On a general note, the mega deals in 2023, like Stripe’s \$6.5 billion investment and Microsoft’s \$10 billion investment in OpenAI, contrast with the significant slowdown in global venture capital (VC) funding. According to Crunchbase News, 2022 and the first quarter of 2023 witnessed a significant deceleration in activity across all stages of global VC funding, with each funding stage marking a 44% to 54% decline in a year-over-year analysis. Global funding in 1Q23 merely reached \$76 billion, reflecting a steep 53% drop compared to the previous year. This slowdown in VC activity has been linked to an array of factors, including shifting global geopolitics, rising interest rates, and increased market volatility. The situation was further exacerbated in 2023 with the collapse of the Silicon Valley Bank, an event that dealt a significant blow to the VC industry^[8].

FROM CRISIS TO COMEBACK: SWF POST-PANDEMIC INSIGHTS

Examining data from two 15-month periods provides insight into SWF behaviour. The first, from October 2020 to December 2021, is called the pandemic period^[9]. The second, from January 2022 to March 2023, is called the recovery period. This analysis sets the end of the pandemic in December 2021 for simplicity and comparison reasons.

SWFs participated in 425 deals during the recovery period and 448 during the pandemic period. The leading five funds - Temasek, Mubadala, GIC, ADIA, and QIA - remain steady across both periods. They engage in at least 77% of all SWF deals, 325 in the recovery period and 381 in the pandemic period. A notable shift in the Top 10 ranking is the diminished involvement of the Russian Direct Investment Fund, from 14 deals in the pandemic period to four in the recovery period, primarily in Russia, likely due to the Russian-Ukrainian conflict and Western sanctions.

[8] Gené Teare, "Global VC Funding Falls Dramatically Across All Stages In Rocky Q1, Despite Massive OpenAI And Stripe Deals", Crunchbase News, April 5 2023, <https://news.crunchbase.com/venture/global-vc-funding-falls-q1-2023/> (accessed June 21 2023)

[9] Data for this pandemic period comes from the collaboration with the SWF Database of the SovereignNET, an initiative at The Fletcher School, Tufts University.

Figure 11

The most active Sovereign Wealth Funds (analysis on 15 months periods)

Deal count. In brackets, percentage of total deals.

Pandemic period

 Oct 2020 – Dec 2021

TOTAL DEAL COUNT	TOP 10 SWF	OTHER SWF
448	427 (95.3%)	21 (4.7%)

Temasek Holdings

 125 (27.9%)

GIC

 117 (26.1%)


Mubadala

 82 (18.2%)

Qatar Investment Authority

 33 (7.4%)


Abu Dhabi Investment Authority

 24 (5.4%)


Russian Direct Investment Fund

 14 (3.1%)

Public Investment Fund

 11 (2.5%)

China Investment Corporation

 10 (2.2%)

ADQ

 6 (1.3%)

NIIF

 5 (1.1%)

Post-pandemic period

 Jan 2022 – Mar 2023

TOTAL DEAL COUNT	TOP 10 SWF	OTHER SWF
425	379 (89.1%)	46 (10.9%)

Temasek Holdings

 121 (28.4%)

Mubadala

 70 (16.4%)

GIC

 68 (16.0%)


Abu Dhabi Investment Authority

 37 (8.9%)


Abu Dhabi Investment Authority

 29 (6.8%)


Public Investment Fund

 22 (5.2%)


ADQ

 11 (2.6%)


Government Pension Fund Global

 7 (1.6%)

Kuwait Investment Authority

 7 (1.6%)

Future Fund

 7 (1.6%)

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023) & SovereignNET - Fletcher School at Tufts University (2022)

In terms of geographic investment destinations, the US, India, and China hold their top spots. Total value of investments in these countries ranged between \$14 billion and \$27 billion during the pandemic. And in the recovery period, the UK, UK, India, China, and Saudi Arabia saw investment value between \$4 billion and \$13 billion.

Meanwhile, in the recovery period, the US received a staggering \$70 billion with SWF participation,

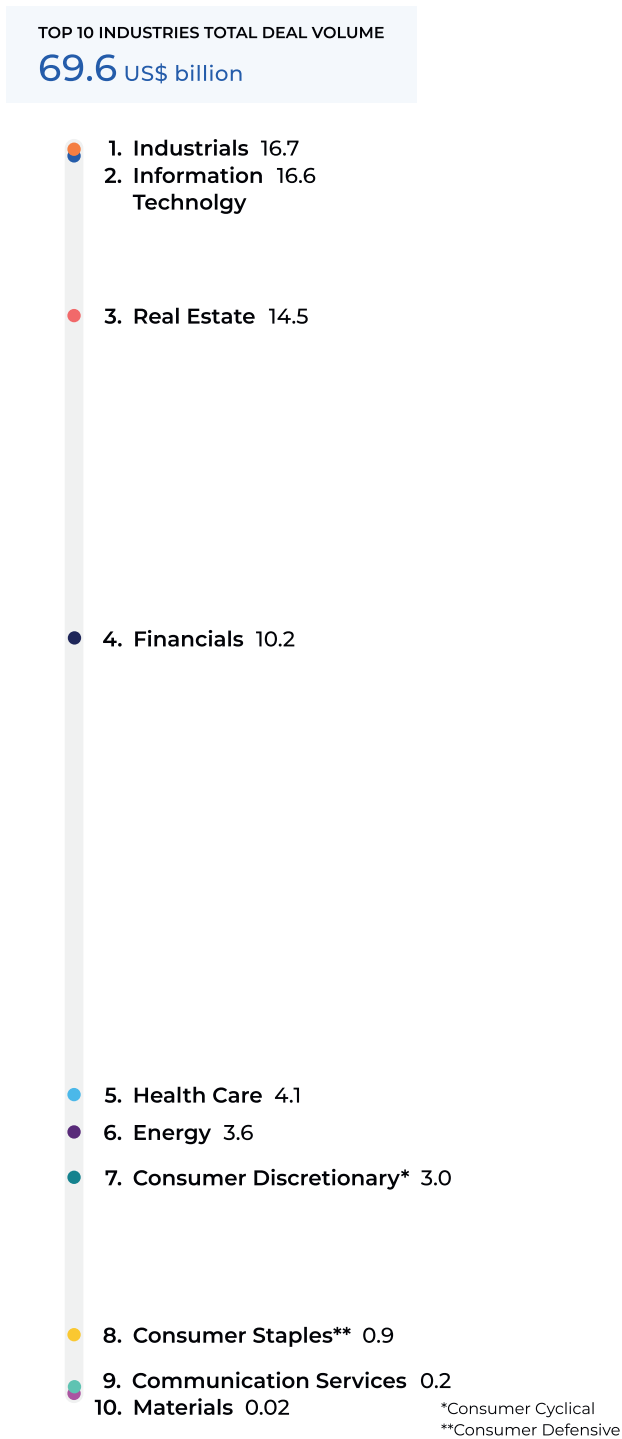
making up 59% of all deals. The number of deals in the US remained consistent across both periods, but the average investment per deal rose significantly in the recovery period. Ten deals alone amounted to \$54 billion. Sectors that saw the most funding in the US were the industrial, tech, real estate, and financial.

Just like the US, the deal count in the UK stayed steady over both periods, but the average invest-

Figure 12

Destination of SWF Investments in the US (2022-2023)

Total deal volume per sector. US\$ billion.



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023) & SovereignNET - Fletcher School at Tufts University (2022)

ment per deal shot up during recovery. Conversely, India, China, Germany, and Singapore, despite remaining in the Top 10 most active SWF investment recipients post-pandemic, saw a marked decrease in average deal investment. Specifically, investments dropped by 50% in India, 60% in China, 15% in Germany, and a hefty 70% in Singapore.

The latest report changed the sector allocation methodology to the Global Industry Classification Standard (GIC methodology), affecting comparability. Nevertheless, a couple of useful insights can still be derived.

In the recovery period, investments were dispersed more evenly among the top five sectors: tech, industrials, real estate, financial, and healthcare. Each received investment with total values between \$11 billion and \$25 billion, a stark contrast to its former period. In the pandemic phase, tech alone amassed 42% of all deals or 35% of investment dollars, totaling nearly \$42 billion. It was followed by infrastructure, utilities, services, and life sciences, which jointly received \$57 billion. Healthcare, also known as life sciences in previous reports, held a steady fifth place, with close to \$11 billion in investments with SWF participation in both periods.

Figure 13

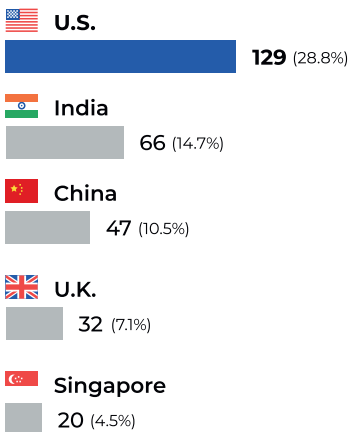
Top 5 destination countries (analysis on 15 months periods)

By deal count. In brackets, percentage of total deal count.

Pandemic period

 Oct 2020 – Dec 2021

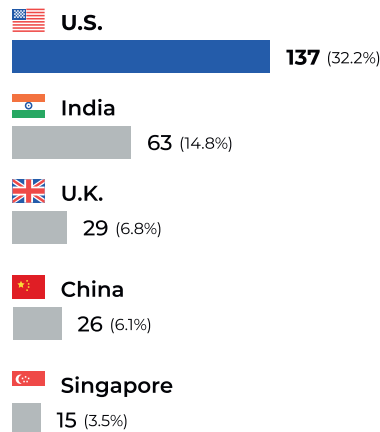
TOTAL DEAL COUNT	TOP 5 COUNTRIES	OTHERS
448	294 (65.6%)	154 (34.4%)



Post-pandemic period

 Jan 2022 – Mar 2023

TOTAL DEAL COUNT	TOP 5 COUNTRIES	OTHERS
425	270 (63.4%)	155 (36.6%)

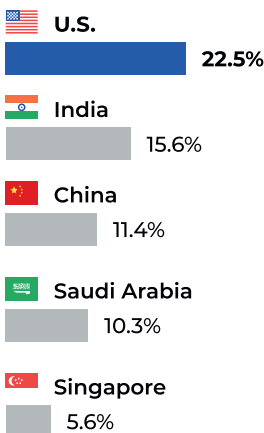


By deal volume. In brackets, percentage of total deal volume.

Pandemic period

 Oct 2020 – Dec 2021

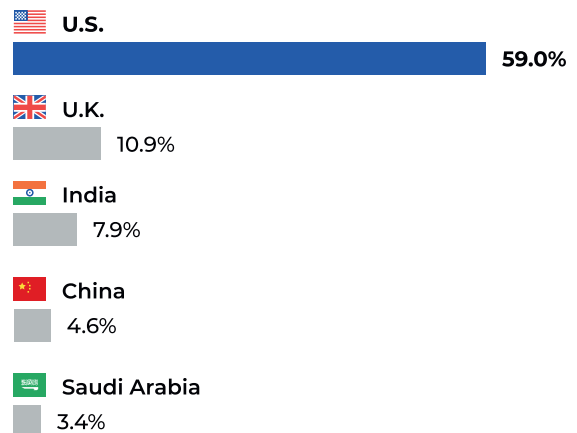
TOP 5 COUNTRIES	OTHER COUNTRIES
65.4%	34.6%



Post-pandemic period

 Jan 2022 – Mar 2023

TOP 5 COUNTRIES	OTHER COUNTRIES
85.8%	14.2%



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023) & SovereignNET - Fletcher School at Tufts University (2022)

Figure 14

Top 10 sectors (analysis on 15 months periods)

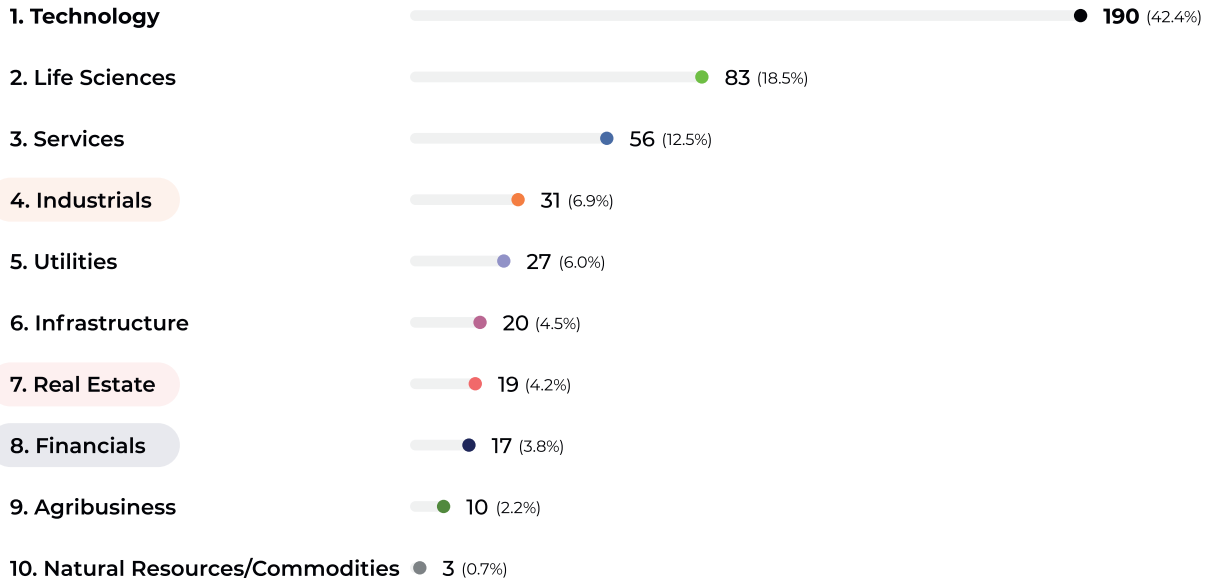
By deal count. In brackets, percentage of total deal count.

Pandemic period

 Oct 2020 – Dec 2021

TOTAL DEAL COUNT

448

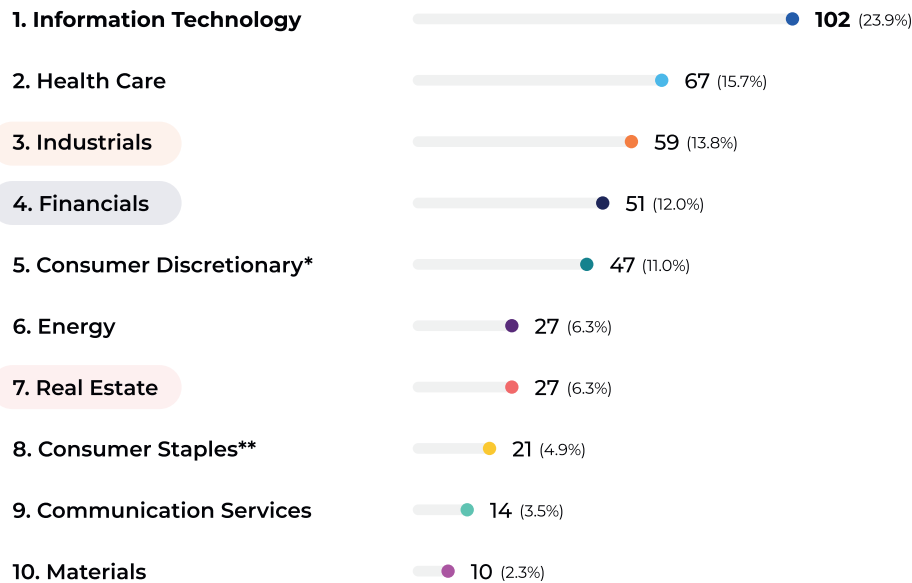


Post-pandemic period

 Jan 2022 – Mar 2023

TOTAL DEAL COUNT

425



*Consumer Cyclical
**Consumer Defensive

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023) & SovereignNET - Fletcher School at Tufts University (2022)

Figure 15

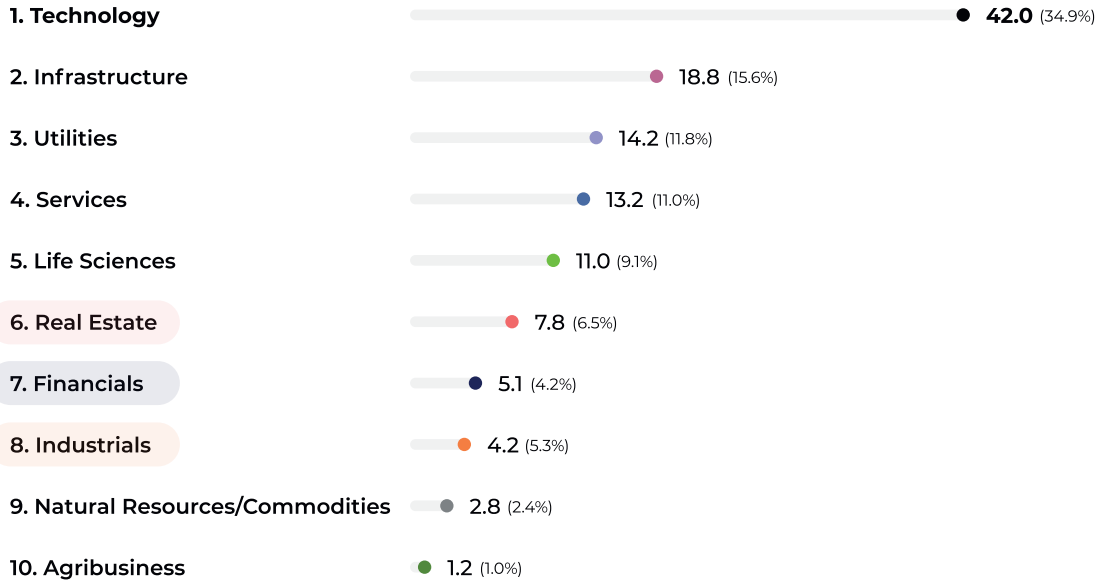
Top 10 sectors (analysis on 15 months periods)

By deal volume. In brackets, percentage of total deal volume. US\$ billion.

