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BUSINESS STRATEGY
Pegasus: The Silent Threat To Digital Democracy

TECHNOLOGY
From Dollars To Digits: Navigating The Shadows Of A Cashless Society

BUSINESS STRATEGY
The Widening Tech Gap: Reshaping Canada's Tech Future

Volume 9

FALL 2023 ISSUE

Table of Contents

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Letter From the Editors

A Pursuit to Understand a Changing and Dynamic World

Since the economic shutdown of 2020 and the global optimism that came in 2021 and 2022, the world's economy has not faced such uncertainty as it has now. Rampant inflation, global conflicts, supply chain issues and slowing economies have brought into question what the future holds. On one hand, some expect the economy to continue to slow as nations face internal conflict, while others see a bright future as the world normalizes post-COVID. Only time can tell.

In the Fall 2023 issue of the Waterloo Business Review, the Editorial Team delved into these topics, spanning issues surrounding technology, healthcare and the global financial ecosystem. Our goal was to understand where the world stands today and where it will be, and to answer the question of whether we can expect near-term prosperity or a continued downward spiral.

At the Waterloo Business Review, we seek to interpret the world around us and understand the changing landscape which we are a part of. We strive to question what we consume in the media, and to build our own thesis on how the world evolves through research and discussion. We aim to equip students with the tools to think critically and independently in an era defined by the availability of digital information and potential for misinformation.

Today's global economy is in limbo between growth and decline, with no clear answer on what we can expect to see in the next few years. In times like these, it is important to bring unique views and to form differentiated perspectives. The Editorial Team embarked on such a journey to form this publication, and we hope to encourage students to not consume media at face value, but rather, challenge ideas imposed upon them and form opinions after careful consideration.

On behalf of the Editorial Team, we hope the publication offers new insights and a little light for the clouded future ahead.

Sincerely,

Luka P

Luka Pavlesen
Editor-in-Chief

Vivian Guo

Vivian Guo
Editor-in-Chief

Our Team

Our dedicated and passionate team is focused on growing and establishing the Waterloo Business Review in the Waterloo and Kitchener business community.

Waterloo Business Review empowers our team through our emphasis on creative freedom, professional development of research and communication skills, and our culture of entrepreneurship and growth as we nurture members to adopt positions of greater responsibility and leadership.

Editorial Team









Left to right, top to bottom: Luka Pavlesen, Vivian Guo, Ali Ravjani, Ansh Farmah, Katarina Miovcic, Manu Krishna, Sophie Hsieh, Arnav Sheth and Alex Zhu

Research Team

Left to right, top to bottom: Kabir Bajwa, Sofia Suleman, Gurpartap Thap, Leo Stetsyuk, Siddhant Kapur, Arpit Sandhu, Agraj Joshi, and Yukttha Sivaraju

Creative Team

Left to right, top to bottom: Devena Mohabir, Viviana Basurto, Nirva Bharwada, Vivian Guo, Pramiya Arulraj, and Yukttha Sivaraju

Technology:

Pegasus: The Silent Threat to Digital Democracy

Alex Zhu, Agraj Joshi

Illustrated by
Viviana Basurto

Introduction

Today, our smartphones know more about us than many of our closest friends and family. The digital revolution has opened the floodgates for technology capable of digitizing every aspect of our lives. The ascendance of household devices, such as smart speakers, smart appliances and our beloved smartphones has shown us that technology can affect nearly every part of our lives. Additionally, the emergence of more nascent technologies in the fields of virtual reality (VR), augmented reality (AR) and artificial intelligence (AI), such as the Meta Quest (Oculus) Headset, Apple's recently released Vision Pro and ChatGPT, have shown us that technology may soon take a front seat in our lives. With the ubiquity of technology, we are invariably sharing more information through our devices than we may be comfortable sharing with most of the people we know, begging the question: are any parts of our digitized lives truly private?

Most people are familiar with the concept of spying, a practice as old as time, where groups or individuals secretly collect information about their enemies and competitors. The earliest forms of spying, referenced in Sun Tzu's 5th Century book Art of War, were conducted physically; later, more sophisticated cyber espionage was developed during the Cold War, a time that saw the founding of the CIA and KGB. However, there is one recent technology making all other spying methods look like child's play: Pegasus, engineered by NSO Group Technologies, a multi-billion dollar Israeli spyware firm.

What is Pegasus?

Founded in Israel in 2010, the NSO Group is a product of its environment, as Israel is a global technological center in the heart of a major conflict zone.

Though plagued by war for nearly the entirety of its independence, Israel is often referred to as the Startup Nation as the tech sector makes up 18% of Israel's GDP, 50% of its exports, and 30% of its tax revenue. Despite having just 0.1% of the world's population, Israeli companies account for 10.5% of the world's AI startups, according to Statista. Additionally, there has been no shortage of global high-tech companies forged in the Middle Eastern techno-cauldron. From the satellite navigation app Waze to the autonomous driving-tech company Mobileye and the popular website builder Wix.com, Israel has a strong tech industry and success to show for it.

One of the more controversial digital flowers that bloomed in Israel is the NSO Group. Most recently valued at $2.3 billion, the NSO group is one of the most secretive companies in the world and a global leader in spyware technology. Their flagship product, Pegasus, named after the legendary winged horse from Greek mythology, was released in 2011 and is only licensed to governments and law enforcement for "the sole purpose of preventing and investigating terror and serious crime", according to the company's website.

Pegasus is a sophisticated spyware that is capable of installing itself onto a victim's device without leaving a trace. Once installed, Pegasus gains full remote access to the victim's device. This means that Pegasus can see all of the device's passwords, phone and message records and location, as well as be able to turn on the camera and microphone, send messages and make calls on the victim's behalf.

What is a Zero-Click Attack?

What makes Pegasus especially advanced and hard to stop is its use of zero-click attacks to install itself on a victim's device. Compared to the majority of spyware attacks, which are spear phishing attacks—requiring a victim to click a malicious link—zero-click attacks install software on a victim's device without the victim ever clicking anything. This means that even if someone is careful with who they interact with, what they interact with and where they interact on the internet, they are vulnerable to zero-click attacks.

Zero-click attacks take advantage of a loophole in most devices' systems that trust data coming from trusted apps. Most downloads on modern devices either come through an app store manned by teams of hundreds of app reviewers, or have warnings associated with their online download from untrusted sources. However, there are fewer restrictions on data and downloads onto a device via already-installed apps, such as messaging or social media apps that allow for sending data between strangers with relative ease.

Recognizing this loophole, zero-click attackers target apps, sending malicious code to victims' devices through apps like WhatsApp*, email and SMS messaging, that attempt to seep into the device itself. As soon as the device is compromised, the hacker effectively has access to all the functions in the victim's phone, meaning the malicious message could be erased from the device, without the victim ever knowing, leaving virtually no trace that the attack ever happened.

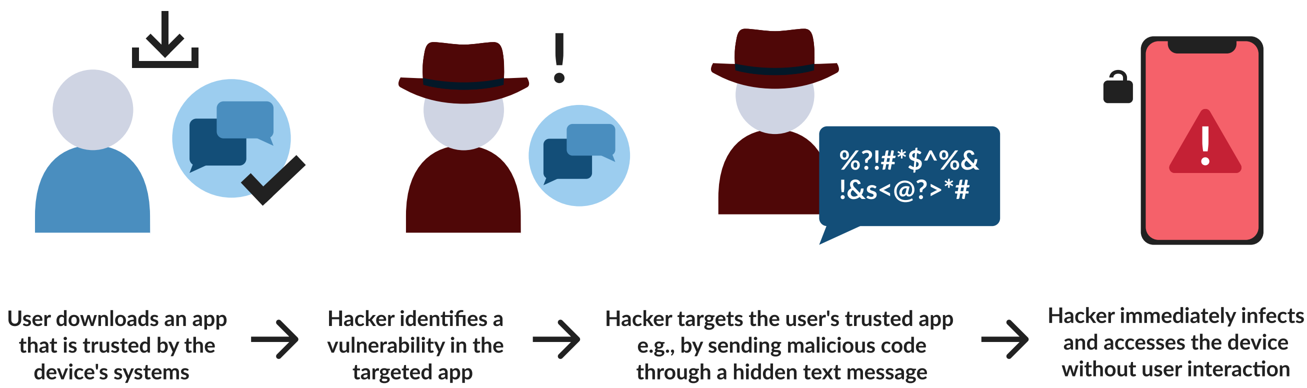
Why is This Important?