Pandemic period

 Oct 2020 – Dec 2021

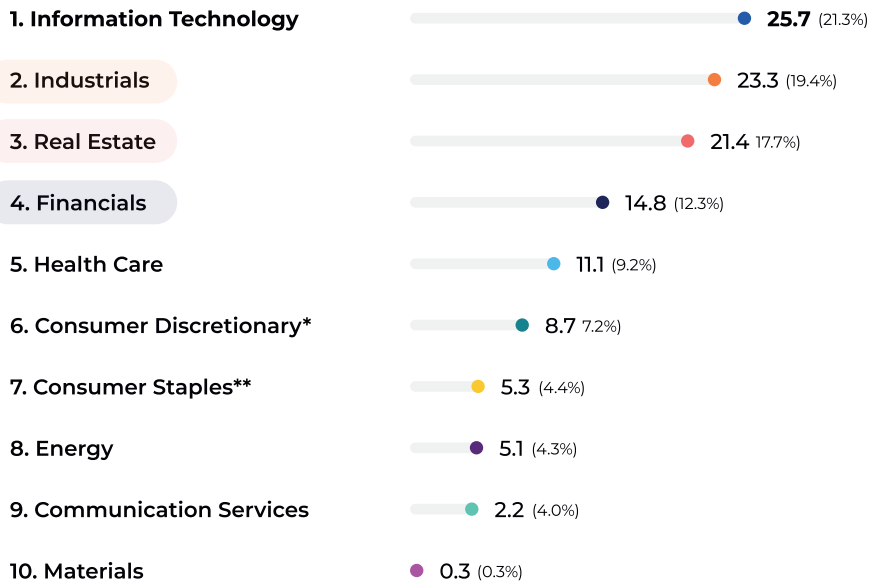
TOTAL DEAL VOLUME
120.3 US\$ billion



Post-pandemic period

 Jan 2022 – Mar 2023

TOTAL DEAL VOLUME
118.1 US\$ billion



*Consumer Cyclical
**Consumer Defensive

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023) & SovereignNET - Fletcher School at Tufts University (2022)

THE BIGGER PICTURE

Sovereign Wealth Funds (SWFs) navigated a challenging financial landscape in 2022 marked by geopolitical tensions, supply chain disruptions, and inflation. Amidst this uncertainty, SWFs made strategic investment decisions, with 31 active SWFs making 377 investments across 355 distinct transactions, with a total value of \$97.7 billion. The top six SWFs—Temasek, GIC, Mubadala, Abu Dhabi Investment Authority, Qatar Investment Authority, and Public Investment Fund—dominated the field, accounting for 81% of the investment activity and approximately 93% of the capital invested during the period.

The US attracted the majority of SWF investments, holding 58% of all global transactions (with total value of \$55 billion). The UK, India, Saudi Arabia, and Germany combined claimed 27% (\$26 billion combined). The Middle East also attracted significant foreign direct investment (FDI) in the post-Covid period, with the UAE, Saudi Arabia, and Qatar becoming leading countries for FDI.

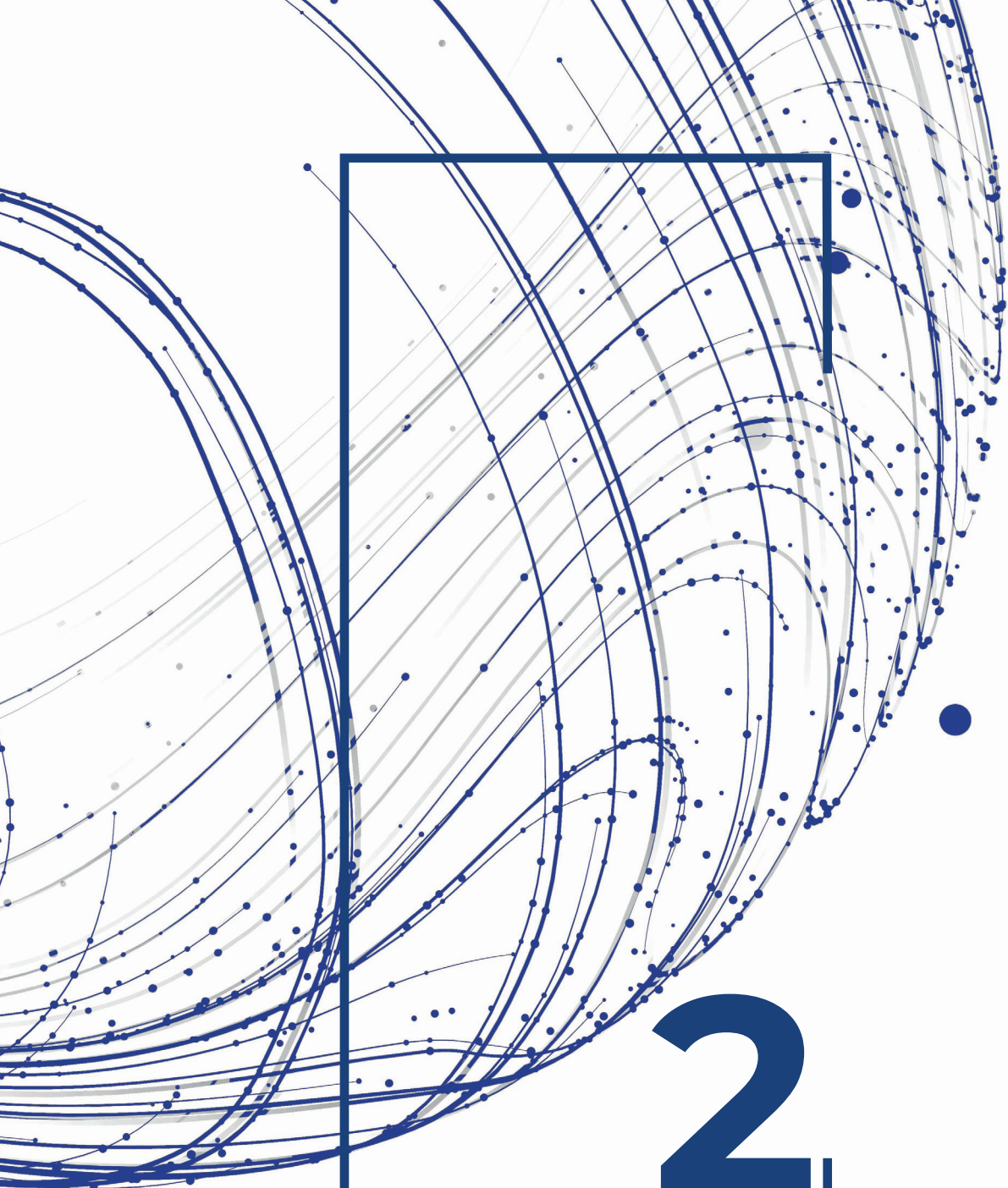
SWFs showed a clear preference for certain sectors, with notable investment activities in technology, real estate, and industrials. The healthcare sector also saw significant activity. The two largest deals involved the investment in Store Capital Corp for \$13.8 billion and in Emerson Climate Technologies for \$11.8 billion, both located in the US.

Analysis of SWFs behaviour during two 15-month periods, the pandemic period (October 2020 to December 2021) and the recovery period (January 2022 to March 2023), reveals consistent participation by leading funds - Temasek, Mubadala, GIC, ADIA, and QIA. The US remained the top investment destination, receiving transactions with SWF participation worth \$70 billion during the recovery period. The

sector allocation saw a shift from a dominant focus on Tech during the pandemic period to a more even distribution across tech, industrials, real estate, financial, and healthcare during the recovery period.

The performance of these individual SWFs underscores the resilience and strategic importance of these funds in the global financial landscape. As we look ahead, it's clear that SWFs will continue to play a crucial role in global investment as key partners for private equity firms and venture capitalists; and as a promoter of investments in key tech firms or sustainability-related technologies.

In conclusion, 2022 and the first quarter of 2023 represents a challenging period for all long-term investors, including sovereign wealth funds. Geopolitical tensions, supply chain disruptions, the central banks' fight against inflation and the market volatility that comes with all of them frame the complex scenarios that the new world order, solidified after the Ukraine invasion, presents. SWFs demonstrated resilience and adaptability, diversifying their portfolios and focusing on sectors like technology, real estate, industrials, and healthcare, arguably sectors with exposure for medium and long-term success. The performance of SWFs such as GIC, ADIA, and Temasek highlights the strategic importance of these funds in the global financial landscape. Looking ahead, SWFs will likely continue to play a crucial role in global investment, with a focus on sustainable and tech-driven sectors. The ongoing geopolitical and economic uncertainties underscore the need for SWFs to remain agile and adaptable in their investment strategies



2

GROWTH AND GREEN: SOVEREIGN WEALTH FUNDS ENGAGE INTO SUSTAINABILITY

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2. Growth and Green: Sovereign Wealth Funds Engage into Sustainability

INTRODUCTION

Sovereign Wealth Funds (SWFs) stand at the forefront of a shift in global energy dynamics, with renewable energy sources and related technologies taking precedence over traditional fossil fuels. This chapter delves into the instrumental role SWFs play in this transition, focusing on their investment strategies, the sectors they target, and the impact they have on the green economy.

The first part of the chapter explores the continued shift of SWFs from conventional oil-related industries to green technologies. Although the largest and most influential funds source a substantial portion of their capital from hydrocarbon sales, they are now channelling capital into renewables. This development is evident in the data from January 2022 to March 2023, where all investments in the energy sector were associated with renewables, with no investments linked to oil and gas. This represents a turning point for SWFs which traditionally backed oil-related deals.

The second part of the chapter discusses the role of SWFs in the energy transition, with a particular focus on energy networks and energy storage. It highlights the significant investments made by SWFs like ADIA, New Zealand Superannuation Fund, and Mubadala in these areas. The essay also explores the diversification of sustainability investments by SWFs, with significant allocations to electric vehicle companies, sustainability businesses, and the agri-tech sector.

The final part examines the influence of SWFs beyond the energy sector. It discusses the One Planet SWFs (OPSWF) initiative, which promotes the integration of climate-related financial risks into asset management. The essay also highlights the substantial progress made by OPSWF members in recent years, including the establishment of an inaugural internal ESG Report by KIA in 2021 and a pledge by The Sovereign Wealth Fund of Egypt (TSFE) to invest \$40 billion in green hydrogen projects.

A LONG TERM SHIFT

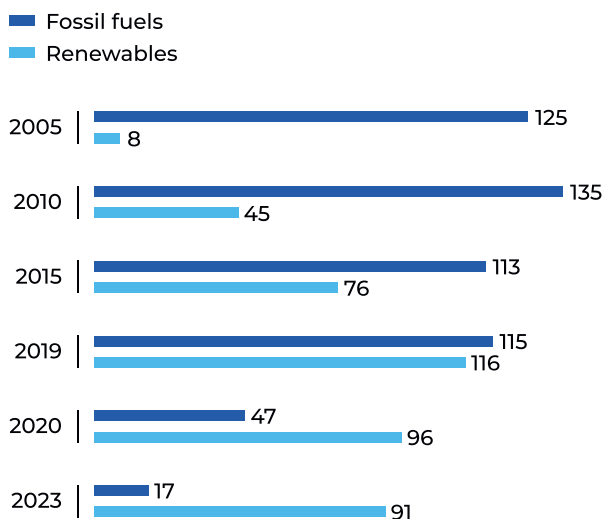
Foreign Direct Investment (FDI) stands as a key measure of investor sentiment, providing valuable insight into enduring economic and geopolitical patterns. The interpretation of FDI figures brings to light a profound shift in energy dynamics, where renewable energy sources and related technologies take precedence, leaving behind the appeal of traditional fossil fuels.

Data and scrutiny by fDi Intelligence establish that FDI flows towards renewable energy sectors demonstrate sustained growth over the past ten years. This culminated in a year of record-breaking performance in 2019, followed by consistent resilience amid the turbulences brought on by the Covid-19 pandemic. As per this data, 2019 marked a significant turning point: FDI influx into renewables hit an all-time high at \$116.6 billion, outperforming fossil fuels for the first time, which attracted \$115.5 billion during the same period. While the pandemic left its mark, FDI into renewables demonstrated resilience, totalling \$96.7 billion in 2020 and \$90.8 billion in 2021. Even though these numbers did not reach the 2019 peak, they surpassed the 2010s' average yearly investment of \$66.6 billion. Conversely, foreign investments in coal, oil, and gas fell drastically, tumbling down to \$47.5 billion in 2020 and hitting a new record low of \$16.2 billion in 2021.

Figure 1

The Switch

Announced greenfield FDI in renewables and fossil fuels, in US\$ billion.



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023) based on fDi Intelligence (2022)

FROM OIL TO GREEN TECH: THE PARADOXICAL SHIFT OF SWFS

Sovereign Wealth Funds (SWFs) find themselves amidst these evolving sustainability trends and are playing an instrumental role in the transition towards sustainability.

On the one side, they are minimizing their investments in conventional oil-related industries and channelling capital into green technologies. This development might seem paradoxical considering that the largest and most influential funds source a substantial portion of their capital from hydrocarbon sales. From January 2022 to March 2023, all investments in the energy sector were associated with renewables, with no investments linked to oil and gas.

Analysis of the Sovereign Wealth Research at the IE Center for the Governance of Change also shows that the influx of capital into this sector denoted intensified competition for the same projects, which also implies that SWFs must exhibit increased selectivity due to a narrowing pool of investment options. Analyzing capital investments in greenfield FDI projects reveal notable changes. In 2005, global greenfield FDI allocated less than 2% to climate-re-

lated and environmental initiatives. By 2018, this figure had expanded appreciably, contributing to 12% of global FDI. Fast forward to 2022, and climate FDI constituted 39.4% of all global capital investment in greenfield FDI projects, with total investment approaching \$500 billion^[1].

To stay competitive amid the pressure of diminishing returns due to the inflow of fresh capital into the sector, SWFs have rethought their investment strategies. The focus has expanded from merely investing in energy generation resources like solar, wind, or hydrogen. SWFs have broadened their investment spectrum to include energy networks, energy storage, and manufacturing supply chains. In 2022 and 1Q23, SWFs were part of 24 deals amounting to \$6.2 billion.

This recalibration required a wider perspective to assess sustainability trends, moving beyond traditional energy generation and distribution. A wider lens now encompasses sectors like electric vehicles, agriculture, sustainability, and recycling. In this expanded scope, SWFs participated in 41 deals totalling \$9.3 billion, which included \$2 billion in deals in electric vehicle companies and an additional \$1.1 billion in sustainability, agritech, and agricultural operations.

On the other side, a comprehensive sustainable portfolio may not strictly align with a selection of sectors but instead may relate to general policies within portfolios and boardrooms. This approach can aid in reducing the carbon footprint of “heavy-emitting industries” such as real estate, transportation, waste management, land use, cement,

[1] Henry Loewendahl, “Global competition for climate heads up”, May 24 2023, fDi Intelligence, https://www.fdiintelligence.com/content/data-trends/global-competition-for-climate-investment-heats-up-82517?xnpe_tif-c=4d4_hlVjbl07OFzjx.Lu4jpsafeWaeiWhFW5bMhWbdeXbMBSnkEAbfs3tu-4vaMXXOFUuhlssbfnJ4FQL4ueN&utm_source=exponea&utm_campaign=f-Di%20-%20Intelligence%3A%20Graph%20Time%20-%20Newsletter%20-%2024.05.23&utm_medium=email, (accessed May 28 2023)

Figure 2

SWF Investments in the Low Carbon Transition

Deal count and total deal value per year. US\$ billion.

	2022		2023		Total	
	US\$ billion	Deals	US\$ billion	Deals	US\$ billion	Deals
Energy	4.8	19	1.5	5	6.4	24
Gas-Distribution	1.7	1	N/A	N/A	1.7	1
Renewable Energy	0.8	6	0.8	2	1.6	8
Energy-Alternate Sources	0.6	5	0.6	2	1.2	7
Energy	0.8	3	0.07	1	0.9	4
Energy Storage	0.8	3	N/A	N/A	0.8	3
Solar	0.1	1	N/A	N/A	0.1	1
Consumer Discretionary*	1.5	4	0.4	1	1.9	5
Electric Vehicle	1.5	4	0.4	1	1.9	5
*(Consumer Cyclical)						
Industrials	1.1	11	N/A	N/A	1.1	11
Sustainability	0.5	2	N/A	N/A	0.5	2
AgTech	0.3	5	N/A	N/A	0.3	5
Agricultural Operations	0.3	4	N/A	N/A	0.3	4
Materials	N/A	N/A	0.02	1	0.02	1
Forestry	N/A	N/A	0.02	1	0.02	1
Grand total	7.44	34	1.85	7	9.28	41

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

and chemicals. Therefore, SWFs have adjusted investment strategies and exerted boardroom influence to advocate for sustainability. This dual strategy underscores their proactive role in guiding a future with higher regard for environmental consciousness and sustainability.

WIRING THE FUTURE: SWFS AND THE REINVENTION OF ENERGY NETWORKS

The participation of SWF in the transition towards renewable energy has seen two major trends over the past 15 months. Primarily, the significance of energy networks has become evident, and ADIA, NZSF, and Mubadala have had key participation in this market.

A case in point is the largest deal of the period: a \$1.7 billion acquisition of a 10% stake in the American company Sempra Infrastructure, in which ADIA participated. Sempra operates 4,500 miles of natural gas transportation pipelines and aims to develop 3,000 MW of solar, wind, and battery storage projects. The investment into Sempra demonstrates the emphasis on the modernization of energy networks, a necessity for a successful energy transition. Existing gas infrastructure could potentially transport hydrogen once it becomes commercially viable. Reported global investments in green hydrogen grew from \$3.3 billion in 2019, to \$8 billion in 2020, and \$25.2 billion in 2021^[2].

Longroad Energy, an American developer of a 15 GW wind, solar, and storage portfolio across 13 states, also draws interest in the US pipeline infrastructure. The NZSF, an investor in Longroad since 2016, participated in a recent \$500 million equity infusion. The capital will shift the company's initial "develop to sell" business model towards ownership and expedite the expansion of its current 1.5 GW portfolio of owned assets to 8.5 GW of wind, solar, and storage projects over the next five years, according to the company press release.

Finally, Mubadala, together with BlackRock, invested close to \$500 million for a 10% stake in the Indian company Tata Power Renewable Energy. In a press release last April, Tata mentioned that the investment will allow it to create India's most comprehensive renewable energy platform, including solar, wind and hybrid generation, and a plan to go from producing 4.9 GW of power to 20 GW in 5 years^[3].

The heightened competition for renewable projects might have compelled Norway's SWF to adapt its "conservative" policy of investing exclusively in listed assets. In January 2023, Norges Bank Investment Management, the unit of the central bank managing the gigantic Government Pension Fund Global, declared its intention to spend \$650 million to procure a 49% share in a portfolio of solar plants and onshore wind farms in Spain, with a combined capacity of nearly 1.3 gigawatts. This would be the

[2] fDi Intelligence, Green Hydrogen's Moment in the Sun, 2022, The Switch Report, Chapter 5, page 37.

[3] Ivan Shumkov, "BlackRock, Mubadala close 1st-tranche investment in Tata Power Renewables", August 19 2022, Renewables Now, <https://renewables-now.com/news/blackrock-mubadala-close-1st-tranche-investment-in-tata-power-renewables-795346/>, (accessed May 3 2023)

Figure 3

SWF Investments in the Energy Sector

Deal count and total deal value per year. US\$ billion.

	2022		2023		Total	
	US\$ billion	Deals	US\$ billion	Deals	US\$ billion	Deals
Energy						
Gas-Distribution	1.7	1	N/A	N/A	1.7	1
Renewable Energy	0.8	6	0.8	2	1.6	8
Energy-Alternate Sources	0.6	5	0.6	2	1.2	7
Energy	0.8	3	0.07	1	0.9	4
Energy Storage	0.8	3	N/A	N/A	0.8	3
Solar	0.1	1	N/A	N/A	0.1	1
Grand total	4.78	19	1.47	5	6.25	24

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

second transaction in the new unlisted category for the Norwegian SWF after it acquired a 50% interest in the Borssele 1 & 2 offshore wind farm located in the Netherlands. The Spanish portfolio, some of which include greenfield projects, is operated and co-owned by renewable energy firm Iberdrola. Of the total capacity, 20% will originate from wind and 80% from solar. The portfolio includes 12 projects, 9 of which are slated for completion between 2023 and 2025. This renewable energy portfolio will have the capacity to meet the equivalent electricity demands of more than 700,000 homes each year.