Pegasus remains prominently used around the world. Between August 2016 and August 2018, Pegasus spyware was found to have likely been used to spy on individuals in 45 countries. Even the FBI revealed that they purchased a Pegasus license in 2019.

Governments around the world are using Pegasus to track terrorist movements, but also to undermine political campaigns, expel ideological dissidents and suppress free speech. However, you do not have to be a politician, activist or journalist to be targeted by a Pegasus attack.

In the connected world of digital media, people are linked to one another in more ways than ever. If someone interacted with a political party's social media page, is seen in a photo with an activist or was on the mailing list of a controversial journalist, they could potentially be targets of a government that licenses Pegasus. Your digital presence is something that follows you for a lifetime, and Pegasus could be used to expose it.

*Meta, the parent company of WhatsApp, sued the NSO Group in 2019 for the targeted use of Pegasus to spy on 1,400 of its users. After the U.S. Supreme Court rejected the NSO Group's claim for immunity in January 2023, which argued that the company was acting as an agent for foreign governments, the case remains ongoing in the U.S. District Court of Northern California.



In response to the first revelations of Pegasus, Edward Snowden, the famous U.S. National Security Agency (NSA) whistleblower said that, traditionally, for an agency to access a suspect's phone, they would need to "break into somebody's house" with a warrant. However, with Pegasus, "they can do the same thing from a distance, with little cost and no risk" and "do it all the time, against everyone who's even marginally of interest".

Snowden added that this is "an industry that shouldn't exist". Nonetheless, it does exist, and we are seeing the consequences regularly and all around the world.

Uses of Pegasus Software

In 2011, the Mexican government became Pegasus's first client. Since then, Mexico has been a case study for both the abundant potential for security as well as the oppression of individuals that Pegasus brings to a nation.

As a tool designed to thwart terrorism and crime, Pegasus has been used in many high-profile cases in Mexico for that exact purpose. Pegasus has been used by the Mexican government to fight crime and bring down child abuse rings. On Christmas Eve 2011, the President of Mexico called the NSO Group to say: "I couldn't have asked for a better Christmas present. With what you gave us, we can finally eradicate the cartels". Sure enough, the NSO Group claimed that Pegasus was used to track, and eventually capture, the notorious drug lord Joaquín "El Chapo" Guzmán Loera in February 2014, after he escaped from a maximum security prison thirteen years earlier.

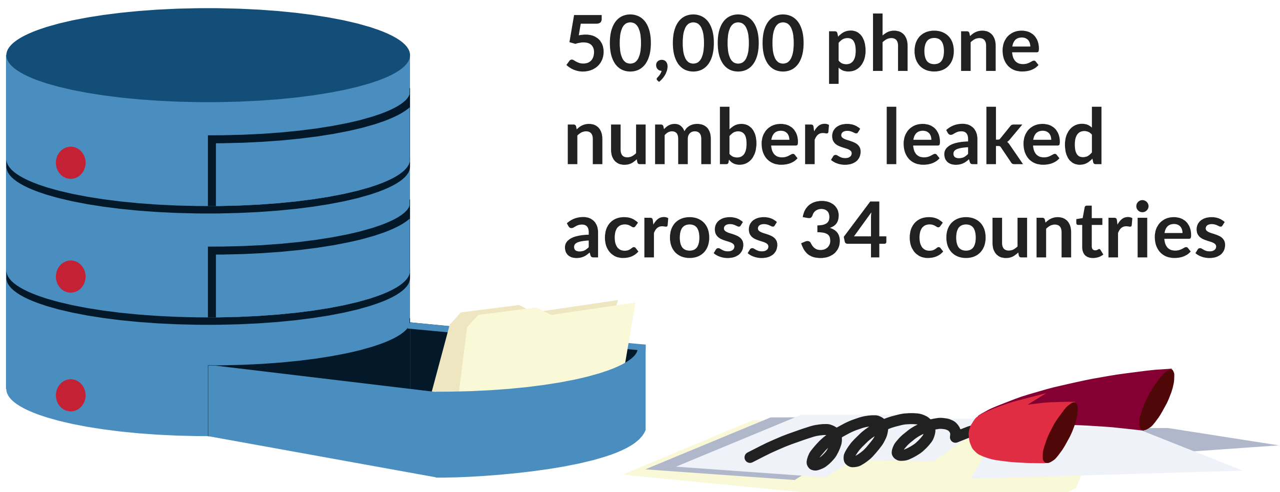
However, while the primary purpose of Pegasus is for governments to fight crime and terrorism, Pegasus's real-world uses have extended far beyond that.

Jamal Khashoggi was a prominent Saudi journalist who covered major stories such as the Soviet Invasion of Afghanistan and the rise of al-Qaeda's former leader Osama Bin Laden. Khashoggi served as an advisor to Saudi Arabia's royal family before falling out of favour and going into self-imposed exile on two separate occasions: to London in 2003 and then to the U.S. in 2017. While writing for the Washington Post in the U.S., Khashoggi published a monthly column criticizing Crown Prince Mohammed bin Salman, Saudi Arabia's de facto ruler at the time. On September 28, 2018, Khashoggi was murdered in the Saudi Consulate in Istanbul. His body was never found and the UN issued a statement saying that

Khashoggi's death "constituted an extrajudicial killing for which the state of the Kingdom of Saudi Arabia is responsible" and that there was "credible evidence" to warrant an investigation into Prince Mohammed. Amnesty International's Security Lab later uncovered that Pegasus was used to hack the devices of Khashoggi's wife, new fiancee, as well as his associate Wadah Khanfar, who was an Al Jazeera journalist, within a period beginning six months before the murder. The NSO Group vehemently denies that Pegasus was used to monitor Khashoggi, his relatives or his associates, contradicting the report by Amnesty International's Security Lab as well as Saudi Arabia's known use of Pegasus and its tarnished human rights record.

In 2021, a list of 50,000 phone numbers was published with clues as to who may be the target of past, present and future Pegasus attacks. The list included two Turkish officials deeply involved in the Khashoggi homicide investigation. Although NSO Group called the list "exaggerated" and the origin of the list remains unknown, an investigation by The Washington Post and sixteen media partners concluded a "tight correlation" between "a [phone number] on the list and the initiation of surveillance". Reporters identified more than 1,000 numbers on the list, including 65 executives, 85 activists, 189 journalists, and more than 600 politicians, which included French President Emmanuel Macron, Pakistan's then-Prime Minister Imran Khan and Morocco's King Mohammed VI. However, the greatest concentration of numbers was in Mexico, which made up over 30% of the list.

50,000 phone numbers leaked across 34 countries



In Mexico, Pegasus has been used in the suppression of journalists, democracy advocates and accusers of Mexican corruption. Javier Valdez was one of dozens of Pegasus's victims in the country. Valdez was a Mexican journalist and founder of Río Doce, a newspaper in Sinaloa, the home of El Chapo's Sinaloa cartel. Valdez investigated and reported on Mexican cartels, winning the International Press Freedom Award in 2011 for his courageous journalism. On May 15, 2017, Javier Valdez was shot 12 times in an assassination that was condemned by the U.S. embassy in Mexico, the EU, and the UN. It was later confirmed that Pegasus was used to infect the devices of Valdez's wife, who was also a journalist, as well as two of Valdez's colleagues at Río Doce.