Only two months later, NBIM announced a consortium deal with Allianz Capital Partners, the German and European pension fund leader, and AIP Management, a Danish direct infrastructure investment platform for institutional investors. The group is acquiring a 49.9% interest in the He Dreiht wind farm project in Germany, valued at approximately €2.6 billion. NBIM is paying approximately €430 million for its 16.6% ownership interest. He Dreiht is expected to be operational by the end of 2025 and will then be the largest offshore wind project in Germany. Overall, the wind farm will produce clean energy equivalent to the electricity demand of 1.1 million German households.

STORING THE FUTURE: SWFS AND THE RISE OF ENERGY STORAGE INVESTMENTS

Energy storage forms the second noticeable trend. With the need to balance the intermittenencies of solar and wind energy (their production does not always align with demand), energy storage becomes integral to the sustainable energy era. FDI announcements for EV battery manufacturing have grown from a yearly average of less than \$2 billion between 2010 and 2017, to an average of \$14 billion a year between 2018 and 2021^[4]. Wood Mackenzie predicts the capacity of global energy storage will rise from less than 100 GW in 2022 to 741 GW in 2031, representing a 31% compound annual growth rate during this period^[5].

Amid this trend, Temasek took part in \$1.1 billion in investments across 8 deals, five of which took place in North America. The largest transaction involved a \$450 million Series E funding round for Form Energy, an American firm working on a new class of multi-day storage systems. Other participants in this deal included Canada Pension Plan Investment Board and GIC. Temasek also participated in a \$300 million fundraising by Our Next Energy, another American energy storage company that aims to double the range of batteries for electric cars.

Further investment in the energy storage sector includes \$214 million in funding for Group 14 Technologies, with participation from the Oman Investment Fund. The company seeks to develop new silicon-carbon composite materials for lithium-ion markets, aiming to enable the electrification of a range of devices and modes of transportation. Group 14's composite materials and industrial production process intend to overcome cost, scale, and performance challenges that have impeded the world's transition towards an all-electric future.

THE GREEN SPECTRUM: THE DIVERSIFICATION OF SUSTAINABILITY INVESTMENTS

The influence of SWFs extends beyond just the energy sector, enveloping other segments of the green economy such as Electric Vehicle companies. In this area, SWFs joined in five different deals, worth \$1.9 billion. The PIF and Temasek made significant investments in American firms: the former acquired \$915 million worth of stocks in Lucid Motor, a manufacturer of luxury, highly efficient electric vehicles, while the latter participated in a \$275 million post-IPO funding round for Solid Energy Systems, a company producing rechargeable cells tailored for aerospace markets.

The other part of those \$1.9 billion was directed towards Switzerland, Chinese Taipei, and India, territories that also witnessed substantial investment inflows nearing \$710 million from SWFs. Notable instances include GIC and Temasek's investments in ABB E-Mobility, Gogoro, and Euler Motors. These companies specialize in diverse aspects of the green transportation sector, ranging from EV-charging solutions to battery solutions for intra-city transportation.

[4] fDi Intelligence, The Rise of the Battery Supply Chain, 2022, The Switch Report, Chapter 4, page 30

[5] Wood Mackenzie, Global energy storage capacity to grow at CAGR of 31% to 2030, Wood Mackenzie, September 30 2020, <https://www.woodmac.com/press-releases/global-energy-storage-capacity-to-grow-at-cagr-of-31-to-2030/>, (accessed April 25 2023)

Figure 4

Investing in the Low Carbon Transition Industries

Deal count and total deal value per year. US\$ billion.

	2022		2023		Total	
	US\$ billion	Deals	US\$ billion	Deals	US\$ billion	Deals
Consumer Discretionary*	1.5	4	0.4	1	1.9	5
Electric Vehicle	1.5	4	0.4	1	1.9	5
*(Consumer Cyclical)						
Industrials	1.1	11	N/A	N/A	1.1	11
Sustainability	0.5	2	N/A	N/A	0.5	2
AgTech	0.3	5	N/A	N/A	0.3	5
Agricultural Operations	0.3	4	N/A	N/A	0.3	4
Materials	N/A	N/A	0.02	1	0.02	1
Forestry	N/A	N/A	0.02	1	0.02	1
Grand total	2.7	15	0.4	7	3.0	17

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

SWFs have also invested directly in the sustainability business. GIC participated in a late-stage venture, contributing to a \$500 million investment in EcoVadis. EcoVadis assists companies in assessing the environmental and social performance of their suppliers. Simultaneously, Temasek participated in an early-stage venture that raised \$30 million for Circ. This innovative firm, based in Virginia (US), employs technology capable of recycling polycotton into reusable fibres, essentially transforming textile waste into usable materials for clothing manufacture, and partners with renowned fashion brands like Inditex, Patagonia or Zalando.

Lastly, the agritech and agricultural operations sectors attracted significant SWF investments. These industries participated in nine deals totalling close to \$600 million. Temasek featured prominently in seven of these transactions, investing in firms like Wildtype, a cellular agriculture firm that cultivates seafood; EFishery, an ag-tech firm offering integrated feeding solutions for fish and shrimp farming;

and Agriconomie, an agtech e-commerce firm. ADIA also participated in a sizable \$194 million transaction with UPL Sustainable Agri Solutions, one of India's largest agtech platforms.

In conclusion, SWFs have emerged as significant drivers in the transition towards renewable energy and broader sustainability. Two primary trends are discernible: a growing interest in energy networks (which are critical for a successful energy transition and the eventual distribution of hydrogen once it becomes commercially viable) and in energy storage (to counterbalance the intermittencies of solar and wind energy). Significant investments by SWFs like ADIA, NZSF, and Mubadala have helped catalyze these trends.

Furthermore, SWFs have made substantial investments in electric vehicle companies and the wider green economy, underlining their commitment to the sustainability cause. Direct investments in businesses committed to sustainability and in the agri-

Figure 5

SWF Investments in the Low Carbon Transition

Deal count and total deal value per year. US\$ billion.

	2022		2023		Total	
	US\$ billion	Deals	US\$ billion	Deals	US\$ billion	Deals
 U.S.	3.2	9	0.4	2	3.6	11
 China	0.1	1	0.5	1	0.6	2
 Germany	0.4	2	N/A	N/A	0.4	2
 Brazil	0.1	1	0.00	1	0.1	2
 Spain	N/A	N/A	0.6	1	0.6	1
 India	0.5	1	N/A	N/A	0.5	1
 Saudi Arabia	0.3	1	N/A	N/A	0.3	1
 Canada	0.08	1	N/A	N/A	0.08	1
 Israel	0.08	1	N/A	N/A	0.08	1
 The Netherlands	0.05	1	N/A	N/A	0.05	1
Grand total	4.79	18	0.15	5	6.25	23

Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

tech sector also underscore the alignment of SWFs with sustainability goals. These investments not only attest to the growing importance and potential of renewable energy but also illustrate the commitment of SWFs to the sustainability movement in the global investment landscape.

THE GREEN RACE IS GLOBAL

Renewable energy sources deviate from the geographical concentration characteristic of hydrocarbons. The choice of location for investment leans more towards local regulation, incentives, and business environment stability. Countries with abundant solar and wind energy potential do not automatically attract the highest volume of investment. Europe, despite its less favourable geographical conditions for solar energy, ranks as the second-highest recipient of FDI between 2010 and 2022, securing investments worth \$549 billion. Asia Pacific stands at the forefront, having garnered \$711 billion during the same period, even though it does not necessa-

rily possess the greatest solar and wind potential^[6]. This illustrates the complex interplay between renewable energy resources, investor preferences, and the impact of geopolitical factors on investment decisions.

In this context, the US received over 60% of these investments or \$ 3.6 billion, largely due to its market size and stability, along with the appealing incentives offered by some states and its lead in certain technologies, such as batteries. Excluding the US, the lion's share of investment directed itself towards Spain, Germany, India and China. Together they received 2.1 billion.

Aside from those biggest economies, Saudi Arabia received approximately \$400 million. This position makes sense on a macro level, given that the UAE, Saudi Arabia, and Qatar emerged as the most successful in attracting FDI after the pandemic. Com-

[6] fDi Intelligence, The Geography of the Switch, 2022, The Switch Report, Chapter 1, page 7

[7] Alex Irwin-Hunt, Middle East countries lead post-Covid investment rebound, fDi Intelligence, May 10 2023, https://www.fdiintelligence.com/content/data-trends/middle-east-countries-lead-postcovid-investment-rebound-82470?xnpe_tifc=4knZOIz7bDnpblh_4IV7OMpsafeWaeiWhFW5b-MhWbdeXbMBSnkEAbfs3tu4vaMxp4uQLxlojx.QsbILLx.su&utm_source=expona&utm_campaign=Graph%20Time%2010.5.23&utm_medium=email, (accessed May 25 2023).

paring the three years post-Covid to the preceding three years, the UAE saw the arrival of 792 projects; Saudi Arabia, 201; and Qatar, 177. These figures significantly surpass those of their European counterparts, which recorded an increase of an average of 120 additional FDI projects per country^[7].

The Middle East offers a compelling case study of sustainability technology. The UAE's Sovereign Wealth Fund, Mubadala, via its subsidiary Masdar, has committed \$1 billion to a UK start-up specializing in reducing construction CO2 emissions. This strategic investment illuminates the UAE's forward-thinking approach to sustainability, addressing unique challenges, including limited water resources and a deep-rooted construction and infrastructure development sector. The start-up's pioneering work in waterless cement production represents an innovation with the potential to significantly impact the UAE, a country where water scarcity amplifies the value of such a breakthrough.

It is crucial to note that countries leading the energy transition concurrently rank among the largest producers of hydrocarbons. As stated by the US Energy Information Administration, the US, Saudi Arabia, the UAE, and China account for over 40% of total global production. Interestingly, while a portion of the received FDI is channelled to sectors not related to energy, such as tech, business, or financial services, another portion of the FDI flows towards oil and gas development. This allocation is a response to the energy crisis Europe faces due to the conflict between Ukraine and Russia. On another front, it is worth noting that countries like China and the US demonstrate robust specialization in non-electricity generating climate FDI, especially within the manufacturing supply chain. And these governments have provided investment incentives or subsidies for many years, enhancing their position in the sustainability transition.

HARNESSING THE RED SEA: PORT AND GREEN ENERGY OPPORTUNITY

The Red Sea region presents a compelling case of how strategic geographical locations can drive sustainable development. SWFs in the Middle East, particularly in Egypt and Saudi Arabia, have recognized this potential and are actively investing in low-carbon energy sources. Their investments, par-

ticularly along the Red Sea and the Suez Canal, are not only diversifying their domestic and regional economies but also contributing to global net zero objectives. They have invested heavily in renewables and alternative fuels, with a significant focus on hydrogen production, especially green hydrogen, which serves as a clean substitute for fossil fuels.

Egypt had refined its green energy initiatives in preparation for the 2022 United Nations Climate Change Conference (COP27). The country collaborates with foreign partners and its state-owned investors to meet its targets. The Sovereign Fund of Egypt (TSFE) and the Suez Canal Zone have entered into a \$3 billion agreement to generate green energy for ships in Ain Sokhna. Furthermore, TSFE, the Norwegian NBIM and Scatec have agreed to collaborate on renewable energy, green hydrogen, and green infrastructure projects in various African countries. On its part, PIF supported the development of biofuels through its subsidiary, The Red Sea Development Company (TRSDC).

What is more, simultaneously the Red Sea's strategic importance as a trade route is attracting significant investment in port and logistics infrastructure. Recent commitments from Arab SWFs, including Abu Dhabi's ADQ and PIF, have pledged billions into infrastructure development in Sudan and Saudi Arabia's Jeddah. Abu Dhabi Ports, a subsidiary of ADQ is backing a new US\$4 billion port in Sudan as part of a US\$6 billion investment package. Meanwhile, PIF and other regional SWFs are investing heavily in Jeddah, which is witnessing massive capital inflows. The Ethiopian EIH is securing access to energy with a 30% stake in the infrastructure development of a modern oil storage facility in Djibouti, able to accommodate the latest generation of vessels. It is the first overseas bet of the SWF launched only in May 2022.

Saudi Arabia's PIF aspires to be a renewable energy leader and the world's main hydrogen exporter. It is convenient to stop and focus on their renewable energy strategies. The Kingdom plans to displace liquid fuels by harnessing renewable energy sources. The ministry aims to increase the share of renewables in the energy mix to around 50% by 2030. PIF commits to developing 70% of that renewable

energy by 2030, in line with the National Renewable Energy Program. Renewable energy is a PIF priority as a way of unlocking the capabilities of promising sectors and enabling the private sector to enhance Saudi Arabia's efforts in diversifying the economy. PIF is currently developing a total of five projects, with a cumulative capacity of 8GW and over US\$6 billion of investment from PIF and its partners.

In 2022, to build capabilities, PIF eyed a stake in Thyssenkrupp's hydrogen unit, Nucera, which builds hydrogen plants powered by solar and wind energy. We have witnessed how successfully these long-term industrial-SWF partnerships have grown in the past: Mubadala, GIC, CIC, and KIA have all engaged in long-term relationships with industrial partners in the aerospace, logistics, automotive, data centres and renewable energy leaders. So far, PIF has not needed to go overseas to complement its long-term capital strengths with the dynamism of an industrial partner. Since 2018, it has increased its shareholdings in ACWA Power, a Saudi developer, operator, investor and co-owner of renewable energy infrastructure. Today, PIF controls 50% of a company with 4,000 employees, a presence in 12 countries and a portfolio that can generate 50.4 GW of power mostly from renewable sources and produce 6.8 million m³ /day of desalinated water.

In November 2022, ACWA Power established a joint venture with Badeel, a wholly-owned PIF subsidiary, to develop the Middle East and North Africa's largest photovoltaic solar project with a capacity of 2,060 MW in Makkah province, western Saudi Arabia. Yet, the ACWA's ambitions go beyond the Kingdom. ACWA Power signed an agreement to develop a large-scale wind energy and battery storage project in Kazakhstan with the country's Ministry of Energy and Samuruk-Kazyna, the national sovereign wealth fund. The deal will cover a 1GW wind energy and battery energy storage system (BESS) project, scheduled for completion in 2027. It is the first transaction made by ACWA into the Republic of Kazakhstan, where the company said an initial investment of \$1.5 billion will be made, supporting Kazakhstan's aims of meeting 50% of its energy needs from renewable sources by 2050. Only in 2022, ACWA Power signed deals to expand renewable energy capacities, develop green hydrogen and green ammonia or launch desalination facilities in Azerbaijan, Uzbekistan, Indonesia, South Africa,

South Korea, Senegal, Egypt, and Oman. Many of those large-scale deals include the participation of the national strategic SWFs as co-investors, sophisticated the web and reach of SWFs worldwide and reinforcing their development roles.

AWAY FROM THE STOCK PICKING SIDE

Long-term portfolio management extends beyond mere stock picking and requires a continual evaluation of businesses. At its core lies sustainability, a critical factor for enduring portfolio performance. As SWFs with sizable assets, it's crucial to ensure that the investment thesis aligns with current and potential future scenarios. SWFs have notably adjusted their strategies to advocate for sustainability and, what is more, their activism has gone to the boardroom, increasing their pressure on proxy voting.

One example is the One Planet SWFs (OPSWF) initiative. Established in Paris in 2017, OPSWF promotes the integration of climate-related financial risks into asset management while encouraging knowledge sharing and maintaining agility. Initially launched as a working group of six founding SWFs, the OPSWF Network has since grown to 46 members, comprising 18 SWFs, 18 asset managers, and 10 private investment firms, with over \$37 trillion in assets under ownership and management.

In 2018, OPSWF proposed a framework with 12 recommendations based on three guiding principles: 'Alignment', 'Ownership', and 'Integration'. 'Alignment' advocates for climate change considerations in decision-making; 'Ownership' encourages businesses to address climate issues; and 'Integration' urges the consideration of climate risks in investment management. These principles signify a shift towards sustainability in investment practices.

By 2022, substantial progress had occurred across these guiding principles. The OPSWF aggregates some of the key actions developed by its members in recent years. The establishment of an inaugural internal ESG Report by KIA, the SWF of Gabon (FGIS) joined the UN-convened Net-zero Asset Owner Alliance, the first African SWF, to the pledge by TSF to invest \$40 billion in green hydrogen projects. Some of these actions just reveal the interest of SWFs in aligning processes, investments, and culture to a low-carbon economy.

For instance, Mubadala embarked on an important project to quantify the carbon footprint of its corporate operations and direct public and private investments, according to Derek Rozycki, head of responsible investing at Mubadala. The firm also conducted a detailed examination of its most carbon-intensive assets, based on Task Force on Climate-related Financial Disclosures (TCFD) guidelines.

NBIM, on its part, published a 2025 Climate action plan. The plan sets a goal of net-zero emissions by 2050 for all companies in its portfolio. This aim includes the creation of credible initial targets and strategies for reducing both direct and indirect emissions from portfolio companies. By 2025, the SWF aims to establish a comprehensive system for measuring its exposure to climate risk. Furthermore, by 2040, it expects all portfolio companies to have net-zero emission targets. In addition, NBIM's Council of Ethics routinely updates its publicly accessible list of companies under observation and exclusion.

Changing the benchmark portfolio has been a critical decision for some funds. The New Zealand NZSF made a determined move towards sustainability by redirecting 40% of its portfolio, worth NZ\$25 billion, to Paris-Aligned Indices. This new strategy includes two MSCI Paris-aligned indices intending to achieve net-zero emissions by 2050. This change marked a move away from the MSCI ACWI IMI index towards tailored benchmarks. NZSF's CEO, Matt Whineray, stated that discussions about climate change have come to a close. The global investment community must now redirect their capital in ways that enable the energy transition and mitigate global warming. Incremental alterations will not prove adequate. To distribute capital effectively, markets must accurately account for the environmental and societal costs of business activities, he asserted.

SWF influence extends to exclusion lists and corporate boardrooms as well, as the topical debate between divesting or engaging. Different SWFs pursue different methodologies. For instance, the Irish ISIF has adopted its Fossil Fuel and High Carbon Exclusion list that excludes 256 companies. Mubadala reports that firms constituting a large proportion of the Mubadalas's emissions have made net-zero commitments. Finally, NBIM expressed its intent to become a more aggressive active owner of ESG poli-

cies. NBIM warned the directors and boards of companies without a target to reach net zero emissions that the fund would "absolutely" vote against them. It is interesting to notice that only 10 per cent of companies have a clear [net] zero target already in place, according to Nicolai Tangen, its CEO. NBIM voted against resolutions in multiple shareholder meetings since then, but not in every case as it is acknowledgeable of setting reasonable target goals, as in the recent case of BP, when it did not support an investor-led proposal to align to Paris due to the lack of a precise roadmap.

THE SHIFT TO CONSCIOUSNESS AND SUSTAINABILITY

Foreign Direct Investment (FDI) in renewable energy sectors has shown sustained growth over the past decade, outperforming fossil fuels for the first time in 2019. SWFs are instrumental in this transition towards sustainability, channelling capital into green technologies despite their substantial funding from hydrocarbon sales. SWFs have broadened their investment spectrum beyond energy generation resources like solar, wind, or hydrogen to include energy networks, energy storage, and manufacturing supply chains. This wider perspective also encompasses sectors like electric vehicles, agriculture, sustainability, and recycling.

The participation of SWFs in the transition towards renewable energy has seen two notable trends: a growing interest in energy networks and energy storage. Significant investments by SWFs like ADIA, New Zealand NZSF, Saudi Arabia's PIF and Mubadala have helped catalyze these trends. Furthermore, SWFs have made substantial investments in electric vehicle companies and the wider green economy, underlining their commitment to the sustainability cause. Direct investments in businesses committed to sustainability and in the agritech sector also underscore the alignment of SWFs with sustainability goals.



3 |

SOVEREIGN WEALTH FUNDS IN LATIN AMERICA: THE POST-PANDEMIC SCENARIO

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3. Sovereign Wealth Funds in Latin America: the post-Pandemic Scenario

THE INFLUENCE OF NATURAL RESOURCES ON LAC'S SWFS: COPPER, OIL AND RECOVERY

Latin America and the Caribbean (LAC) have shown resilience in the face of the Covid-19 pandemic. Following a significant GDP loss in 2020 due to the Covid-19 pandemic, Latin America and the Caribbean rebounded with substantial growth rates in 2021 and 2022. Sovereign Wealth Funds (SWFs) played a pivotal role in stabilizing the fiscal health of the governments in the region during the crisis, with half of the SWF resources utilized to combat the pandemic economic and social negative effects. By 2022, these funds saw new deposits amounting to \$8.5 billion. A key driver for this recovery was the favourable tailwinds from copper and oil prices, particularly in countries like Peru, Chile, and Guyana. However, SWFs in other parts of the region faced challenges due to rising interest rates, with no new deposits since 2019. Despite the political volatility, the collaboration between SWFs and Development Banks presents a significant opportunity for sustainable economic development.

With a historic GDP loss of 6.8% in 2020, as reported by the Inter-American Development Bank (IDB), the region was among the hardest hit in the developing world. However, successful containment of the virus paved the way for a swift recovery, with GDP growth rates of 7% and 4% in 2021 and 2022, respectively, according to the International Monetary Fund (IMF).

Despite this resurgence, the IMF anticipates a gradual return to long-term average growth rates, projecting a much weaker growth of 1.6% in 2023 and 2.2% in 2024. The Covid-19 crisis prompted governments to implement exceptional measures, resulting in a significant increase in fiscal deficits and overall debt. Consequently, the debt-to-GDP

ratio in the region is expected to exceed 70% in the coming years.

Amidst these challenges, central banks have demonstrated a commitment toward fiscal and monetary orthodoxy. Excluding Venezuela and Argentina, regional inflation rates dropped from 7.8% in 2021 and 2022 to a projected 5.4% in 2023 and 3.7% in 2024. The IMF's Regional Economic Outlook for the Western Hemisphere, released last April, emphasizes the importance of fiscal policy in alleviating the burden on central banks. By slowing domestic demand, fiscal policy can facilitate interest rate reductions and create greater policy flexibility to address future economic shocks.

The IMF suggests contractionary fiscal strategies to temper domestic demand, providing an opportunity for interest rates to decrease and thus, reducing the risk to financial stability. But the challenge is tough as it presents policymakers with the formidable task of locating savings without undermining crucial social programs. Furthermore, they must ensure the equitable distribution of tax responsibilities, requiring the affluent to pay a fair share. A quite complex menu of needs and wants.

A notable peculiarity of the ongoing crisis is the shift in the region's primary creditors. The traditional foreign sovereign bondholders are gradually being replaced by multilateral organizations that have provided these lines of credit. Enabled by the global financial facilities designated for the region, a reconfiguration of the region's international creditors is underway. In its 2022 Annual Report, the IMF declared that it approved financial assistance worth \$112 billion, with 90% directed towards Latin America and the Caribbean. This assistance chiefly benefitted Argentina (\$42 billion via an extended fund facility), Mexico (\$47 billion via a flexible line), and Colombia (\$9.6 billion via another flexible line).

This chapter investigates the repercussions of the post-Covid economic recovery in the region, the utilization of SWF resources during the pandemic, and the tailwinds that helped new deposits for the funds. Lastly, the chapter discusses the role of local development banks and institutions in each country during the recovery phase and explores the potential for establishing lasting relationships between SWFs and development banks (also known as DFIs, development finance institutions).

Ultimately, the central proposition of Sovereign Wealth Funds is to contribute to long-term fiscal

stability amidst persisting economic challenges. This chapter delves into the role of SWFs in Latin America and the Caribbean and evaluates their potential in addressing these issues while securing the region’s financial future.

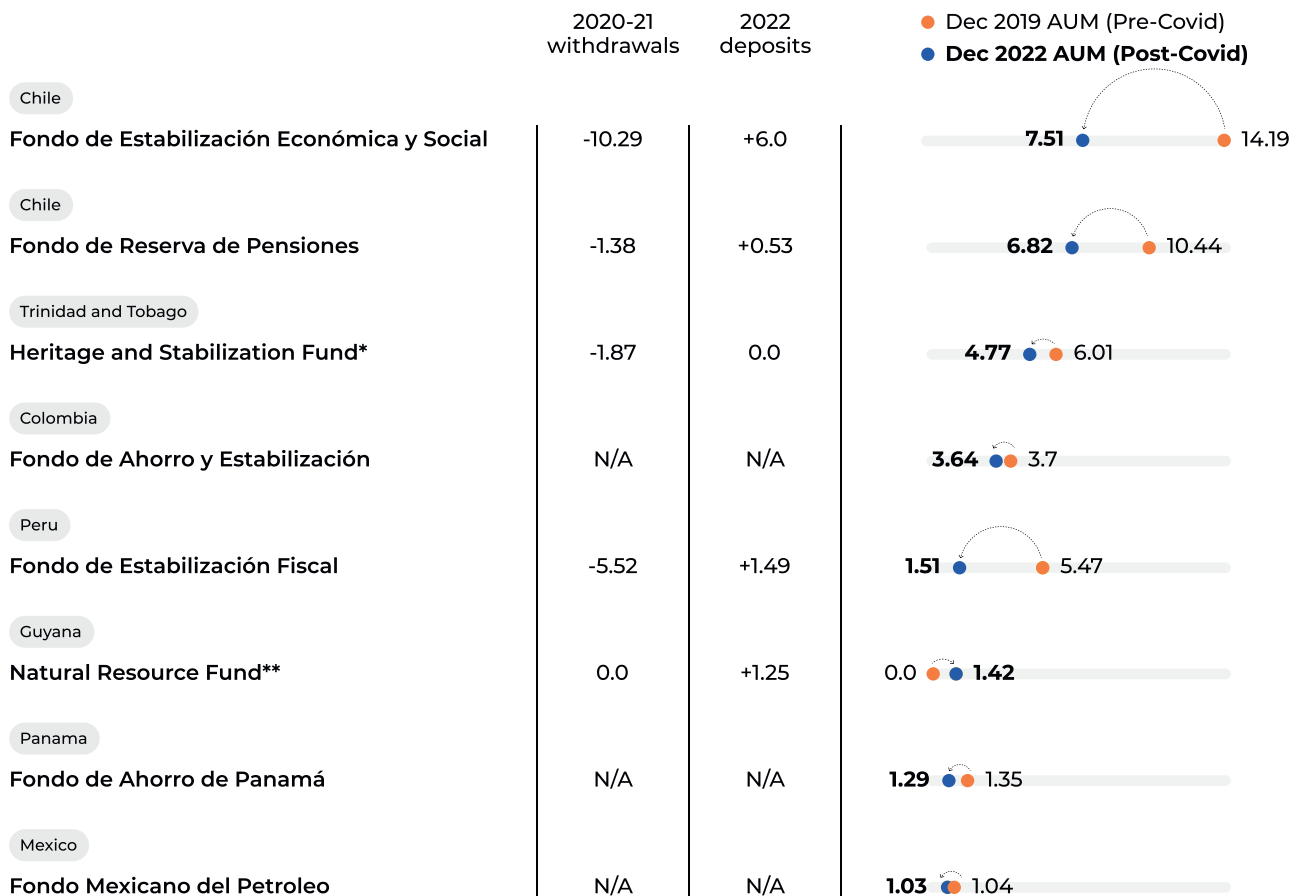
REVITALIZED RESOURCES: COPPER AND OIL DRIVE LATIN AMERICA'S SWF GROWTH

The region is home to 12 Sovereign Wealth Funds (SWFs), with those of Brazil, Venezuela, Bolivia, and Suriname currently inactive. As of the close of 2019, the remaining eight operational funds collectively managed assets worth \$42.2 billion.

Figure 1

Sovereign Wealth Funds in Latin America and the Caribbean as Pandemic Buffers

In US\$ billion.



* As of June 2022

** From March 2020 onwards, the Sovereign Wealth Fund of Guyana received deposits totaling \$2.2 billion, while withdrawals amounting to \$0.8 billion took place in 2022 and 2023.

Amid the pandemic in 2020 and 2021, approximately 50% of these funds (equivalent to \$19 billion) were withdrawn to address the healthcare crisis and the resulting economic and societal challenges precipitated by Covid-19.

Previous editions of this report have underscored the significance of fiscal prudence in the context of SWFs for regional and global country development. Fiscal buffers have empowered countries, notably Chile, Colombia, Peru, and recently Guyana, to navigate the Covid-19 crisis with ample resources, establish a reputation for fiscal responsibility, and secure better debt ratings, thereby accessing lower interest rates. SWFs contribute to the maintenance and enhancement of a country's reputation through long-term fiscal stabilization plans. As the crisis subsides and economies rebound, these countries may prioritize the recapitalization of temporarily depleted funds. SWFs today serve as stabilization funds in the region, but they might serve in the future as strategic tools to stimulate co-investments and foster the development of key sectors and economic activities in the region.

The Peruvian SWF, in particular, exhausted its entire fund towards these causes, while one of the Chilean SWFs utilized nearly 73% of its resources. However, the swift economic recovery witnessed in 2022 and the resultant surge in government income replenished the regional SWFs by \$8.6 billion. It is noteworthy to mention the cases of Chile and Peru, as they capitalized on their status as leading copper producers, leveraging the favourable tailwinds in the copper industry to boost their economies and managed to restore at least 30% of their pre-pandemic SWF funds.

Significant oil discoveries radically shifted Guyana's economic trajectory, leading to the establishment of the Natural Resource Fund. In the last two years, growth in this SWF, fuelled by oil revenues, positions Guyana uniquely within Latin America, with a per capita analysis indicating it as the largest in the region, and with an AUM as large as the Peruvian one, and larger than its peers in Panama and Mexico. It was established in 2019.

The tendency of SWF in the region to have a fixed income-biased portfolio exposed most of the funds to face losses of up to 16% in 2022 due to the rise

of interest rates to combat post-covid inflation pressures.

THE TAILWINDS FOR THE PACIFIC PARTNERS

The global COVID-19 pandemic exerted considerable pressure on the Peruvian and Chilean SWFs. Peru's Fondo de Estabilización Fiscal (FEF) bore the brunt with a major withdrawal of \$5.5 billion, almost emptying the fund. In Chile, the government withdrew almost 73% of the Fondo de Estabilización Económica y Social (FEES), and 13% from the Fondo de Reserva de Pensiones (FRP).

However, 2021 and 2022 brought tailwinds for both nations. Copper emerged as a significant catalyst in the recovery process, given Peru and Chile's commanding roles in global production. The World Economic Forum affirms that these countries contribute 27% and 10% respectively to the global copper supply. With copper prices hitting record highs, above \$4 per pound in 2021 and 2022, the financial trajectories of both nations were positively influenced. The uptick in copper prices directly boosted government revenues, as evidenced by the increased tax income from mining companies and the higher profits from Chile's publicly owned Codelco. The IMF Fiscal Monitor indicates a leap in Chile's revenues from 22% of GDP in 2020 to an average of 27% of GDP in 2021 and 2022. During the same period, Peru saw revenues rise from 17.8% in 2020 to an average of 21.4% in 2021 and 2022.

In response to the economic revival and improved tax income, the Peruvian government invested \$4.5 billion into the FEF and the Reserva Secundaria de Liquidez (RSL) in 2022. Of this, the FEF received only \$1.5 billion, with the remaining \$3 billion directed towards the RSL for current expenses. This approach marked a departure from the last decade's practices when transfers made the funds of FEF account for 3% to 5% of GDP, compared to the current 0.8%. The shift underscores the complex challenge of balancing immediate needs with future fiscal stability. By March 2023, the FEF's assets under management had only rebounded to \$1.4 billion, a fraction of the \$5.5 billion pre-pandemic AUM, attesting to the slow pace of recovery.

In 2022, Chile redirected the revenue boost into a significant \$6 billion investment in the FEES and a more modest \$0.5 billion into the FRP. Despite this capital influx, the performance of the funds suffered due to rising interest rates and losses in bond portfolios. The FEES experienced a loss of 12.5% for the year, in dollar terms, ending with \$7.5 billion in assets under management. The FRP faced a more substantial loss of 16.4%, leaving it with an end-of-period AUM of \$6.5 billion.

The COVID-19 pandemic’s severe impact on the SWFs of Peru and Chile has been somewhat mitigated by the rise in copper prices. The significant yet uneven replenishment of these funds underscores the ongoing tension between meeting immediate financial obligations and securing long-term fiscal stability, a traditional debate among development and stabilization SWFs. The path to full recovery remains a work in progress, highlighting the critical role of these national assets.

SOON-TO-BE LARGEST SWF IN THE REGION: THE CASE FOR GUYANA

Guyana, positioned on the northeastern coast of South America, found its economic trajectory altered following significant oil discoveries within its maritime perimeters. The reserve, reported to contain 11 billion barrels of recoverable oil by Reuters in 2022, drastically rewrote Guyana’s economic story. Given the nation’s population of less than 800,000, the scale of oil reserves places Guyana’s per capita oil reserves as the second highest in the world, only after Kuwait.

Explorations spearheaded by ExxonMobil and Hess Corp set in motion the Liza Phase 1 and Phase 2 projects. Details from the Bank of Guyana note the commencement of production in Liza Phase 1 in late 2019, attaining a peak capacity of 120,000 barrels per day by December 2020. In February 2022, Liza Phase 2 initiated production and hit a full production capacity of 220,000 barrels per day by year’s end. In the third quarter of 2022, these projects surpassed predictions, averaging close to 360,000 barrels of oil each day^[1]. Forecasts suggest that Guyana’s daily production could rise to 810,000 barrels. The ultimate expectation is for an impressive output of 1 million barrels per day by the decade’s end. With the current 360,000 barrels

[1] Mariana Parraga, “Guyana’s oil exports double, with Europe taking half of cargoes”, Reuters, January 13 2023, <https://www.reuters.com/business/energy/guyanas-oil-exports-double-with-europe-taking-half-cargoes-2023-01-13/>, (accessed April 20 2023).

Figure 2

Largest Oil Producers Per Capita

	Population (million)	Million barrels/day	Barrels per day per capita
Guyana 2030	0.80	1.00	1.25
Guyana 2022	0.80	0.36	0.45
United Arab Emirates	9.30	4.24	0.46
Saudi Arabia	35.90	12.14	0.34
Canada	38.20	5.70	0.15
Iraq	43.50	4.55	0.10
Russia	143.40	10.94	0.08
United States	331.90	20.21	0.06

Source: World Bank and US Energy Information Administration (2022) and The World Bank (2022)

per day, Guyana is one of the top producers in the world on a per capita basis. If the country reaches the projected production of 1 million barrels per day, Guyana will become the top producer on a per capita basis, surpassing even the UAE and Saudi Arabia. This achievement would be remarkable, given Guyana’s small population of only 800,000 inhabitants, resulting in a ratio of barrels per day per capita of 1.25.

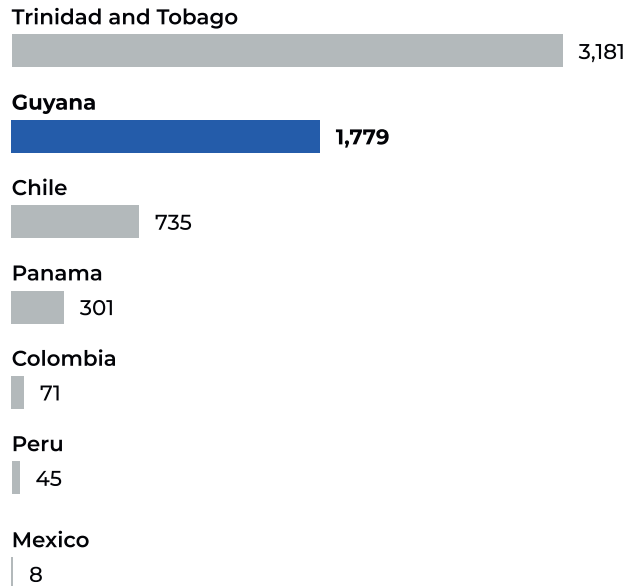
The Natural Resource Fund, established by the government of Guyana in 2019, stands as a testament to the government’s aim to control oil revenues for the benefit of present and future generations and to finance national development projects, including those favouring an inclusive green economy. The fund registered significant growth since its inception, with inflows reaching \$198 million in 2020, \$409 million in 2021, and a significant leap to \$1.2 billion in 2022, mainly from the profits of the Liza Project and royalties.

In 2021, changes to the Natural Resources Act adjusted the rules concerning withdrawals. The subsequent year saw \$607 million transferred to the Consolidated Fund, decided by the National Assembly. This allocation offers resources for national development projects and equips the government to counteract the effects of potential natural disasters.

Figure 3

SWFs AUM per capita

US Dollars.

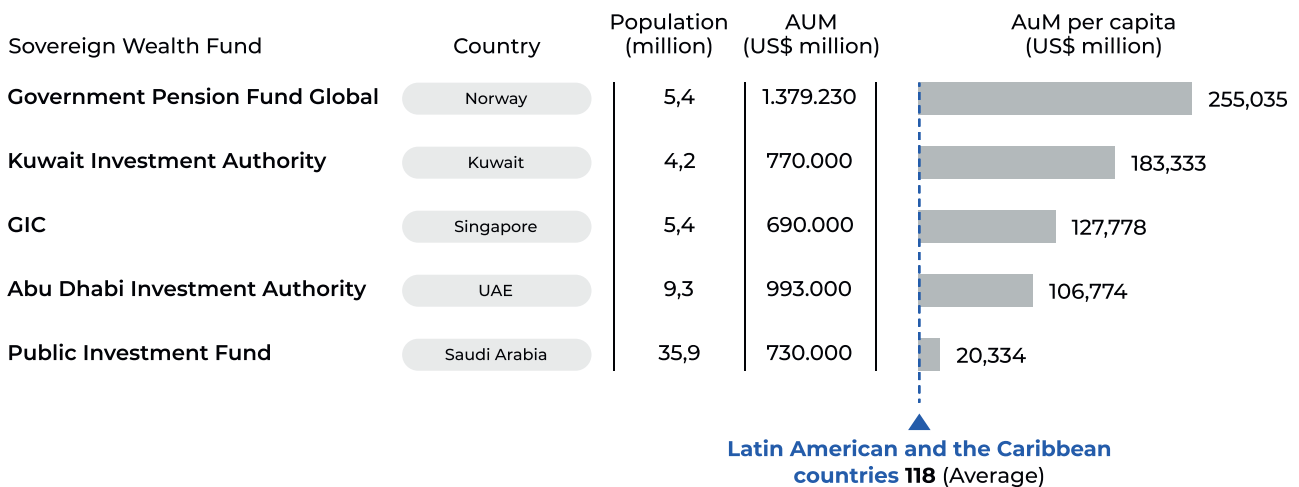


Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023) and The World Bank (2022)

As of March 2023, the Bank of Guyana reported the market value of the Natural Resource Fund at \$1.46 billion. This valuation positions the Guyanese Fund at a level comparable to Peru’s and surpasses those in Panama and Mexico. Despite its recent

Figure 4

SWFs AuM Per Capita: Comparison of the Largest SWFs and Latam SWFs



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023) and The World Bank (2022)

establishment, NRF, on a per capita basis, ranks as the second largest Fund in the region, trailing only Trinidad and Tobago's fund, which has \$4.8 billion of assets under management and a population of only 1.5 million. However, when compared on a per capita basis with globally recognized SWFs, those in the region, despite their growth, still have considerable ground to cover.