The NSO Group and many of their clients, including Mexico, are in a constant precarious dance of bilateral reliance. Mexico's president, Andrés Manuel López Obrador, who promised to ban the illegal spying of Mexico's past was elected in 2018 and has, up until now, not lived up to that promise. On the other side, Israel's Ministry of Defense (IMOD), which must approve all exports of Pegasus, said it would not approve sales of Pegasus to countries with a risk of human rights violations. However, IMOD continues to allow Pegasus to be used in Mexico, as well as countries including Kazakhstan, Morocco and Saudi Arabia.

With Pegasus spyware, anyone can be spied on without them knowing, which could greatly impede their ability to do valuable work. We are nearing a reality where journalists can't conduct interviews without endangering themselves and their sources, activists can't hold meetings without risking government raids, and opposition politicians can't plan campaigns without the party in power anticipating their every move.

What is Being Done

In recent years, human rights activists in the EU have been lobbying to ban Pegasus. In 2021, despite licensing Pegasus just two years earlier, the U.S. put NSO Group on the Entity List, heavily restricting its ability to conduct business in the U.S. This signalled a sharp revision of the U.S.'s stance on the technology: from embracing the innovative spyware to essentially banning it and citing the threat it poses to "the privacy and security of individuals and organizations".

Meanwhile, in the private sector, Apple and Google, which make up 99.3% of the mobile operating system market, have been taking action to protect their users' digital privacy.

In July 2022, Apple launched "Lockdown Mode" on their devices, specifically designed to protect iPhone, iPad and Mac users from "highly sophisticated cyber attacks", as detailed by the company's website. The feature heavily restricts access to most apps, affecting both users and attackers, since apps are the most common attack points for zero-click attacks. The feature immediately paid dividends. It was reported that Apple's "Lockdown Mode" successfully blocked one of "at least 3" instances of a Pegasus attack conducted by the Mexican Army in October of 2022 against two Mexican human rights defenders. The report was published in 2023 by the Citizen Lab, a human rights watchdog based out of the University of Toronto, whose researchers have been targeted by international undercover agents in the past.

Meanwhile, Google has a Threat Analysis Group (TAG): a specialized team that "detects, analyzes, and disrupts serious and government-backed threats against Google and its users". Additionally, Google is in the third year of a five-year pledge to invest $10 Billion into cybersecurity, which includes commitments to protect users from "nation-state actors" and other cybercriminals, according to Kent Walker, Google's President of Global Affairs.

How People Can Protect Themselves

It is so vital to stay connected in today's digital society that even technology like Pegasus shouldn't have anyone running for the hills and switching to pigeon post. Whether you are optimistic or pessimistic about the uses of spyware technologies such as Pegasus, it is inevitable that spyware will continue to be used by entities around the world, for good and for bad.

While it is nearly impossible to fully protect your device from a Pegasus attack—Edward Snowden compared it to protecting oneself from nuclear weapons—there are ways to better secure your device from those who may not have your best interests at heart.

Protecting yourself from spear-phishing attacks is straightforward: never click on suspicious links and always think twice before divulging personal information, especially to people you do not know. These precautions are especially important in a world where 1.2% of all emails are malicious and, each year, 88% of organizations face spear phishing attacks.

Moreover, aside from protecting your device from spear phishing attacks, there are precautions you can take against zero-click attacks.

Firstly, it is important to ensure that your device's software is kept up to date. The companies behind the operating systems on most devices—including Apple iOS and Google Android—are constantly patching exploitable software and adding features to make their devices safer. By updating your device promptly, you are ensuring that any new security patches are installed on your device and attackers have a smaller window to take advantage of known vulnerabilities.

Moreover, hackers rely on a large surface area to carry out their attacks, meaning the more points of entry on a device, the easier it will be for them to find weaknesses in one of them. To reduce your device's attack surface, you should disable pop-ups and delete apps that you do not need. For essential apps, you should always download the official version from developers that you trust and make sure to keep them up-to-date.

Future of Pegasus

Despite the dangers when misused, it is hard to deny that Pegasus truly has potential for good when in the right hands. We can only imagine how the world could be different if Pegasus was around, and used for prevention, during 9/11, the Madrid Train Bombings or other similar tragedies. The question is, who decides who the right hands are?

Companies, including the NSO group, often have profit goals and shareholder interests at heart. Meanwhile, countries have internal, geopolitical, and economic interests that could influence their actions, including decisions about who to target or avoid targeting and which parties have access to powerful tools like Pegasus. Since 2019, Ukraine has been lobbying Israel to get access to Pegasus but has been refused, including at the onset of the Russia-Ukraine War, reportedly due to Israel's fear of angering Russian officials by licensing Pegasus to a regional foe. Since Pegasus licensing currently requires the approval of Israel's Ministry of Defense, Pegasus is frequently used as a bargaining chip supporting Israeli foreign policy.

Maybe technologies like Pegasus should fall under the oversight of a supranational entity like the United Nations. The UN could be a calming force to provide oversight, establish ethical guidelines and ensure that all uses of Pegasus comply with international human rights laws. But the UN likely won't be able to develop Pegasus in the way the NSO Group can. Additionally, what would be the incentive for the future development of bleeding-edge technologies that walk the line of good and evil in the name of technological development?

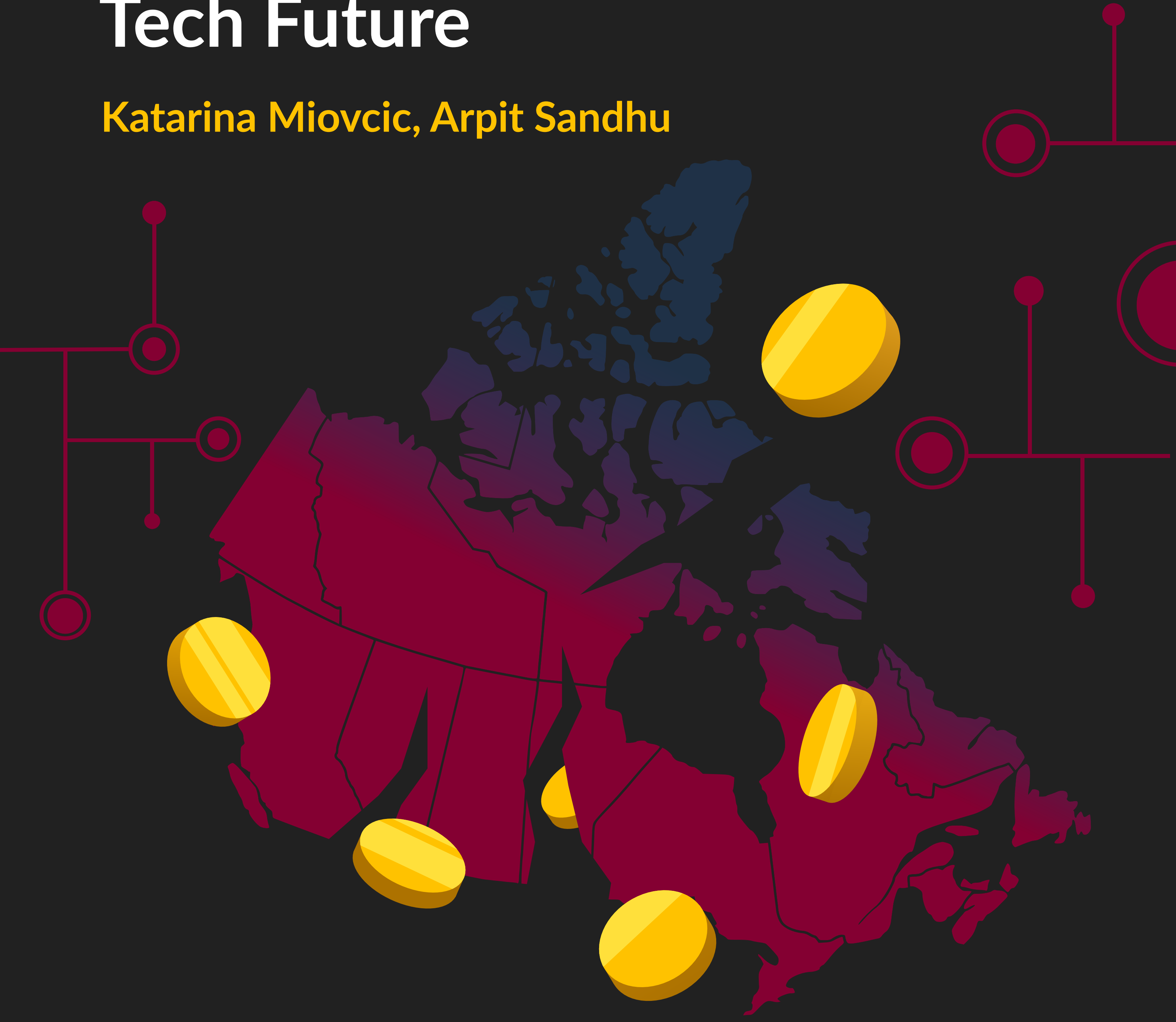
Either way, with each passing year, the world risks the emergence of more technologies that threaten our data, democracies, and lives. In a world where our online identities become increasingly prominent, we need to continue to advocate for companies and countries to prioritize people's online safety. This needs to include implementing policies that make clear when individual data can be legally accessed; for example, in a criminal investigation or in cases, beyond reasonable doubt, of illegal activity. Moreover, as cyberweapons become more powerful, and cybercrime has become a common prelude for physical crime, it is crucial to punish cybercriminals and cybercrime enablers, in the second degree for any crimes that result in their actions and careless distribution of their technologies. Finally, the world, including both the public and private sectors, must continue investing heavily in cybersecurity infrastructure and developing technologies that can protect their people and users

from cyberattacks. We must continue developing vaccines for the digital viruses we know are coming.

Business Strategy:

The Widening Tech Gap: Reshaping Canada's Tech Future

Katarina Miovcic, Arpit Sandhu



Illustrated by
Vivian Guo

Introduction

For many Canadians, the COVID-19 pandemic represented a brutal start to the 2020s. Lives were forever altered, numerous companies collapsed, and the financial markets were in disarray. Remarkably, in this rather depressing economic state, Canada's tech ecosystem reached its pinnacle. Dubbed the "Canadian Tech Boom", 2021 was a record-breaking year in which venture capital investments were at an all-time high; tech giants, like Microsoft, expanded their Canadian presence, and new talent stayed local due to the restrictions limiting travel.

However, as the pandemic subsided and restrictions were lifted, the tech heyday fizzled out. It became glaringly clear that the flaws impairing this country's tech industry resurfaced. The U.S. alternative proving once again why it is the mecca for success and growth in technology, as Canada continues to struggle with the lure of Silicon Valley poaching its STEM graduates, local startups looking to investors down south, and innovation thriving in the U.S. tech industry as Canada's lags behind in R&D investments.

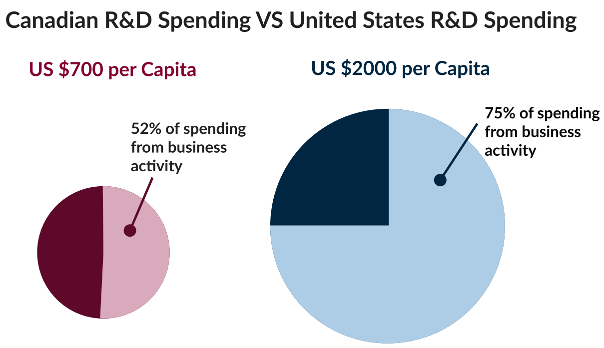
Nevertheless, this period of distinctive success proved that the country has the potential to be a dominant technology hub. Lamentably, the fact remains that in this post-COVID environment, Canada's startup and technology ecosystem remains fractured and the country's venture capital presence, founders, and new graduates are spilling through the cracks into the United States. If these realities are not sufficiently addressed, Canada risks losing a significant portion of its future position as a global leader in technology.

The article hopes to promote potential avenues in which the country can effectively grow its technology industry and address harmful insufficiencies in order to strengthen Canada's position on the global stage while maintaining the characteristics that make the industry uniquely Canadian. These avenues include bolstering investment in R&D, collaborative action by Canadian universities and companies to invest in their talent and research, and addressing how local VC investors may play an active role in boosting the Canadian technology environment despite the risk aversion plaguing the asset class.

Bolstering investment in R&D

Research and development (R&D) is a critical driver of future economic prosperity as it stimulates growth through innovation, invention, and progress. Investment in R&D can result in breakthroughs that drive profits for companies and the well-being of consumers.

A study released in June from Boston Consulting Group's Centre for Canada's Future found that Canada ranked second to last on total R&D spending per capita among its international peers. According to the data, Canadian R&D spending per capita averaged US$700, with 52% of spending coming from business activity, while the remainder came from government or higher education. In comparison, the United States hit US$2,000 in R&D investment per capita, with 75% of spending coming from business activity, while the minority came from public institutions.



This has proven to be a trend as in 2021, U.S. firms spent almost 103x more than Canadian firms on R&D, with a total of $529 billion compared to Canada's $5.2 billion, despite U.S. GDP only being 11.7x greater than Canada's.

Unfortunately, Canada's science and technology organizational structure is severely outdated as it operates nearly exactly as it has since the 1950s. Over several decades, Canada's economic policy objectives have remained vague, focusing mainly on the politics of "job creation." The country's capacity to take on research at scale is insubstantial, still relying heavily upon incremental innovation and safe bets. Realistically, Canada surpasses the majority of international competition in terms of public institutions disbursing experimental ideas to the marketplace. Yet, this is inconsequential as low business investment in R&D has resulted in low business demand for these ideas.

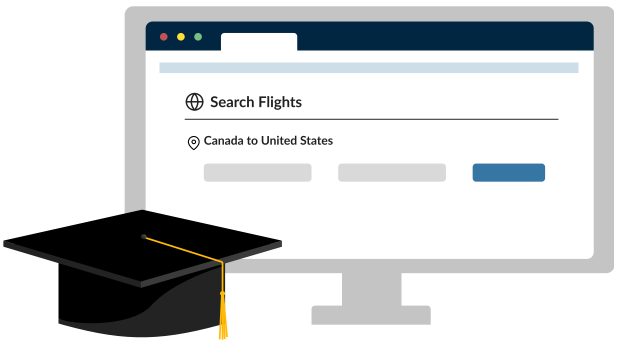
In order to establish its presence as a dominant tech hub, Canada must work diligently to institutionalize technology transfers from public R&D to industry. The country should consider the United States and its Defense Advanced Research Projects Agency (DARPA) as a model for transformative technologies that could be applied to complement the Canadian landscape. DARPA's extensive resume is undeniable, consisting of generational innovations such as the internet, RISC, global positioning satellites, drones, etc. The DARPA model does not simply focus on early-stage idea generation and activation. Rather, it breaks down its role as follows: (1) catalyzing breakthroughs and (2) assisting them through the innovation process. Similarly, in the Netherlands, TNO, the country's national applied research organization, provides significant contributions to the Dutch growth strategy by developing and transferring technologies that help companies boost their productivity and retain their license to operate.

Overall, rational companies will turn away from investing in breakthrough technologies, despite the rewards, if it involves high levels of risk and uncertain R&D timeframes. In turn, this requires governments to take a more hands-on approach. As briefly touched upon above, the internet, GPS, and touch screen are the direct results of partnerships formed between the public and private sectors in other countries to solve a problem. Canada's technology industry would benefit from implementing this similar model within future and current organizations (i.e., Canadian Innovation Corporation) that would focus largely upon "use-driven" research directed at resolving practical issues utilizing breakthrough technologies which, in turn, also solves the market failure and cracks in Canada's innovation ecosystem.