The foundation and growth of the NRF exemplify the government's proactive approach in reaction to the sudden inflow of oil revenue. Even though it is still in the maturation phase, the fund serves as a fiscal strategy template and a symbol of resilience. To ensure the continued expansion and economic development of Guyana, adherence to good governance, transparency, and effective management remains crucial.

A THREE-YEAR PAUSE

The rest of the Sovereign Wealth Funds in Latin America did not receive new deposits since 2019 and witnessed significant losses due to a rise in interest rates. These losses spanned across portfolios, heavily loaded with fixed-income securities, and even those holding equities, as equity markets experienced similar downfalls in 2022. The Heritage and Stabilization Fund, Trinidad & Tobago's SWF, houses the third largest asset pool among the region SWFs and is one of few funds that have a relevant allocation to equities (close to 50%). The fund also saw a withdrawal of nearly \$1.9 billion during 2020 and 2021 and endured negative returns in 2022, including a drop of 5.7% in Q2 and 9.9% in Q3. By June 2022, the fund held an AUM balance of \$4.8 billion by June 2022, a decrease from \$6 billion in 2019.

Fondo de Ahorro y Estabilización, Colombia's SWF, grappled with a 6.2% average loss between 2020 and 2022, with a steep 12% loss occurring solely in 2022, a downturn attributed largely to the rise in interest rates. This financial setback was due to the fund's significant 90% asset exposure to fixed-income securities. Interestingly, despite the interest rate hike, the fund has stayed the course, maintaining its exposure to fixed income. It was observed in 2022 that the fund decreased its allocation to stocks (from 9.8% to 9.1%) and corporate bonds (from 34% to 31.7%), while increasing its exposure to treasuries, with allocation soaring from 34% to

nearly 41%. In an effort to mitigate the downside risk of future interest rate increases, the fund strategically reduced the duration of its portfolio from 5.3 to 4.4 between 2021 and 2022. Despite these shifts in allocation and duration, the absence of new deposits or withdrawals left the AUM of the fund stable, standing at \$3.6 billion by the end of 2022, a figure closely matching its value in 2019.

Two additional Latin American SWFs, the Fondo Mexicano del Petróleo and the Fondo de Ahorro de Panamá, faced losses in 2022, registering negative returns of 4.3% and 8.64%, respectively. Consequently, the Reserve of the Portfolio for the Mexican fund diminished from \$1.08 billion to \$1.03 billion and had no deposits. The Panamanian fund is one of the few exceptions in the region. The fund has a 23% allocation to equities and the rest to fixed-income assets. What is more, 2022 saw the FAP secure authorization from the Ministry of Economy and Finance (MEF) to diversify into new asset classes, leading to the most diversified portfolio in its history, according to its 2022 Annual Report. However, the reported AUM went from \$1.38 billion in 2020 to \$1.29 billion in 2022. Still, the FAP continues to lobby the MEF for the deposits of surplus funds generated by the Autoridad del Canal de Panamá, as stipulated by Panamanian law. The accumulated surplus from 2018 to 2022 approaches \$1 billion, a figure that could nearly double the AUM of the SWF

DEVELOPMENT BANKS: AN OLD TRADITION IN THE REGION

Development Banks (DB) represent crucial pillars within Latin America's economic structure. These institutions, deeply embedded in the region's history, have promoted economic and social stability since their inception, in the decades of 1950 and 1960. Noteworthy exceptions include Mexico's Nacional Financiera, Bancomext, and Brasil's Bano-bras, whose roots extend to the 1930s.

Initially, these banks filled the void in sectors where the private and public sectors fell short, primarily addressing infrastructure and public utilities. As time progressed, they expanded their reach to meet financing deficits in international trade, microfinance, and agricultural development. Today, while many of these institutions continue to provide these traditional services, they have

broadened their scope to include a diverse array of financial activities. Some banks now co-invest in projects in partnership with national or regional governments, operate as second-tier banks, or offer additional services, such as technical assistance and project structuring. A few have ventured into more complex arenas like investment funds and venture capital, marking a notable transition from their original focus. This adaptability illustrates their responsiveness to the region's changing needs and financial landscapes, underlining their pivotal role in Latin America's economic architecture. But sometimes reflect the absence of an institutional context that facilitates and provides comfort for the onboarding of private domestic and foreign investors and companies to the region.

Asset management strategies in these banks generally concentrate on local government loans and SME credit provisions. However, some have adopted a more innovative approach. For instance, Brazil's BNDES has actively funnelled roughly \$700 million into investment funds, with an additional commitment of \$1.2 billion. Similarly, Chile's Sercotec administers a seed capital fund to foster the growth and market entry of new businesses. Nonetheless, such practices remain exceptions rather than the norm.

The financial influence of these banks is evident in the variety of investments and support mechanisms they deploy. For example, Panama's Banco de Desarrollo Agropecuario financed \$44 million between 2020 and 2021, whereas Peru's Cofide reduced its SME financing from around \$700 million in earlier years to \$491 million. In contrast, institutions like Mexico's NAFIN have disbursed substantial amounts, with figures reaching \$20 billion in 2021.

Amid global financial cooperation, international development funds act as significant connectors for Latin American development banks. International FDIs, including the Inter-American Development Bank, Germany's powerful KfW, the French Development Agency, World Bank, European Investment Bank, and the European Union, maintain robust partnerships with these regional banks. This global collaboration enables an effective exchange of resources and knowledge, thereby bolstering the ability of Latin American development banks to enhance regional growth and maintain stability.

BRIDGING THE GAP: THE INTERPLAY OF SWFS AND DFIS IN LATIN AMERICA

Sovereign Wealth Funds and DFIs are instrumental in shaping Latin America's economic landscape. As government-owned investment funds, SWFs invest surplus reserves, while DFIs extend long-term financing for projects focusing on infrastructure, social, and environmental areas in developing countries.

Infrastructure projects stand as a primary area where SWFs and DFIs coalesce. SWFs, due to their long-term investment horizons, are ideally positioned to invest in extensive infrastructure initiatives including highways, airports, and ports or new renewable energy plants including green ammonia or hydrogen. These projects demand significant upfront capital that SWFs could provide, but more importantly, these investments require an extra layer of regulatory and country risk assessment. Here, DFIs in Latin America, like SWFs in Africa could play a derisking role. Indeed, here, DFIs (should) step in, bridging this gap through financing, technical assistance, and know-how, but also guiding international and domestic investors through the legal, political and regulatory processes. By pooling resources and expertise, SWFs and DFIs can collectively expedite the development of essential infrastructure in the region.

Sustainable development stands as another domain where SWFs and DFIs intersect. Both entities have vested interests in fostering enduringly viable economies—SWFs seek to ensure long-term return stability, while DFIs frequently spotlight projects aligned with sustainable development, like renewable energy initiatives or inclusive digitalization efforts. The collaboration of SWFs and DFIs can thus serve dual purposes: the promotion of regional sustainable development and the realization of their financial objectives.

However, potential obstacles to this collaboration include aligning SWFs' investment objectives and DFI's inherent development goals. Despite their shared long-term investment outlook, these institutions might diverge in terms of priorities and risk tolerance. SWFs typically aim for high investment returns, while DFIs might place more emphasis on social and environmental impacts. To mitigate this challenge, SWFs and DFIs can

delineate clear investment criteria and identify common ground within their respective mandates.

In sum, the collaboration between SWFs and DFIs in Latin America presents a vital opportunity to foster sustainable economic development in the region. By pooling their resources and expertise, these institutions can fund critical infrastructure projects and encourage sustainable growth, aligning with their financial objectives. This synergy offers promise for the future, potentially reshaping the economic landscape of Latin America.

BALANCING INSTABILITY AND LONG-TERM GOALS

Political volatility has swept through Latin America in recent years. The Economist observes a notable shift to the left in regional politics. Elections from 2018 to 2022 ushered left-leaning candidates into power in Mexico, Argentina, Bolivia, Peru, Brazil, and Honduras. Peru cycled through six presidents during this period and suffered one self-coup attempt, while Chile navigated civil unrest and debates and referenda on a socialist constitution. Meanwhile, Ecuador's president recently dissolved parliament. Dissatisfaction with right-leaning governments and their handling of economic growth and the pandemic has fed this shift, but a larger anti-incumbency sentiment also influences the landscape. Concerns extend beyond political swings to the integrity of the institutions that support democracy. And these concerns can affect SWFs too.

Firstly, as government-owned or linked institutions, the region's political instability and inconsistent institutions, expose SWFs to the risk of unexpected withdrawals using a flexible view of their own fiscal rules. SWFs from all over the World gathered precisely in Santiago de Chile back in 2008 to establish their own Santiago Principles, to difficult the temptations of short-term politicians of capturing wealth from pools that should be governed with transparency, good governance, accountability, and sound investment practices. These Santiago Principles guide SWFs all over the World in their mission to transfer resources to future generations, fund national development projects, and bolster fiscal deficits when needed.

Secondly, stabilization funds are precisely designed to serve as "rainy day" funds. That is to accumulate in the good years to combat the economic distortions of the bad ones. Definitely, Covid-19, global inflation and high-interest rates represent a rainy, if not, stormy day. Thus, transfers, as the \$19 billion shifted to government coffers, can support local economies, entrepreneurs, national projects, and health systems (as happened in 2020 and 2021).

Thirdly, SWFs resources should not mask long-standing issues such as inaction, inadequate prioritization, and corruption. The existence of a well-governed SWF brings benefits but should not imply complacency. The Covid pandemic made this evident. According to the OECD, hospital bed count serves as a critical measure of a health system's preparedness for surges in demand, like that caused by the pandemic. Unfortunately, the region was not prepared to handle the sanitary crises of 2020 and 2021. The Latin America and Caribbean region reports an average of 2.1 beds per 1,000 population, less than half the OECD average of 4.7. This statistic highlights the challenges that these governments and their SWFs face in managing public resources and prioritizing their use effectively.

Political turbulence and fragile institutional frameworks in Latin America put the effectiveness of SWFs at risk. Although SWFs should remain independent and fully functional regardless of political swings, these funds often face potential inefficient misuse in a political environment that tends to prioritize immediate needs over long-term stability and growth. The management of SWFs in this context necessitates strict adherence to the Santiago Principles. Given persistent challenges, especially in health infrastructure as spotlighted by the COVID-19 pandemic, the region needs to emphasize the prudent and efficient management of these vital resources to pave the way for a sustainable future.

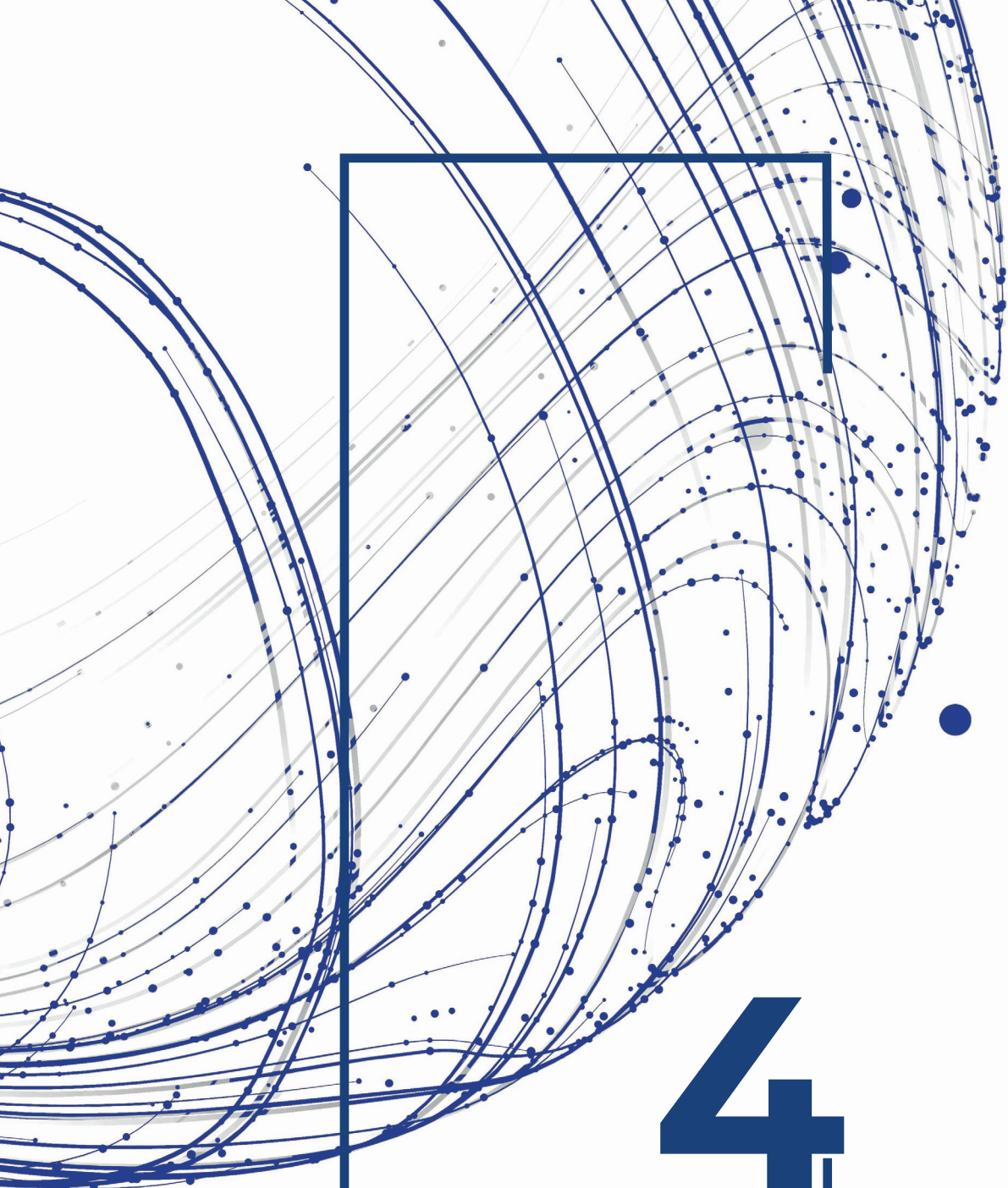
CONCLUSION

Latin America and the Caribbean, with 8 active SWFs, used half of these funds to fight the Covid-19 crisis. The 2022 economic recovery in Peru and Chile, driven by the copper industry, replenished these funds by \$8.6 billion. Guyana, following significant oil discoveries, established the Natural Resource Fund, signalling a shift in its economic path. The remaining SWFs in the region, however, suffered losses due to rising interest rates and saw no new deposits since 2019.

The recent political volatility in Latin America might affect the effectiveness of SWFs. Given the political climate, these funds, which should remain independent and effectively managed, prioritise long-term stability and productivity growth at home and regionally.

Development banks (and DFIs more broadly), crucial to understand Latin America's economic structure, have evolved since their inception in the 1950s and 1960s to meet the region's changing financial needs. They have broadened their scope from infrastructure and public utilities to co-investing in projects with governments, operating as second-tier banks, and providing technical assistance. Some have ventured into investment funds and venture capital. SWFs and DFIs together speed up the development of essential infrastructure in the region and promote sustainable development. Aligning SWFs' investment objectives and DFIs' goals, however, presents a challenge. Despite this, their collaboration provides a critical opportunity to foster sustainable economic development in the region.

In conclusion, in light of the significant economic and social challenges posed by the Covid-19 pandemic, Latin America and the Caribbean have shown resilience and adaptability. The region has seen a rebound in GDP, and effective inflation control by central banks, but an asymmetric recovery of SWFs, influenced by natural resources and the geopolitical distortions brought by the war in Ukraine. Country and regional DFIs have evolved to meet changing financial needs, and the collaboration between SWFs and DFIs offers a significant opportunity for sustainable economic development.



4

SOVEREIGN WEALTH FUNDS IN VENTURE CAPITAL: A SUCCESSFUL ADVENTURE?

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4. Sovereign Wealth Funds in Venture Capital: A Successful Adventure?

INTRODUCTION

Sovereign wealth funds are an influential institutional investors class in today's global economy. In total, they control over \$11.6 trillion in assets under management, almost tripling in size in the last decade. This heterogeneous investor group is composed of government-owned investment vehicles without explicit pension liabilities that typically engage in long-term investment strategies. This sovereign background, combined with the lack of transparency, results in a unique investor profile. SWFs made a name for themselves in the aftermath of the Great Recession when they rescued several major Western banks (injecting more than \$40 billion in 15 months) to avoid the complete collapse of the financial system.

There are two clear trends in the way sovereign wealth funds are shaping their investment strategies. First, their appetite for alternative investments has escalated dramatically, particularly within private equity. Collectively, they have doubled their allocation to these investments over the 2015-2019 period, reaching an all-time high of close to 31%. At the same time, they are taking a much more active role within this asset class. While before, they seemed content entrusting their assets to external fund managers, SWFs regularly take part in direct investments to achieve their financial and strategic objectives. And second, they are increasingly attracted to investment opportunities in the technology sector. Instead of concentrating on more traditional industries such as financial services or real estate like in the past, SWFs are now serial venture capitalists, investing in advanced innovation businesses in areas such as biotechnology or artificial intelligence.

Despite their relevance in the global financial markets, academic literature on sovereign wealth funds is still nascent. In particular, little is known about

their financial returns and their determinants. The diversity of investment and policy objectives within this investor class, together with the general opaqueness surrounding private equity (and venture capital) deals, have impeded further research. Renowned academics have stressed the importance of conducting future research that explores their performance. This chapter aims to tackle this gap, seeking to understand what factors drive the financial returns of private equity direct investments by sovereign wealth funds in the technology sector.

SWF INVESTMENT TRENDS IN PRIVATE EQUITY

Sovereign wealth funds have sought to increase their investments in private assets over the past decade. During a seven-year period, the portfolio allocation of this investor class to private equity, real estate and infrastructure has more than tripled, increasing from 9.2% in 2015 to 29% in 2022. In January 2023, Norway's \$1.3 trillion NBIM wrote a letter to the national Ministry of Finance saying they were considering opening their investment universe to include unlisted equities, arguing they see an increasing share of value creation happening in the market^{1]}. This signals a significant shift in strategy from a fund known for its conservative investment approach that has repeatedly neglected the idea of getting exposed to private markets. Similarly to other institutional investors, SWFs used to invest in private equities predominantly through external fund managers, acting as limited partners. As they learned and adapted their organisations toward those specific capabilities, SWFs began to co-invest along with the general partners of the funds they were funding. From there, the most sophisticated SWFs increasingly started to favour

^{1]} See <https://www.reuters.com/technology/norways-sovereign-wealth-fund-chief-seeks-state-regulation-ai-ft-2023-04-28/>

direct investment opportunities in private equity instead and, in some cases, as this report uncovers, would even lead early or late-stage venture capital rounds in technology companies. This may also be a natural consequence of their evolution as investors after gaining exposure to learning opportunities through their relationships with other financial actors.