Universities need to incentivize companies to invest in their talent and research

The "Cali or Bust" mentality among Canadian STEM students, where many want to pursue opportunities in Silicon Valley as opposed to staying in Canada, is a concerning trend that reflects the challenges in Canada's science and tech ecosystem. According to Global Mail, Canada has been the worst-performing advanced economy in the Organization for Economic Co-operation and Development since 1976, with a significant brain drain of highly skilled tech workers heading to the U.S. annually, indicating a broken research and innovation ecosystem.

Currently, Canada is experiencing a loss of two-thirds of recent software engineering graduates and a third of computer engineering and computer science graduates to the United States.



To combat this trend, Canada can look to successful models, such as Samsung's collaboration with South Korean universities. Samsung's partnerships involve a comprehensive five-year program that integrates graduate and undergraduate students, providing them with industry-specific academic training and internship opportunities in the semiconductor space. This collaborative approach fosters a direct link between academia and industry, nurturing talent and preventing the brain drain that Canada is currently experiencing.

To counter this trend, universities must incentivize companies to invest in talent and research, by creating incentives such as increasing salaries, enhancing co-op placements with Canadian firms, and boosting government funding for research and development. By enhancing funding through programs like the federal government's Research Support Fund, universities can play a significant role in bridging the gap between research and industry, ultimately stabilizing Canada's position in the global technology landscape. This attracts Canadian students while making these institutions competitive on a global scale. When students have opportunities to participate in cutting-edge research projects, they are more likely to stay local to be part of these initiatives.

Without urgent measures to stabilize the technological skilled-labor market, Canada risks losing its technological future to global competitors.

To ensure that the government and universities receive a return on their investment in the innovation ecosystem, several strategies can be considered:

Public-Private Partnerships (PPP): Governments can encourage collaboration between public institutions, such as universities, and private companies through PPPs. These partnerships can involve joint funding for research projects, shared resources, and a commitment to leverage outcomes for mutual benefit. This allows students to engage in collaborative industry-related projects with companies locally rather than seeking these opportunities abroad.

Skills Development and Talent Retention: By investing in educational programs that align with industry needs, universities can contribute to the development of a skilled workforce. This not only addresses the talent drain issue but also ensures that graduates are well-equipped to contribute meaningfully to the workforce, making them attractive to Canadian companies. A skilled workforce attracts businesses, leading to economic growth, increased tax revenue, and reduced unemployment, resulting in a positive economic impact for the Canadian government.

Global Competitiveness:
Governments can position their investments as strategies to enhance the country's global competitiveness. If governments invest in new Canadian graduates, it would contribute to the country's reputation as a problem solver, attracting partnerships, and opening opportunities for economic growth. A thriving research and innovation ecosystem can lead to the development of cutting-edge technologies and solutions to future problems.

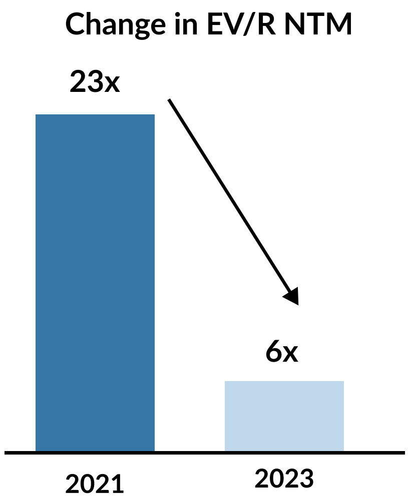
The role Canadian VCs need to undertake

Gone are the days of the investor "FOMO" that ran rampant when VC funding hit its peak in 2021; venture capitalists are now far more comfortable sitting on the sidelines. This strong inclination towards risk aversion is the result of multiple factors, such as rising interest rates, public market valuations restricting VC-backed exits through IPOs, and more. This has contributed to venture being the sole private investment strategy that produced a negative one-year return on a global scale. The distinctiveness of this outcome is substantiated by venture having topped the global charts within private investment strategies for three and five-year returns, and ranked second behind only private equity for ten-year returns. From a positive angle, this establishes that VC has a storied history of behaving as a pivotal driver of economic growth and progress in countries across the world, Canada undeniably included.

Nonetheless, the recent international trends plaguing the industry have been blatantly apparent within the country. This is clearly depicted in the first half of 2023, in which VC disbursements to Canadian companies amounted to ~$3 billion, representing a roughly 60% decrease from that same period in 2022. Yet, while the lack of funding is unquestionably concerning, this is plausibly not a pressing long-term issue. In fact, an argument can easily be made that the following current market conditions make a rather convincing argument for continuing to invest in Canadian technology startups:

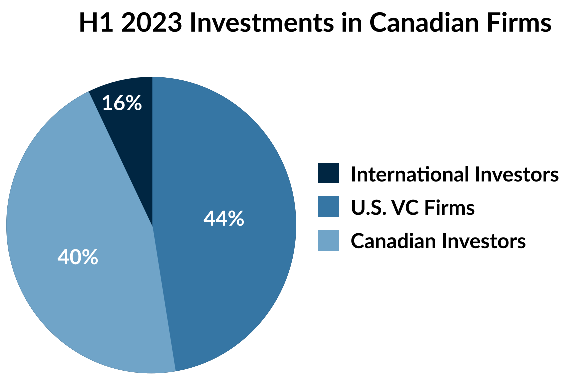
1. **Valuation multiples have considerably decreased, causing entry multiples to decrease.** This regression helps

investors enhance confidence regarding a company's ability to exit at similar valuation levels, thus setting less risk upon the exit-multiple.



2. **Pursuing profitability has become the main priority for tech companies,** as the lack of funding discourages them from operating in "cash burn mode". Ultimately, producing fundamentally sustainable and reliable businesses for investors to diligence.

Regardless, it appears that international investors are far more intrigued by these investing conditions than their Canadian counterparts. In H1 2023, U.S. VC firms provided the majority of the ~$3 billion in funding, accounting for 44% ($1.43 billion) of total VC investments. International investors, outside of North America, totaled 16% of investments and the remaining 40% was provided by



Canadian investors. These results have extended from 2021 in which 72% of investments in Canadian firms were made by foreign investors, with 56% coming from the U.S. alone. To the country's benefit, the diversification in the regional source of capital in Canada shows increasing international recognition of the competitiveness of Canadian startups and the attractiveness of the local venture capital asset class.

However, these statistics also raise valid concerns regarding the probability of keeping Canadian startups local in order to continue reaping the economic benefits that come with their exits and continued success. When analyzing Canada's tech heyday, of approximately 400 VC-backed companies involved in M&A between January 2019 and February 2021, over half were acquired by foreign investors. Of those that stayed local after being taken over, 71% had a majority of original Canadian investors, suggesting that a greater share of domestic owners is a decent predictor that a company's post-takeover owners will also be Canadian. Overall, this illustrates the need for Canadian investors to be active and majority investors in our local startups, as their participation bolsters economic progress and the tech landscape from the early-stage startup to exit.

Conclusion

Canada's technology ecosystem suffers from a number of critical flaws that are creating opportunities for international competitors to swoop in and extract startups, emerging talent, and the significance of local venture capital investors. Paired alongside a dreary macroeconomic environment that overshadows the country's strengths, the days of the "Canadian Tech Boom" could not seem further away. However, this sentiment does not negate from the fact that the country's technology industry is brimming with potential. From world-class universities to a storied history of successful local startups and technology investments, Canada has the ability to right the ship and cement itself as a top technology destination. The many statistics that afflict the prosperity of the country's tech sector are clear and the individual industry and institutional roles that can be enacted have been outlined. The overarching theme is that these varying groups will not maximize innovation and success if they work in isolation. Canadian suppliers, customers, investors, universities, research and government institutions need to band together to mend the fractures within the country's technology industry.

Business Strategy:

The Double-Edged Sword of Foreign Investment: Unveiling the Cynicism of Economic Rebuilding

Arnav Sheth
Gurpartap Thap

Illustrated by
Devena Mohabir

Introduction

In the grand narrative of rebuilding distressed or developing economies, foreign investment (FI) often takes center stage as a beacon of hope and progress. Governments and corporations champion the infusion of capital from abroad as a catalyst for economic growth, job creation, and technological advancement. To some extent, the FI received does contribute to these factors by allowing countries to rebuild and providing many corporations with the resources they need to be successful.

However, beneath the veneer of positive rhetoric, a critical examination reveals a more complex reality. This article contends that despite the ostensibly positive themes surrounding the rebuilding of economies through foreign investment for many underdeveloped countries, the net impact on the people in those economies is often negative as it results in debt-trap diplomacy, exploitative labor practices and cultural erosion. Through the lens of historical examples, this argument will explore impacts that shed light on the dark side of foreign investment.

Debt Dependency: The Latin American Debt Crisis

Despite the continuous contributions of foreign investment in South American economies since the 1980s, there has been minimal observable impact on economic growth, indicating a lack of correlation between foreign investment and sustained expansion. The Latin American Debt Crisis of the 1980s stands as a stark example of how foreign investment, while initially intended to spur economic development, resulted in a web of debt that ensnared the region for years to come. In the 1970s, many Latin American countries eagerly embraced foreign loans to finance ambitious development projects. These loans, primarily from international banks, were often used to modernize infrastructure, stimulate industrial growth, and address social issues.

During this period, Mexico, under President José López Portillo, borrowed heavily to fund ambitious projects, including the state-run oil company Pemex. However, the global economic landscape shifted with the oil price shocks of the late 1970s. As oil prices skyrocketed, many Latin American countries, heavily dependent on oil exports, flourished momentarily, but the boom was short-lived. When oil prices plummeted in the early 1980s, countries like Mexico found themselves unable to service their burgeoning debts.

The debt crisis, which initially surfaced in Mexico in 1982, quickly spread throughout the region, affecting countries like Brazil, Argentina, and Peru. The International Monetary Fund (IMF) and the World Bank stepped in with bailout packages, but these came with stringent conditions. The imposition of neoliberal economic policies, including austerity measures, privatization, and deregulation, exacerbated social inequalities and disproportionately impacted the most vulnerable segments of the population.

In Brazil, for instance, the government, under pressure from creditors, implemented austerity measures that led to widespread

unemployment, social unrest, and a decline in living standards. The economic reforms imposed by the IMF also favored foreign investors and multinational corporations by expanding their business at the expense of local industries and workers, perpetuating a cycle of dependency.

The debt crisis had far-reaching consequences on Latin American economies, pushing millions into poverty and creating a lost decade of economic stagnation. The negative impacts of foreign investment became glaringly evident as the promised benefits of development projects gave way to a vicious cycle of debt and austerity. Initially welcomed and embraced as a catalyst for progress, foreign investment in the region has left unintended consequences that have enduringly influenced the economic and social fabric, emphasizing the imperative for a more nuanced approach to international financial relations in the subsequent context.

Labor Exploitation: The Asian Sweatshops

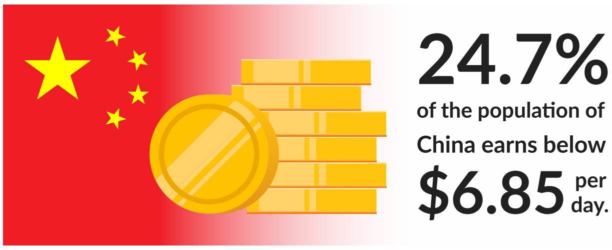
Analyzing the evolution of Asian sweatshops from the mid-20th century to the 21st century's globalized supply chains, we observe a pattern of exploitation and socio-economic disparities fueled by foreign investment. The story begins in the mid-20th century when Asian countries, particularly those in Southeast Asia, attracted foreign investment to kickstart their industrialization. Initially heralded as a means of fostering economic growth and providing jobs, the reality within the sweatshop walls would soon unveil a different narrative.

In the 1950s and 1960s, Japan and South Korea, rising from the ashes of World War II and the Korean War, respectively, eagerly welcomed foreign investment to rebuild their war-torn economies. The textile and garment industries became early beneficiaries of this influx of capital. However, the pursuit of low-cost production to remain competitive in the global market laid the groundwork for exploitative labor practices. Long working hours, low wages, and minimal job security characterized early sweatshops in these nations.

As Japan and South Korea transitioned to higher-value industries, foreign investors shifted their gaze to Southeast Asian countries like Thailand, Indonesia, and Malaysia. The advent of globalization further fueled the demand for cheap labor, and multinational corporations sought to capitalize on the comparatively low production costs in these nations. The rise of the export-oriented industrialization model in the region brought about rapid economic growth but also entrenched the sweatshop culture.

The 21st century witnessed the globalization of supply chains, with multinational corporations establishing a vast network of subcontractors across Asia. Countries such as China became epicenters of mass production, drawing millions of workers from rural areas to urban sweatshops. While economic growth surged, labor conditions deteriorated. Reports of child labor, unsafe working conditions, and egregious human rights violations became commonplace in the race to meet production quotas and maintain profit margins.

Historically, Asian sweatshops have perpetuated a cycle of poverty rather than serving as vehicles for socio-economic upliftment. The promise of job creation and economic development has often come at the expense of the well-being of the labor force. The negative impact of foreign investment on the lives of workers, particularly in the garment and electronics industries, highlights the urgent need for ethical business practices, improved labor standards, and a more equitable distribution of the benefits of globalization. All in all, Asian sweatshops, fueled by foreign investment, reveal a cycle of exploitation and inequality while highlighting the disparities that exist in the nature of foreign investment.



Cultural Erosion: The Impact on Indigenous Communities in Africa

The impact of foreign investment on indigenous communities in Africa unfolds through a chronological lens, tracing a history marked by cultural erosion and socio-environmental disruption. The story begins during the colonial era when European powers, driven by economic motives, sought to exploit Africa's abundant natural resources.

In the colonial period, European powers disrupted indigenous communities and their traditional practices in pursuit of economic gain. Valuable resources, such as minerals and timber, were extracted, leading to the displacement of local communities and the imposition of foreign norms and governance structures.

After gaining independence in the mid-20th century, many African nations saw foreign investment as a catalyst for economic development. However, the legacy of neo-colonialism persisted as multinational corporations continued exploiting natural resources.

The case of the Ogoni people in Nigeria, facing segregation and having their land and rights usurped, exemplifies the struggles faced by indigenous communities dealing with the environmental and cultural impacts of oil extraction by foreign companies.

With the rise of globalization, multinational corporations extended their influence into Africa, targeting regions rich in natural resources. The diamond trade in Sierra Leone is illustrative of the exploitation that often resulted in the displacement of indigenous communities. Foreign companies, driven by profit, frequently overlooked the ecological and cultural significance of these areas, which contributed to the erosion of traditional knowledge and practices.

In recent years, the Amazon Rainforest, home to numerous indigenous communities, has faced unprecedented pressure from foreign interests seeking to exploit its resources. Logging, mining, and agribusiness have encroached upon indigenous territories, leading to deforestation and the loss of biodiversity. Indigenous groups in Africa, similar to those in the Amazon, face the challenge of preserving their cultural heritage amidst the encroachment of foreign-driven activities.

The historical narrative of foreign investment in Africa underscores persistent challenges faced by indigenous communities. Despite promises of economic development, the net impact has often been negative, characterized by cultural erosion, environmental degradation, and social dislocation. Addressing these challenges requires acknowledging and rectifying the historical injustices and ongoing struggles faced by Africa's indigenous populations in the wake of foreign investment.

While the allure of foreign investment as a mechanism for rebuilding distressed or developing economies is undeniable, the historical examples presented here caution against blind optimism. The net impact on the people in these economies is often negative, marked by resource exploitation, debt dependency, labor exploitation, cultural erosion, and environmental degradation. As we navigate the complex terrain of global economic relations, it is imperative to scrutinize the true costs of foreign investment and seek a more equitable and sustainable approach to rebuilding economies.