The motivation behind SWF investments in private equities as opposed to listed companies may be mainly financial. Investing in alternative riskier assets can allow investors to diversify their portfolios and potentially access higher returns. Moreover, SWFs are more likely to benefit from the “private firm discount,” allowing them to negotiate more favourable prices and invest at a significant discount relative to what is available in public markets. At a trade-off of investment illiquidity and larger information asymmetry, the rate of return of private equity has generally outperformed public market performance across strategies and geographies, even after accounting for management and performance fees^[2].

Apart from the benefits of greater profitability and risk diversification, SWFs with a strategic governance focus on investing in private firms with a financial motivation can benefit from developing in-house capabilities in several ways. First, dealing with sophisticated private equity fund managers pushes SWFs to professionalise their internal teams further through the development or attraction of top talent. This improvement in human capital can result in a more efficient, innovative and adaptable organisation. Second, by investing in their internal investment capabilities, SWFs can reduce their dependence on external fund managers and their associated fees, as well as access more complex assets in private markets. And third, improved internal capabilities reduce the agency costs derived from the principal-agent conflict between sovereigns and fund managers or investee firms as they can monitor the risk of information asymmetry more effectively. An example of this can be seen in Abu Dhabi’s Investment Authority, which is currently in

the process of limiting its dependence on external fund managers (down to 50% of AUM in 2022 from close to 75% in 2012) and attracting international talent from top investment banks, allowing it to have a larger degree of control over its activity.

Finally, investing in private equity can also be positive for sovereign wealth funds that pursue strategic investment objectives through long-term learning that can bring value to the sovereign. Establishing alliances and joint ventures with leading international private companies can be an avenue to diversify the local economy into strategic sectors, enhance the value of other portfolio companies by sharing know-how and capabilities, and develop mutually beneficial long-term relationships between the sponsoring and receiving governments. For example, Abu Dhabi’s Hub71 is the main innovation push of the Emirate, backed by Mubadala. Through the establishment of a global tech ecosystem, Abu Dhabi plans to attract top global talent and capital. Among the initial investments made by Mubadala in the venture capital arena, some of their portfolio companies joined the first cohorts of entrepreneurs established in Hub71, acting as anchor innovators for the hub. After that, the ability to keep an attractive regulation, build a globally connected community and provide access to a network of capital providers and businesses are some of the traditional ingredients of successful technology hubs. And the role of a strategic SWF can be critical.

SWF INVESTMENT TRENDS IN TECHNOLOGY

Over the past decade, we have observed a shift in investment preferences by SWFs. A combination of low expected returns and increasing red tape from receiving countries has led them to transition away from traditional safe assets (such as real estate and tourism, utilities or infrastructure) and toward technology-related investments^[3]—the most preferred sector over the last eight years in a row. SWFs have shown increasing interest in advanced technological sectors such as biotechnology or artificial intelligence, backing large-scale disruption in industries like consumer services, finance or healthcare.

[2] See KKR, 2023, “Regime Change Report”, available at <https://www.kkr.com/sites/default/files/2023-March-Regime-Change-Private-Equity.pdf>

[3] See Wall Street Journal, July 2018, available at <https://www.wsj.com/articles/sovereign-wealth-funds-boost-tech-direct-investments-1531766056>

In a recent survey to SWF officials, close to 85% declared having increased their investments in technology over the past five years^[4]. The reasons behind this shift in behaviour could include the perceived higher growth potential of the sector, improved portfolio diversification and risk management and insights into how innovation will affect the rest of their portfolio holdings. An additional explanation could be that there have been more opportunities to invest in the space, for example, due to the trend of tech companies remaining private for longer instead of going public. This a trend that non-traditional VC investors made possible through the deployment of billions of dollars until very recently.

This chapter revolves around an industry that has been suffering a continued crash since it knocked on the doors of venture capital heaven in the fourth quarter of 2021. Globally, 4Q2021 saw investors injecting \$187 billion in angel-seed, early and late-stage technology startups. This is not the case anymore today. Between April and June 2023, global VC investment declined to \$64 billion, down 65% from the peak and down 49% from the same quarter in 2022. The correction of the technology industry as a whole (including major layoffs in listed companies in the post-covid era), the fears of investors marking down valuations of cash-burning unprofitable startups, the collapse of the crypto industry or the impact of the Silicon Valley Bank crash paired with the global high-interest rates combating inflation or the geopolitical and regulatory concerns, presents a gloomy picture for the VC industry globally. This trend has not been compensated by the massive rounds injected into AI-powered deals in Q1 2023 (most notably in OpenAI, which received a \$10 billion mega-round lead by Microsoft). Some analysts predict that the vast majority of the 1,400 existing unicorns will likely do a down round (that is, it will raise financing at a lower valuation than their previous round) in 2023. With this picture in mind, this paper tries to analyse round-specific and deal-specific factors that might provide some light for those SWF managers and analysts willing to explore this particular asset class.

Up until 2019, the technology space had been reserved mostly for sophisticated venture capital investors, although this was not the case in the latest stages of the VC super cycle that ended in 2021. Probably, after these recent events, non-traditional VC investors may leave the space while other well-prepared non-traditional institutional investors join the trend with reinforced tools and risk mechanisms in place.

The probability of SWFs, like that of other non-traditional VC investors, succeeding in this new area will depend on their ability to source the right talent and deals. Aware of this fact, sovereigns have also evolved in terms of the nature of relationships that they establish with private equity and venture capital fund managers. While SWFs used to be content with being simple capital providers as limited partners in funds, more recently, they have looked for more active and collaborative approaches to the private sector. This will help them to develop their direct investment strategies as well as lower their investment costs by avoiding certain fees. Moreover, some SWFs such as GIC, Temasek and Khazanah Nasional have opened offices on the US West Coast to be closer to better compete for target opportunities.

SWFs have invested in technology through a combination of external asset managers and direct investments. Early-stage investments are almost always channelled through external VCs, while direct strategy is often more focused on growth. These external and internal strategies complement each other in a few ways, such as improving deal flow for co-investments; or educating the SWF direct investment team while building capability. There are signs of a dynamic shift in SWFs' preference for building up the direct investment strategy at the expense of fund investments over time, with those more exposed to technology gradually evolving from an LP role to a more hands-on approach. Growth or expansion capital is especially suited for the investor profile of SWFs. Deals in this stage can be too large for many VC funds (at least before the global financial crash of venture capital), but the firms are not ready to exit through a buyout or listing. This nature makes them interesting for long-horizon investors who can provide that liquidity and get paid for providing the patient capital needed.

[4] See Engel, Hamirani & Saklatvala, 2016, "Pursuing Innovation: Sovereign Wealth Funds and Technology Investments". Available at <https://ssrn.com/abstract=2864853>

A more strategic argument for increasing technology investments could be the development and know-how opportunities which could reach the local economy, as economic growth and returns on investment are linked to productivity increases driven by technological advancements. Sometimes, target companies themselves may want to leverage connections from investor SWFs to open up new markets, benefiting from their local knowledge and political influence in a mutually beneficial situation. The investment by Qatar Investment Authority in Iberdrola showcases the effectiveness of this type of collaboration. Through its 8.8% stake in the Spanish renewable energy firm, they entered a strategic alliance by establishing an innovation centre in Doha that promoted the local R&D ecosystem^[5]. This has helped Qatar push forward its climate technology ambitions.

Some sovereign investors may find entering the innovation market challenging, given its complex and inefficient nature. For instance, there can appear significant risks from technology, market, business model validation or execution, and even geopolitical tensions. At the same time, it is complicated to allocate capital at scale because many opportunities consist of a small investment ticket size, and top-performing general partners of the likes of Sequoia or Andreessen Horowitz are deeply oversubscribed. In this increasingly complex global context, how can sovereign investors pick the winning investments? It would be advisable for SWFs to incorporate a “learning curve” consideration to their existing objectives of financial returns and strategic benefits, especially in the first years of investing in the technology sector, to lay the groundwork for long-run success. One way in which this can be done, for example, is by making long-term commitments to several fund managers and aiming to obtain as much knowledge from them as possible, including understanding how GPs add value to portfolio companies.

INVESTMENT RETURNS: A LARGELY UNANSWERED QUESTION

All in all, the success of any investment strategy linked to technology and innovation will be measured by the return these investments make. Yet, a significant amount of academic research related to SWF performance has focused on the impact of SWFs on the value of invested firms. Investments by SWFs generate a positive short-term reaction on the target firm after the transaction is announced in a similar way to other large investors. However, even though the change in valuation is positive, the increase is not as large as the effect caused by other institutional investor groups. This phenomenon is referred to as the “SWF discount^[6]”. The reason for this occurrence may lie in the concern of the target firm’s shareholders that the SWF may bring strategic motivations to the transaction, as was outlined before. Indeed, it has been shown that funds with more independent structures and long-term savings mandates are less affected by this “liability of sovereignty” and instead carry a financial impact similar to other institutional investors.

However, there is a notable gap in the existing literature regarding the performance of the investment for SWFs themselves. A major explanation for this is the lack of consistent and comprehensive datasets of SWF deals. In the end, available datasets tend to be biased toward the most transparent funds. It would be beneficial to answer whether SWFs can achieve positive risk-adjusted returns when compared to the market or other investors and the factors related to investment selection. Another highlighted aspect is that, while SWFs are major and increasingly relevant players in alternative assets, most academics concentrate on public equity, and therefore extending the research to private equity could result in a fuller understanding of overall SWF strategies and performance. As SWFs evolve in their operational and capital allocation strategies, increasing their investments in disruptive innovation sectors and taking a more direct approach to private equity, it is paramount to understand how these changes can impact their performance. It would be necessary, however, to also take into account the heterogeneous nature of SWF characteristics at the same time to accurately examine their performance.

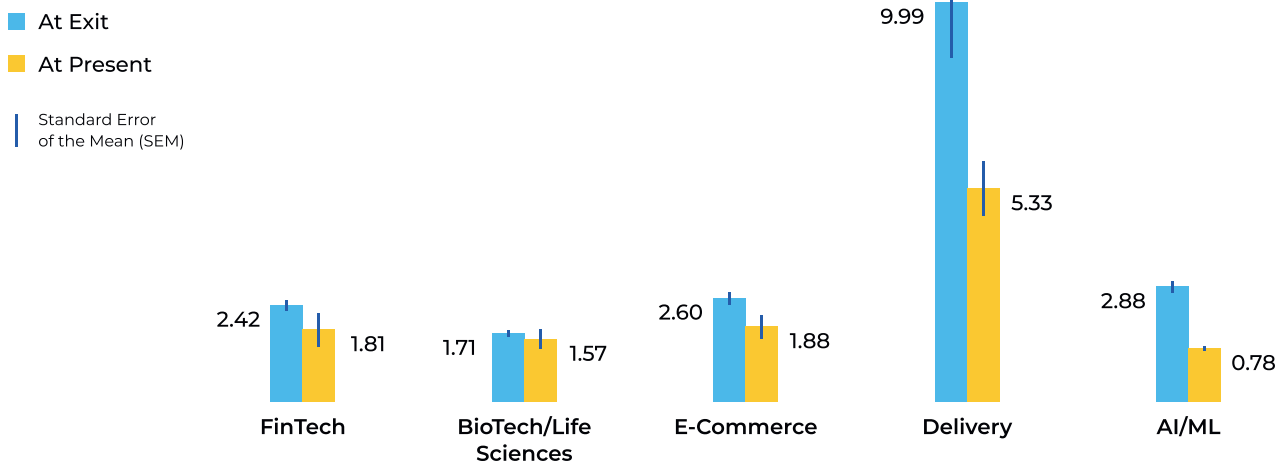
[5] See Iberdrola corporate website, May 2022, available at <https://www.iberdrola.com/press-room/news/detail/iberdrola-qatar-sign-agreement-to-strengthen-strategic-alliance-innovation>

[6] See Bortolotti, Fotak & Megginson, 2015, “The sovereign wealth fund discount: Evidence from public equity investments”. Available at <https://doi.org/10.1093/rfs/hhv036>.

Figure 1

Investment returns by sub-sector

Multiple on Invested Capital (MOIC).



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

This chapter attempts to shed some light on the highly relevant and complex field of sovereign wealth fund investment returns, addressing the determinants of SWF performance within the context of the growing trend of direct private equity investments in technology. It does this by generating a novel dataset containing 60 already-exited investment transactions by SWFs in the industry. Overall, it encompasses 46 different technology firms which have raised a total of \$38.9 billion in funding, yet there is a remarkable variance in the returns they have produced for their investors. Using the maximum likelihood estimation method, it evaluates and compares SWF performance across a variety of deal and round-specific factors.

THE SWF PERFORMANCE BASED ON DEAL-SPECIFIC FACTORS

Performance can be viewed across multiple dimensions. For instance, deal-specific factors such as sector, geography or year of investment may affect returns and performance. Also, round-specific factors may illustrate whether taking the lead, joining in a late or early round or making follow-on contributions affect performance in a significant way or not.

When leading a round, it is clear that, in terms of the difference in performance across different sectors, the delivery space has generated by far the largest returns among all other sectors studied (Figure 1). Investment targets in the space have generated four times more returns than those in categories such as Fintech, Biotech or AI/Machine Learning. The case of DoorDash is particularly noticeable. SWFs that invested in this US scale-up during Series B achieved an extraordinary 65x MOIC return upon exit, while those who participated in Series D or F still received 27.9x and 5.5x their investment, respectively. However, when these returns were measured up to the present, they turned out to be only half as large, highlighting the extreme volatility in valuations within the sector. Other targets such as Zomato, Grab or Meituan also generated solid returns above the median investment. While this outperformance of this delivery sector was striking, it is unclear how it could be translated into an ac-

tionable strategic plan of asset allocation for SWFs in the future. Rather, it seems that scale-ups in the space took advantage of unprecedented liquidity from VCs to dominate a nascent market. However, in reality, most of these companies continue to be unprofitable and face increasing regulatory pressure, questioning whether this was simply an outcome of the recent tech bubble.

On the other hand, sectors such as FinTech or Bio-Tech, which could reasonably be expected to play an increasing role in the economy, produced much more modest returns. It is also worthy of mention that firms with a business model based on AI and machine learning have been some of the weaker performers, especially over the longer period of measurement. It is important to remember, however, that in the world of investing, past performance is never a guarantee of future results and that it is possible for trends in sector performance to shift for further investments.

The “bits vs atoms” framework introduced by famous investor Peter Thiel provides another possible angle from which to analyse investment performance by sector and target firm missions^[7]. Bits companies refer to predominantly software-based digital product businesses, whereas atoms refer to tangible innovations in fields such as biotechnology or new materials. The most relevant insight from this analysis is that “bit” companies behave in the opposite direction to “atom” companies when return is measured over shorter or longer periods, perhaps

also reflecting the different reactions in business valuation after an economic downturn. Investment targets with digital business models had a better performance until liquidity when compared to those innovating in the physical world, and this reversed over a longer holding period in a post-downturn economy. This could be an indication that “atom” companies have more resilient business models that could act as a defensive investment during a down cycle. However, it is important to recognise the limitations of this somewhat unsophisticated classification.

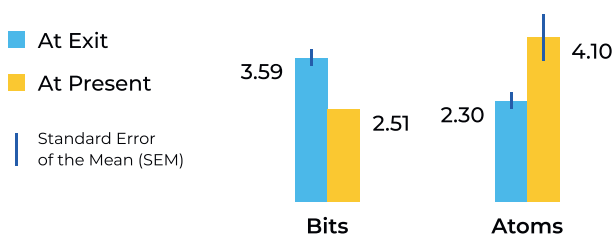
The return on investment is also determined by the investment targets’ geography. Investments produce a better financial return when the company is located in Asia, followed by North America, then Europe and lastly Latin America. It is surprising to see that these differences are not fully reflected in the proportional share of investments made by SWF investors across the globe. Despite their more modest performance, in our sample, European countries attract almost the same investment as Asian ones and about 50% more than Americans.

This performance pattern appears to be interlinked with the fact that a majority of the investments in the sample were carried out by Asia-based SWFs and were directed towards targets in the same region, benefitting from a smaller cultural distance. When SWFs invest with a home bias (in the same region of their home country), this results in approximately double the financial returns for the sovereign investors, as seen in Figure 5. This result is surprising to the extent that it contradicts some of the existing academic theories. Two possible explanations come to mind. First, the risks of investing in a portfolio with a home bias may be outweighed by the benefits of higher learning and specialisation levels within a region that leads to a better investment selection. And second, the difference in the growth potential of companies based in Asia, a largely emerging world region, is such that it counteracts the negative influence of selecting targets with a home bias.

Figure 2

Investment returns in the “bits vs atoms” framework

Multiple on Invested Capital (MOIC).



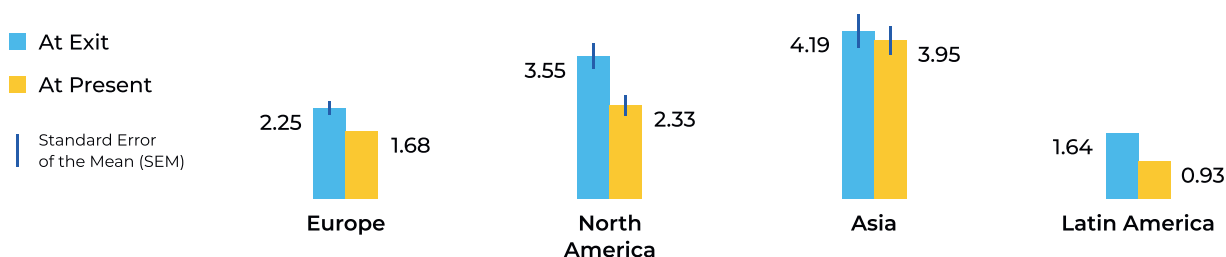
Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

[7] See VentureBeat, September 2014, available at <https://venturebeat.com/business/vc-peter-thiel-you-can-either-invest-in-bits-or-atoms/>.

Figure 3

Investment returns by region

Multiple on Invested Capital (MOIC).

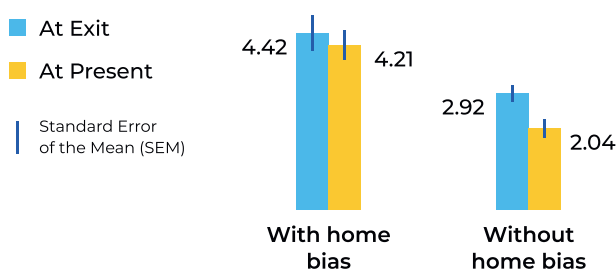


Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

Figure 4

Investment returns depending on “home bias”

Multiple on Invested Capital (MOIC).