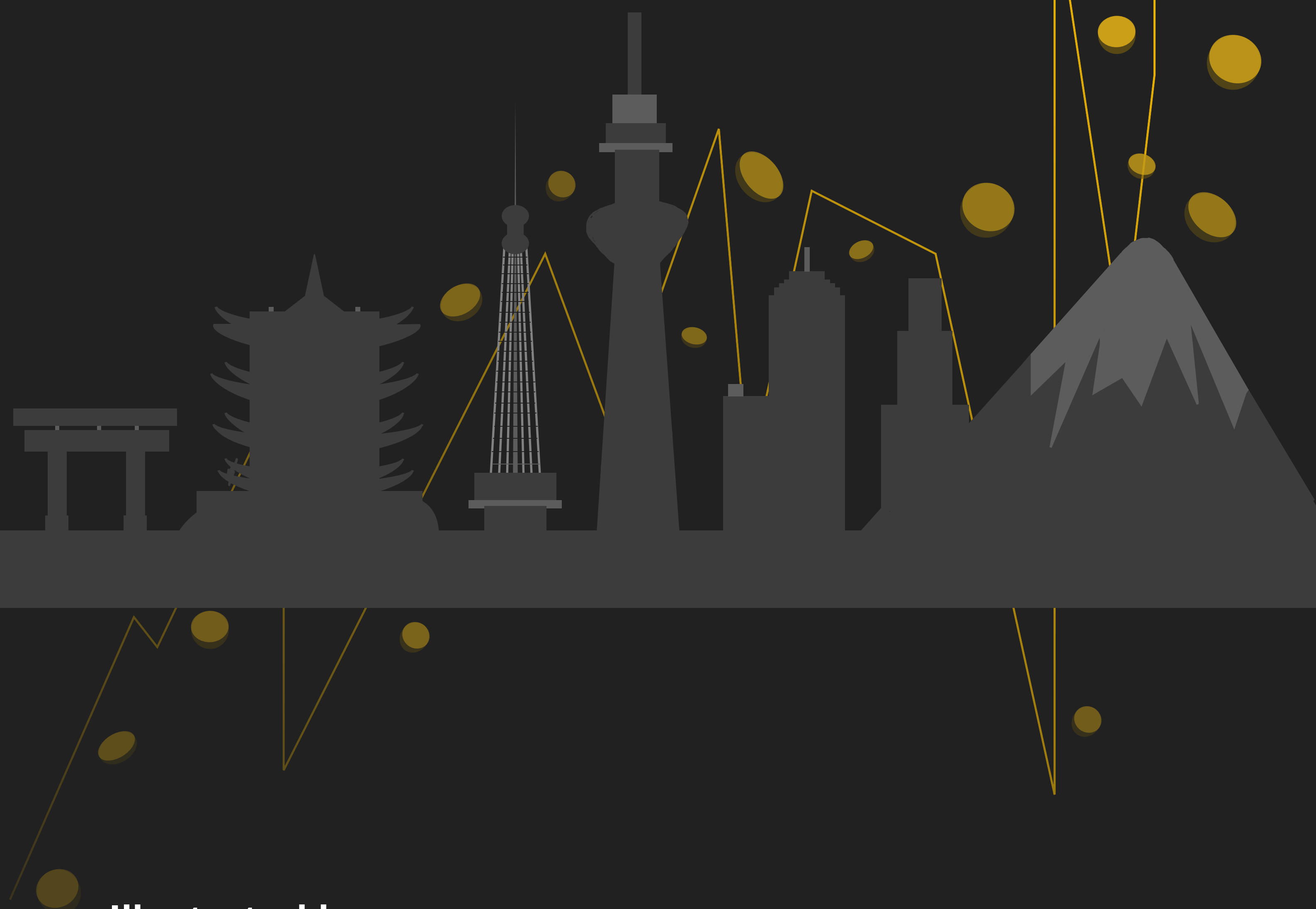
Conclusion

In the optimistic pursuit of economic rebuilding, employment opportunities, and technological advancement through foreign investment, the unfolding narratives of Latin America's debt-trap diplomacy, the struggles faced by Asia's sweatshops, and Africa's cultural erosion present the cynical nature of foreign investment. Behind the clear progress made lies the reality of exploitation, debt entanglements, and shattered traditions. As explored in the article, despite the attractiveness of foreign investment as a catalyst for rebuilding distressed economies, these historical examples caution against blind optimism. The stories of Latin America, Asia, and Africa collectively emphasize the need for us to remedy our approach and shift toward a more conscientious, equitable, and sustainable path to rebuilding economies without sacrifice of human well-being.

Business Strategy:

Japan’s Corporations: A Path to Prosperity

Manu Krishna
Siddhant Kapur



Illustrated by
Nirva Bharwada

Introduction

Japan was once the second largest economy in the world, with its economic presence so well established by the 1980s that some people anticipated it to become the next global economic powerhouse. However, Japanese society as a whole had several cultural and structural issues that were left unaddressed, which significantly impeded its ability to truly become the economic hegemon that they expected it to be. Now, coming into modern day, we examine how Japanese corporations have shaped the Japanese economy and how the country could propel itself back into an era of prosperity through its changing corporate landscape.

> "In the next decade or two Japan almost inevitably will achieve giant economic, technological, and financial stature, that very likely it will become financially and politically powerful in international affairs, and that eventually it is likely to strive to become a military superpower as well.
>
> ~ Herman Khan"

History & Context

After the Second World War and before the advent of the Cold War, Japan saw tremendous economic growth, with its GDP rapidly increasing from $44.31B in 1960 to $3.13T in 1990. Dubbed the Japanese Economic Miracle, this period was brought about mainly due to technological changes and investment in various industries, along with economic reforms and heavy lending that led to the rapid industrialization of the Japanese economy.

Following this rapid growth, Japan faced a decade-long economic crisis, commonly known as "The Lost Decade". This crisis originated due to excessive monetary easing that led to massive valuations in real estate and stocks, only for it to come crashing down in the early 1990s when the Bank of Japan tightened its monetary policy.

In the years after The Lost Decade, Japan's economy remained stagnant. This was due to a multitude of external and underlying structural issues that impacted the country. Firstly, there was a rapidly aging population and decreasing birth rates. This meant that the proportion of people who were in the workforce and contributing to the economy was steadily being outnumbered by the retired population that needed to be provided for. Secondly, there were extremely high savings rates in the population and a declining trend in private investment. Finally, the corporate structure of Japan worked to culturally disincentivize foreign investment and the growth of shareholder profits. These structural issues, coupled with external shocks like the Tohoku disaster and The Great Recession, meant that the quantitative easing policies implemented in the 2000s forced the Japanese government to take on an incredible amount of debt. Consequently, Japan held more public debt as a proportion of GDP than any other fully developed nation, further undermining their ability to become an economic powerhouse.