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

Finally, the contrast in performance between investments made across different periods is one of the most convincing results from this analysis, showing a clear negative trend across investment vintages. The results point out the fact that investments made a longer time ago have significantly outperformed more recent ones. One can consider that this is the case due to the ability to grow businesses over time, or the most probable explanation, is that the market became quite saturated, and prices (entry valuations) skyrocketed in the later periods and therefore led to a decrease in the investment yield.

THE SWF PERFORMANCE BASED ON ROUND-SPECIFIC FACTORS

The research also focuses on the relevance of round-specific factors. One of the most relevant factors is that of being or not a round leader. VC financing round press releases tend to highlight the lead investor role. Are SWFs doing better when they lead

or when they follow? In Figure 7, the results of such analysis are given, and probably not the expected ones. When SWFs take a leader or co-leader position, they tend to underperform those where they do not lead the round. This difference in performance is significant when measuring until the point of exit but not quite significant when we extend the return measurement until the present date. The results hint at the fact that the difference in returns between rounds led or not by SWF is smaller when measured until the exit than when measured until the present.

The results of this analysis show that SWFs tend to obtain worse financial returns on investments where they take a leadership role during the funding round. An explanation for this can again be found in the “learning” framework developed in this chapter. As SWFs are relatively less experienced than other more professionalised investors in this particular asset class, they may be selecting worse investment targets. If this is the case, a policy recommendation for SWF stakeholders could be to continue to focus on co-investment opportunities and less aggressive forms of investing while they continue to build up their internal capabilities so that they may have more success leading rounds in the future.

Is this trend consistent over time? In Figure 8, we tried to capture the time effect. Are SWFs leading better today than in the first years of VC exposure? The results are not convincing either. It can be observed a marked decrease in the difference in returns depending on round leadership. The strength of the learning hypothesis is reinforced by the closing performance gap between rounds not led and led by SWFs, signalling that SWFs may be advancing their

Figure 5

Investment returns by year of investment

Multiple on Invested Capital (MOIC).

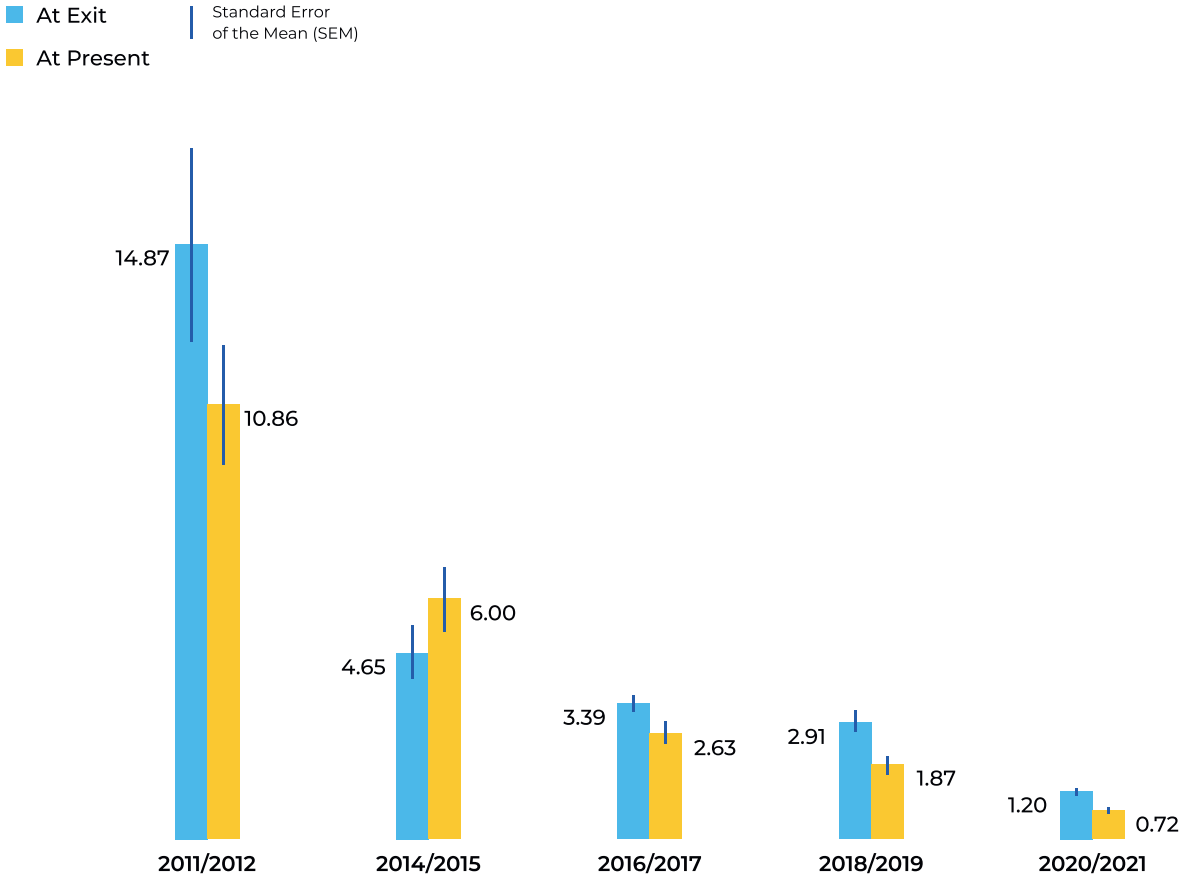


Figure 6

To lead or not to lead: Investment returns by SWF leadership role

Multiple on Invested Capital (MOIC).

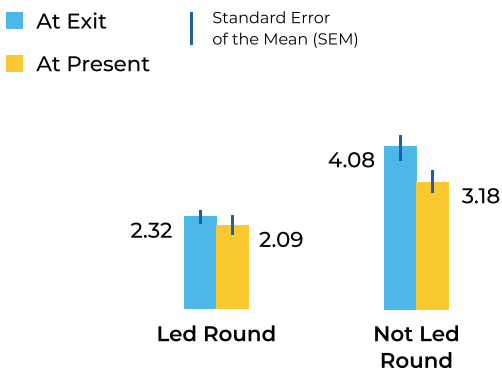
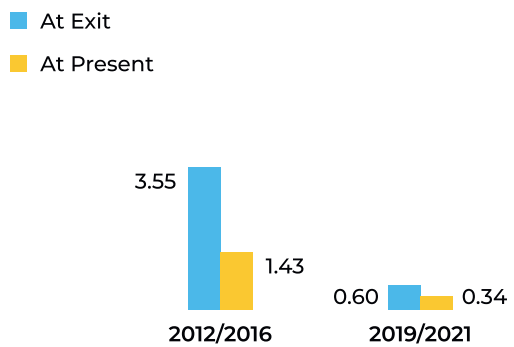


Figure 7

Investment returns by SWFs as leaders over time

Multiple on Invested Capital (MOIC).

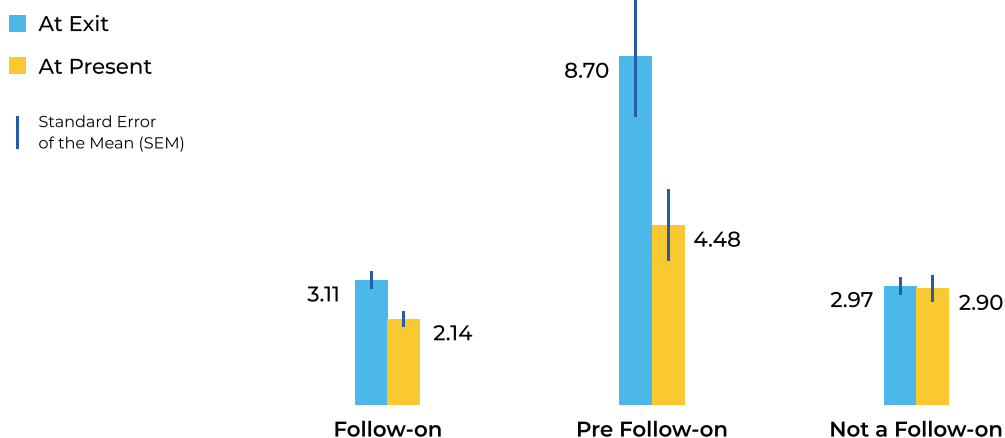


Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

Figure 9

Investment returns depending on follow-on investments

Multiple on Invested Capital (MOIC).



Source: Sovereign Wealth Research - IE Center for the Governance of Change (2023)

capabilities and are closer to successfully leading investment rounds. Another plausible explanation could be that SWFs may be leading rounds where they are attempting to achieve non-financial objectives that add value to the sovereign and its domestic economies in strategic ways and are, therefore, more comfortable with a lower return on investment threshold.

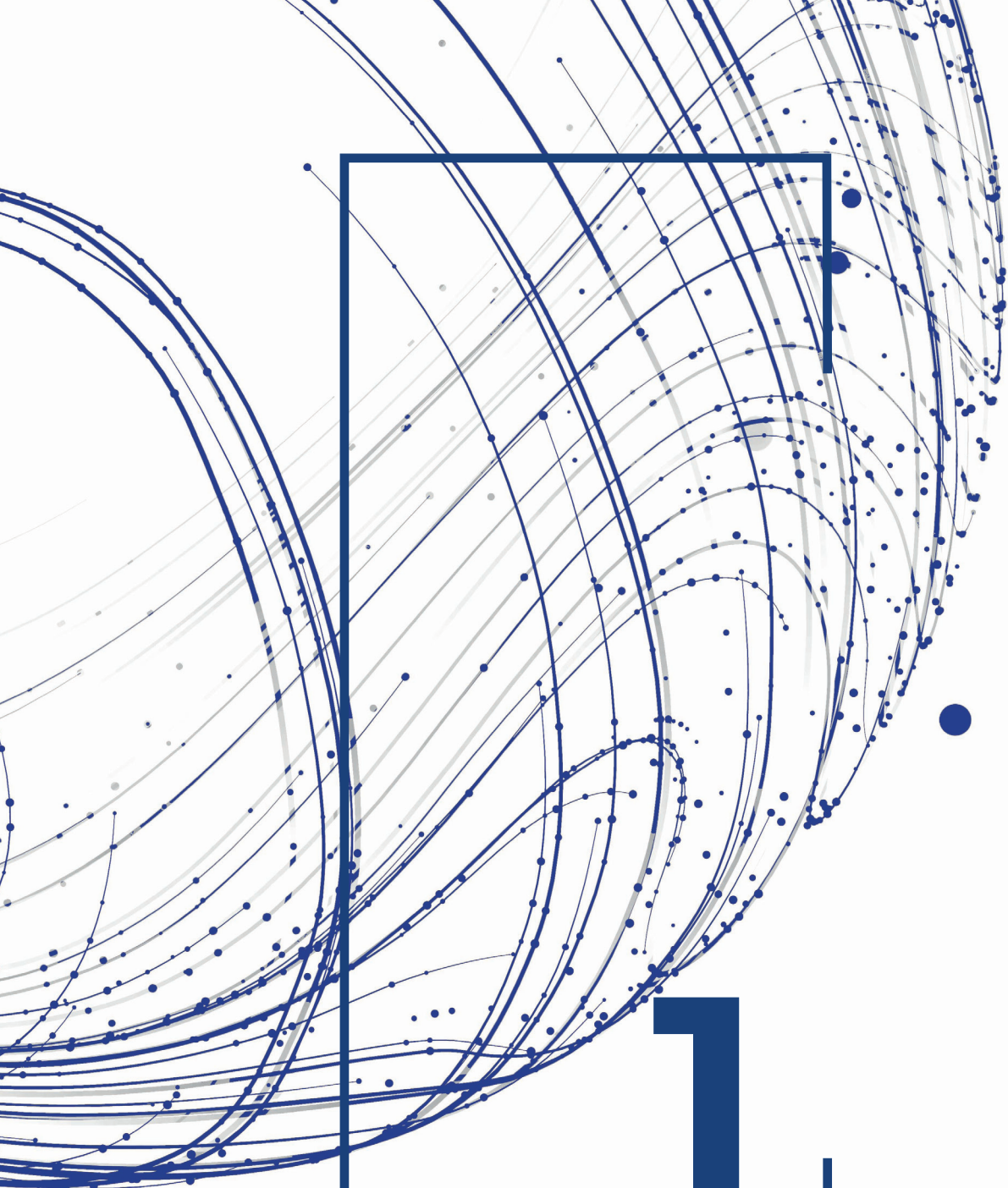
After comparing the performance of different investment round stages, the results in Figure 9 distinctly show that early stages outperformed later ones, on average generating 4x more than any other stage. Even though corporate finance theory would suggest that earlier rounds carry a higher risk in their investment and therefore bring a higher expected return, a more probable cause of this large gap in the returns by rounds is due to selection bias toward outlier successful investments instead. While growth and mature stages had similar average returns, mature investments demonstrated a larger level of consistency over time. Additionally, there appears to be some minor evidence that investments in the expansion stage of a business may be the least attractive in terms of returns. This should inform investors to be more cautious of opportunities in stages where they may find neither significant growth potential nor solid profitability.

The performance of follow-on investments has not been explored but is a question that may be of interest to SWF stakeholders. The more obvious result in this regard is that investment rounds in firms which are not follow-ons but who later on attract follow-on investments produce significantly higher financial returns than other types of rounds. However, this is impossible to observe ex-ante. Nevertheless, the fact that follow-on investments have a similar return profile to investments that are not follow-ons is a relevant finding in and of itself. This is the case because follow-on investments have two considerable advantages over those which are not follow-ons. First, the cost of investing in them could be meaningfully less since there is no extra effort required to source the opportunity, and the investor is already a shareholder and so has access to all the necessary information to diligence the opportunity. And second, the funding raised in the follow-on round will most likely be necessary to make the previous investment a successful one in the first place. Therefore, if the similarity in performance between rounds which are follow-on investments and those which are not is found to be robust, this should guide the investment strategy of SWFs to be more open and willing to invest in follow-on opportunities in the future.

CONCLUSIONS

Over the last decade, we have observed how the asset allocation of SWFs has shifted towards riskier alternative assets in private equity and venture capital, with a special focus on the most innovative sectors. This chapter has explored the field of investment performance within this asset class to understand what are some of the driving factors, acknowledging that the venture capital industry as a whole has been suffering a severe correction since the last quarter of 2021. With this scenario in mind, the paper provides a novel database of relevant direct investment transactions by SWFs into private technology companies taking place mostly during the boom years of the VC industry.

The analysis provided a list of the relevant deal and round-specific factors that can help explain differences in investment performance. On average, the chapter finds that targets which were Asian-based, within the delivery sector, in earlier stage rounds or conducted a long time ago tended to outperform their peers within the time frame of the analysis. Digital “bit” businesses had stronger returns in the short run; however, the performance of physical “atom” businesses was more resilient over time. Follow-on investments had similar returns to one-off investments. And finally, while investment rounds led by SWFs were less successful than those from other institutional investors, the performance gap has decreased over time. All of these factors appear to be relevant even when accounting for selection bias in the sample, indicating that they can be complementary to the existing theoretical framework that understands SWFs as learning organisations. These insights can provide grounds to gain a deeper comprehension of what makes the investment strategies of SWFs successful and potentially benefit a wide range of sovereign stakeholders.



1

ANNEX 1
IE Sovereign
Wealth Research
Ranking 2023

IE Sovereign Wealth Research Ranking 2023*



SOVEREIGN WEALTH FUNDS	ASSETS UNDER MANAGEMENT (\$bn, US dollars)	COUNTRY	ESTABLISHED
1. Government Pension Fund Global	1,437	NORWAY	1990 ●
2. China Investment Corporation	1,351	CHINA	2007 ○
3. State Administration of Foreign Exchange	1,034	CHINA	1997 ●
4. Abu Dhabi Investment Authority	993	UAE	1976 ○
5. GIC	799	SINGAPORE	1981 ○
6. Kuwait Investment Authority	770	KUWAIT	1953 ○
7. Public Investment Fund	730	SAUDI ARABIA	1971 ●
8. Hong Kong Monetary Authority	514	HONG KONG SAR (CHINA)	1993 ●
9. National Social Security Fund	474	CHINA	2000 ●
10. Qatar Investment Authority	450	QATAR	2005 ○

* This list includes sovereign wealth funds established as of June 2023. The IE Sovereign Wealth Research Ranking uses the most updated information available, some figures may differ from data shown in other parts of the Report. SWFs names in bold indicate full or associate members of the International Forum of Sovereign Wealth Funds.

Source: IE Sovereign Wealth Research (2023) with information obtained from funds' annual reports and websites. In their absence, we relied on estimates from Bloomberg, Reuters and Global SWF.

SOVEREIGN WEALTH FUNDS	ASSETS UNDER MANAGEMENT (\$bn, US dollars)	COUNTRY	ESTABLISHED	
11. Saudi Arabian Monetary Authority	430.00	SAUDI ARABIA	1952	●
12. Investment Corporation of Dubai	317.79	UAE	2006	○
13. Temasek	298.00	SINGAPORE	1974	●
14. Mubadala Investment Company	276.00	UAE	2002	○
15. Future Fund	202.80	AUSTRALIA	2004	○
16. Korea Investment Corporation	169.00	SOUTH KOREA	2005	○
17. ADQ	157.00	UAE	2018	●
18. National Wealth Fund	153.00	RUSSIA	2008	●
19. Emirates Investment Authority	91.00	UAE	2007	●
20. Alaska Permanent Fund	76.00	USA	1976	○
21. Samruk-Kazyna	71.00	KAZAKHSTAN	2008	○
22. Libyan Investment Authority	68.00	LIBYA	2006	○
23. Texas Permanent School Fund	56.00	USA	1854	●
24. Brunei Investment Agency	55.00	BRUNEI	1983	○
25. State Oil Fund of the Republic of Azerbaijan	53.43	AZERBAIJAN	1999	○
26. Ethiopian Investment Holdings (EIH)	46.00	ETHIOPIA	2021	○
27. Dubai World	42.00	UAE	2006	●
28. Oman Investment Authority	42.00	OMAN	2020	○
29. New Zealand Superannuation Fund	39.00	NEW ZEALAND	2001	○
30. New Mexico State Investment Council	37.00	USA	1958	●
31. Dubai Holding	35.00	UAE	1997	●
32. Khazanah Nasional	30.00	MALAYSIA	1993	○
33. National Development Fund	23.00	IRAN	2011	●
34. Türkiye Wealth Fund	19.96	TURKIYE	2016	○

SOVEREIGN WEALTH FUNDS	ASSETS UNDER MANAGEMENT (\$bn, US dollars)	COUNTRY	ESTABLISHED
35. Bahrain Mumtalakat Holding Company	19.00	BAHRAIN	2006 ●
36. Alberta Heritage Savings Trust Fund	18.60	CANADA	1976 ●
37. Timor-Leste Petroleum Fund	17.00	TIMOR-LESTE	2005 ○
38. Ireland Strategic Investment Fund	16.00	IRELAND	2001 ○
39. Russian Direct Investment Fund	10.00	RUSSIA	2011 ●
40. China-Africa Development Fund	10.00	CHINA	2007 ●
41. CDP Equity	9.70	ITALY	2011 ○
42. Permanent Wyoming Mineral Trust Fund	9.00	USA	1974 ●
43. Maharlika Investment Fund	8.90	PHILIPPINES	2023 ●
44. National Oil Fund of Republic of Kazakhstan	8.00	KAZAKHSTAN	2000 ●
45. North Dakota Legacy Fund	8.00	USA	2011 ●
46. Fondo de Estabilidad Económica y Social	7.51	CHILE	2007 ●
47. Fondo de Reserva de Pensiones	6.82	CHILE	2006 ●
48. COFIDES	6.00	SPAIN	2018 ○
49. Indonesia Investment Authority	6.00	INDONESIA	2020 ○
50. Heritage and Stabilization Fund	4.77	TRINIDAD AND TOBAGO	2000 ○
51. National Investment and Infrastructure Fund	4.00	INDIA	2015 ○
52. Pula Fund	3.90	BOTSWANA	1994 ○
53. Fondo de Ahorro y Estabilización	3.64	COLOMBIA	2011 ●
54. Alabama Trust Fund	3.50	USA	1985 ●
55. Quebec's Generations Fund	3.40	CANADA	2006 ●
56. Gulf Investment Corporation	3.30	KUWAIT	1982 ●
57. Idaho Endowment Fund	3.10	USA	1969 ●
58. Nigeria Sovereign Investment Authority	3.00	NIGERIA	2011 ○

SOVEREIGN WEALTH FUNDS	ASSETS UNDER MANAGEMENT (\$bn, US dollars)	COUNTRY	ESTABLISHED
59. Fundo Soberano de Angola	3.00	ANGOLA	2012 ○
60. State Capital Investment Corporation	2.40	VIETNAM	2006 ●
61. Bpifrance - SWF Partnerships	2.30	FRANCE	2014 ●
62. Ithmar Capital	2.30	MOROCCO	2011 ○
63. Malta Government Investments	2.00	MALTA	2015 ○
64. Partnership Fund	1.90	GEORGIA	2011 ●
65. Fonds Gabonais d'Investissements Stratégiques	1.89	GABON	1998 ○
66. Fondo de Estabilización Fiscal	1.51	PERU	1999 ●
67. Louisiana Education Quality Trust Fund	1.50	USA - LOUISIANA	1986 ●
68. Natural Resource Fund	1.42	GUYANA	2019 ○
69. Fondo de Ahorro de Panamá	1.29	PANAMA	2011 ○
70. Mauritius Investment Corporation	1.08	MAURITIUS	2020 ○
71. Fondo Mexicano del Petróleo	1.03	MEXICO	2015 ○
72. Palestine Investment Fund	0.96	PALESTINE	2003 ○
73. Revenue Equalization Reserve Fund	0.70	KIRIBATI	1956 ●
74. The Sovereign Fund of Egypt	0.63	EGYPT	2018 ○
75. Future Generations Fund	0.62	BAHRAIN	2006 ●
76. Fund for Israel Citizens	0.60	ISRAEL	2014 ●
77. Ghana Stabilization Fund	0.33	GHANA	2011 ●
78. Ghana Heritage Fund	0.33	GHANA	2011 ●
79. Agaciro Development Fund	0.24	RWANDA	2012 ○
80. Fonds Souverain de Djibouti	0.20	DJIBOUTI	2020 ○
81. Fund for Future Generations	0.16	EQUATORIAL GUINEA	2002 ●
82. Intergenerational Trust Fund	0.16	NAURU	2015 ○

SOVEREIGN WEALTH FUNDS	ASSETS UNDER MANAGEMENT (\$bn, US dollars)	COUNTRY	ESTABLISHED
83. National Fund for Hydrocarbon Reserves	0.15	MAURITANIA	2006 ●
84. West Virginia Future Fund	0.13	USA - WEST VIRGINIA	2014 ●
85. Petroleum Revenue Investment Reserve	0.12	UGANDA	2015 ●
86. FONSIS	0.10	SENEGAL	2012 ○
87. National Investment Corporation	0.09	KAZAKHSTAN	2012 ○
88. Future Heritage Fund	0.09	MONGOLIA	2019 ○
89. Fondo para la Estabilización Macroeconómica	0.03	VENEZUELA	1998 ●
90. National Wealth Fund	0.03	TURKS & CAICOS ISLANDS	2017 ●
91. Fonds de Stabilisation des Recettes Budgétaires et Réserves pour Générations Futures	0.02	D.R. OF THE CONGO	2005 ●
92. Welwitschia Fund	0.02	NAMIBIA	2021 ●
93. Northwest Territories Heritage Fund	0.00	CANADA	2012 ●
94. National Investment Fund	N/A	CYPRUS	2019 ●
95. Oil Revenue Stabilization Fund	N/A	SOUTH SUDAN	2008 ●
96. Papua New Guinea SWF	N/A	PAPUA NEW GUINEA	2011 ●
97. Permanent Fund for Future Generation	N/A	SÃO TOMÉ E PRÍNCIPE	2004 ●
98. Savings and Stabilization Fund	N/A	SURINAME	2017 ●
99. Turkmenistan Stabilization Fund	N/A	TURKMENISTAN	2008 ○
100. Zimbabwe Sovereign Wealth Fund	N/A	ZIMBABWE	2014 ●

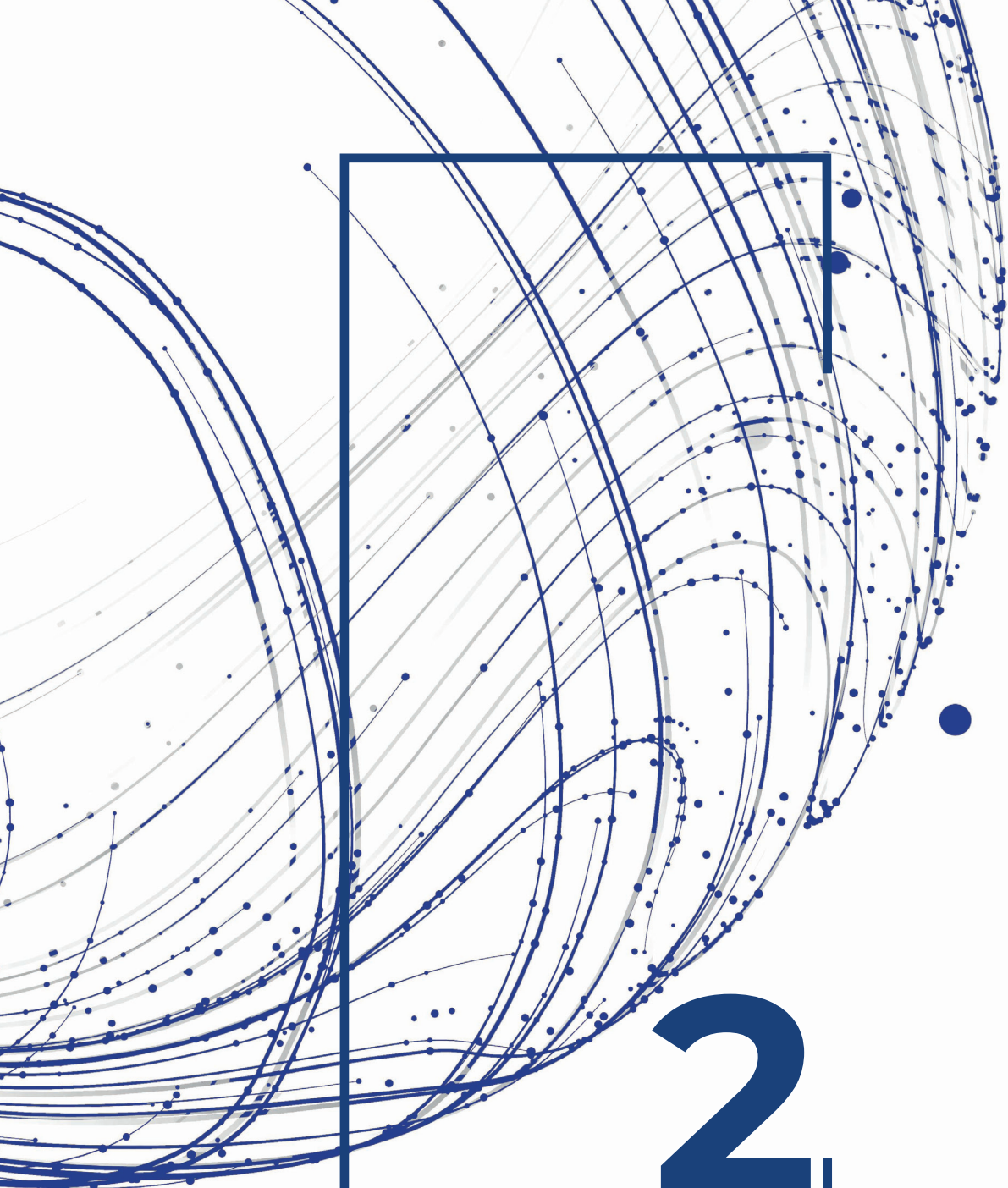
Total Assets under Management

\$11.56 trillion

POTENTIAL NEW FUNDS**

SOVEREIGN WEALTH FUNDS	COUNTRY/TERRITORY
100. South Africa	SOUTH AFRICA
101. Lebanon	LEBANON
102. Kenya	KENYA
103. Mozambique	MOZAMBIQUE
104. Bahamas	BAHAMAS
105. Romania	ROMANIA
106. Japan	JAPAN
107. Zambia	ZAMBIA
108. Tanzania	TANZANIA
109. Liberia	LIBERIA
110. Saskatchewan	CANADA
111. Bangladesh	BANGLADESH
112. New Caledonia	NEW CALEDONIA
113. United Kingdom	UNITED KINGDOM
114. Investment and Development Fund	MACAU SAR
115. Taiwan National Stabilization Fund	CHINESE TAIPEI
116. Mongolia	MONGOLIA
117. Jordan	JORDAN
118. Republic of Kosovo	KOSOVO

**These 19 funds were not established when this edition went to press. The establishment is currently discussed.



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ANNEX 2

Sovereign Wealth Funds in Spain: A Resilient Pattern

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ANNEX 2

Sovereign Wealth Funds in Spain: A Resilient Pattern

Spain experienced record levels of SWFs activity again in 2022 and the first part of 2023 amid global economic, geopolitical and social uncertainties. High transaction volumes and strategic alliances characterized this period.

In 2022, SWFs carried out 11 transactions in Spain, a record number that equalled the peak set in 2014. These transactions, amounting to a total value of up to €2.9 billion, are as high as the amounts seen in 2009 when IPIC (now Mubadala) acquired its first large stake in CEPSA. The first quarter of 2023 also showed robust activity, especially with NBIM's finalized collaboration with Iberdrola in renewables and Mubadala's CEPSA subsidiary, precisely, through a large co-investment agreement in biofuels. Further investment boosts were expected from forthcoming FOCO announcements.

Real estate, both residential and logistics, and technology attracted the largest deals. GIC is set to invest approximately €1.5 billion to build a portfolio of 8,000 rental homes in Spain over the coming years, the most significant known investment by a foreign investor in this type of asset in the country. GIC has partnered with Spanish company Azora to manage the investments and acquisitions of the new vehicle. However, GIC will not shoulder the entire €1.5 billion investment alone. The Singaporean SWF will invest along with other co-investors, given the dense net of relationships GIC has established for years in the country. The fund intends to build this portfolio of homes in cities with high rental demand, including Madrid, Barcelona, Seville, Malaga, Palma de Mallorca, and Valencia.

Mubadala continues to invest in senior residences in Spain. The investment vehicle of the Arab country entered the sector of accommodations for the elderly in Spain in 2021, with the purchase of a 49.38% stake in the listed real estate company Healthcare Activos. This Real Estate Investment Trust (REIT) has invested over €630 million in purchasing and developing assets related to the health sector: residences, clinics, and hospitals. Recently, the partners of Healthcare Activos have injected €49.39 million into the company for new investments. Based on the number of shares of each shareholder, Mubadala would have transferred €24.39 million. Other participants in this investment include the Dutch insurer Nationale-Nederlanden, the CBRE IM fund, and other shareholders whose identities have not been disclosed. The company plans to expand its portfolio of residences and other health sector assets to a value of €1.5 billion within four years.

The human resources tech firm Factorial has reached unicorn status with a \$1 billion valuation, following a \$120 million Series C funding round. The round was led by Atomico, the European VC leader, and included participation from GIC again, accompanied by Tiger Global, CRV, K-Fund, and Creandum. The company's primary mission is to centralize and automate HR processes in a single tool, with a particular focus on serving small and medium-sized businesses. The company, which has seen a 200% growth over three years, will use the funding to enhance its capabilities and expand its global presence. The company was founded in 2016 by three engineers.

Norway's SWF continues to get exposure to privately owned renewable energy infrastructure, as it expands its traditional listed-assets-only investment policy. In January 2023, Norges Bank Investment Management, the central bank unit overseeing the Government Pension Fund Global, announced a \$650 million investment for a 49% stake in Spanish solar and wind assets with a 1.3GW capacity. This follows their 50% stake in the Dutch Borssele 1 & 2 wind farm. The Spanish assets, partly owned by Iberdrola, include 12 projects, with 9 due by 2025. The renewable energy collection can supply the electricity equivalent to the demand of over 700,000 homes annually.

On its part, Cepsa, a majority-owned (63%) subsidiary of Mubadala Investment Company, announced that it plans to build a second-generation biofuels plant in Huelva. The €1 billion project will produce biodiesel and Sustainable Aviation Fuel (SAF) from organic waste. The company aims to lead in biofuel production in Spain and Portugal, with a target of 2.5 million tons annually, including 800,000 tons of SAF. Cepsa's strategic plan includes reducing its CO2 emissions by 55% and achieving net-zero emissions by 2050.

A DYNAMIC YEAR FOR SOPEF

On its part, SOPEF, the joint venture of Spain's COFIDES and the Oman Investment Authority, demonstrated remarkable dynamism in the period reviewed. In the three years since its establishment in 2018, the SOPEF portfolio has incorporated six companies: Llusar, Palacios, and Symborg from the agriculture and food sectors; Logalty from the legal technology sector; Uriach from pharmaceuticals; and TCI Cutting from the industrial sector. In the 15 months covered in this report starting in January 2022, SOPEF has made 5 acquisitions in companies that provide a nexus between traditional business activities and technology. SOPEF entered three new sectors such as education technologies, sports and property technologies. In 2022, SOPEF made the first two portfolio divestments too.

Overall, SOPEF continues to support through a minority positions strategy a sectorally and geographically diverse portfolio mirroring its strategic investment

vision and commitment to fostering growth and innovation in crucial Spanish economic sectors.

In June 2022, SOPEF placed an investment in Seabery, an edtech startup based in Huelva leveraging augmented reality for welder training, with a goal to slash material consumption by over 70% and reduce teaching time by over 50%. In November SOPEF made its debut in the sports industry too by investing in All For Padel, a designer, manufacturer, and vendor of paddle tennis equipment and courts, and also the exclusive licensee of Adidas AG for this sport. This investment underscores SOPEF's inclination to invest in high-growth sectors, with exposure to overseas markets such as America and the Middle East. In December 2022, Agrovín, a Ciudad Real-based company specialising in manufacturing and distributing oenological products and machinery for wineries and laboratories, secured investment from SOPEF, reinforcing SOPEF's engagement with the agricultural sector. Lastly, in March 2023, SOPEF welcomed Fermax into its portfolio, a Valencia-based company founded in 1949, focusing on connectivity and providing innovative residential communication in buildings.

SOPEF's recent moves include divestments from two companies: Haizea Wind Group and Symborg. Haizea Wind Group, a manufacturer of wind towers, offshore foundations, and casting components, attracted SOPEF's investment in November 2019, but by the first quarter of 2023, SOPEF had withdrawn its investment. Haizea has solidified its global leadership position with recent new contracts with offshore wind developers Orsted and Iberdrola. The monopiles Haizea manufactures from its industrial centre in Bilbao are 130-meter-long steel structures, which are used to fix the wind turbines to the seabed, and are the most competitive type of foundation. SOPEF also disinvested Symborg, a biotech and biostimulant manufacturer, which received SOPEF's investment in September 2020. With SOPEF's assistance, Symborg established a production facility in Murcia and expanded its presence to international markets such as the US and Latin America. By 2023, Symborg had succeeded in extending its presence to four Latin American countries, the US, China, and Turkey.

COFIDES AS AN UMBRELLA

In June 2023, Spain's sovereign wealth fund, COFIDES, launched two new funds: the Co-investment Fund (FOCO) and the Social Impact Fund (FIS). FOCO, with a capital of €2 billion, aims to attract foreign investment in Spanish companies to advance objectives such as energy transition and digital transformation. FIS, with €400 million, will invest directly in Spanish companies with social and environmental goals. These funds join existing ones under the COFIDES perimeter, taking COFIDES's total assets under management to over \$6 billion.

FOCO builds on existing deals with Middle Eastern SWFs, including the previously commented joint venture (SOPEF) with the Oman Investment Authority and memoranda of understanding with the Qatar Investment Authority and Abu Dhabi's Mubadala. With promised new personnel and capabilities, FOCO can be a powerful tool to attract capital to Spain and to Spanish companies and projects. With a similar philosophy to the co-investment SWFs models of France and Italy (now both submerged into their respective public banks) these partnerships aim to draw in foreign capital to support mid-sized companies in Spain, launch larger co-investment projects, strengthen economic and investment ties, and support the aims of the Recovery, Transformation and Resilience Plan (RTRP) of Spain.

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The Sovereign Wealth Research at the IE CGC is a research program focused on sovereign wealth. The program has proven experience and international recognition. The SWR helps to understand better the critical role of sovereign wealth funds and their transformative position on technology disruption, sustainable finance, economic development and corporate governance. The program produces annual reports, peer-reviewed papers in top academic journals, training programs, closed-door seminars, and open conversation spaces with sovereign wealth stakeholders. The Center for the Governance of Change (CGC) is an applied-research educational institution based at IE University studying the political, economic, and societal implications of the technology revolution and advancing solutions to overcome its unwanted effects. The CGC produces pioneering impact-oriented research that cuts across disciplines and methodologies to unveil the complexity of emerging technologies such as Artificial Intelligence, Big Data, Blockchain, and Robotics and explore their potential threats and contributions to society—based at IE University, home of one of the top five business schools in the world according to The Economist, Forbes and The Financial Times.

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ICEX Spain Trade and Investment is a public corporation at the national level whose mission involves promoting the internationalisation of Spanish companies to support their competitiveness and add value to the economy as a whole, as well as attracting foreign investment to Spain. Its vision is a) to serve as a window of internationalisation for Spanish companies by collaborating with strategic partners, b) to provide high-added-value services, meeting customers' needs, and c) to attract top-quality foreign investment, helping investors to enter Spain and set up activities here. ICEX Spain Trade and Investment renders its services through a network of 31 Provincial and Regional Divisions in Spain, along with almost 100 Economic and Trade Offices globally. It also boasts 16 Business Centers worldwide, offering Spanish companies temporary infrastructure and acting as incubators for internationalisation.

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Within ICEX, Invest in Spain Division fulfils its mission with four lines of action: a) Attracting new foreign direct investment projects, especially involving countries, sectors and businesses that show the highest growth potential in Spain; b) Positioning Spain as an internationalised country boasting extremely competitive resources, business centre and international investment as well as being a global platform for access to third markets; c) Promoting an improved business climate and regulatory environment, thereby facilitating business activity in Spain; d) Facilitating collaboration between foreign investors and Spanish companies for the development and expansion of activities in our country.

**SOVEREIGN
WEALTH FUNDS
2023**