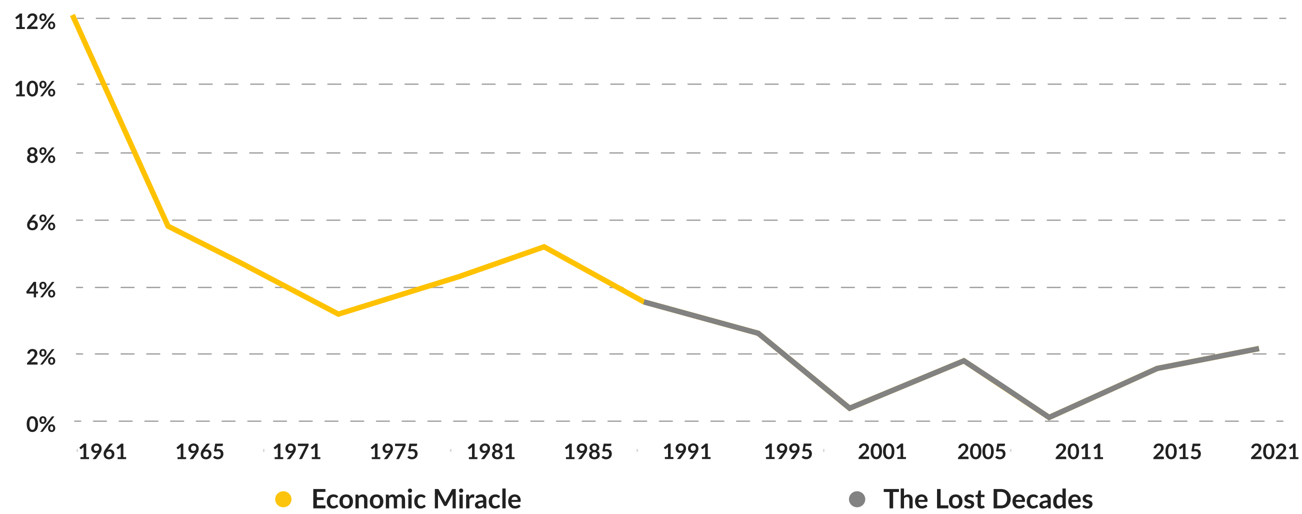
The Role of Corporations in the Japanese Economy

To explore how corporations play a role in the Japanese Economy and why it declined so heavily from the 1990s, we first need to understand their corporate structure.

The Japanese corporate structure varies quite significantly from Western economies like the US. Firms in Japan tend to be more stakeholder-oriented than shareholder-oriented, and they are often interlinked with other firms in a system known as Keiretsu, which encourages partnership and cross-shareholding that limits the influence of external shareholders. In addition, they tend to have a board of directors dominated by insiders rather than

Japan - GDP Growth %

Source: worldbank.org. 2023

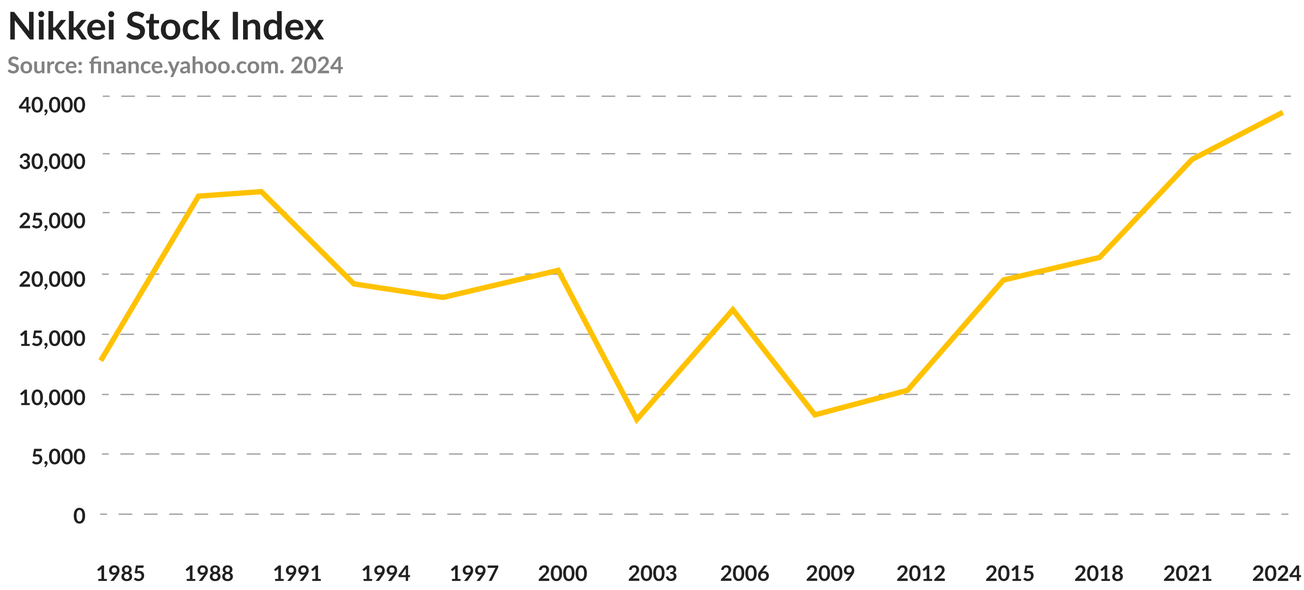


the external BOD system that the US relies on to protect shareholder interests. Japanese employment culture further exemplifies firms' stakeholder orientation. Firms encourage long-term employment through seniority-based pay instead of merit-based pay, and the average employee is fiercely loyal, with service firms existing for the sole purpose of quitting jobs on behalf of an individual. These characteristics are fatal flaws as they mean that foreign investors, innovators and entrepreneurs have little incentive to invest in these corporations. In fact, despite it being the third-largest economy, Japan ranks low in all international reports on entrepreneurship. For example, in the 2023 IMD World Competitiveness Yearbook, Japan ranks 35th among 64 countries, well behind other developed economies such as the US, UK, Germany, and China, all found in the top 20.

Over time, the Japanese government has made several reforms that aim to encourage a more shareholder-oriented focus in Japanese corporations. In 2014, stewardship codes were introduced to aid institutional investors in setting goals and disclosure for the firms that they invest in. Over 300 institutions in Japan participated in this disclosure as of 2023, driving profitability through active voting in the investee firms.

More recently, Japanese Prime Minister Fumio Kishida has set certain policy goals surrounding wage growth in the country with an aim to encourage the growth of the economy. While these are just targets, it is important to consider that in a nation like Japan that is heavy on collectivist culture, merely setting these targets means that there will be a very active push from the government and corporations to meet these targets.

The culture in Japan is very adequately summarized by the phrase, "The nail that sticks out is the one that is hammered down". Japanese society has evolved in such a way that conformity and collectivism is expected and encouraged, which is precisely why in order for Japan to grow meaningfully, the government and institutions need to start incentivizing companies to bring about the changes they want to see. A recent example of this is the Japanese Exchange Group highlighting companies that succeed in improving shareholder value by bringing their price-to-book ratio above one. This added an underlying pressure to the 45% of companies that have not accomplished this task and would encourage them to prioritize value.



These corporations that have long stood as bastions of stability and long-term employment in Japan are now increasingly recognized as vehicles for the country's economic growth. Firms are seeing more foreign investment, furthering their transition into a shareholder-oriented structure. In fact, a goal was set to double inward FDI (Foreign Direct Investment) by the Japanese government in 2013 and they achieved this by 2020, with inward FDI stock at about 8.4% of Japan's GDP. Recognizing the importance of attracting FDI, the government announced in April 2023 that they plan to have their inward FDI stock reach 20% of their GDP by 2030.

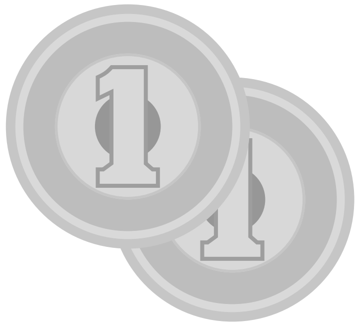
This cultural and structural transition is evident through cases like that of Sharp Corporation, a major player in Japan's technology sector that was plagued by financial distress despite receiving two bank bailouts. Instead of turning to the banks again, Sharp Corporation ended up being acquired by the Taiwanese company Foxconn in 2016. The impact of this decision was evident in the market's reaction to the news, fueling a 29% increase in the company's share price over just two days. This decision essentially indicated to foreign investors that Japan was open to foreign involvement, with Sharp prioritizing market-driven decisions over state-backed alternatives. More recently, Warren Buffet himself has shown increased interest in the country by increasing Berkshire Hathaway's stake in the top 5 trading companies in Japan to an average of more than 8.5%.

This increased pressure from the government and increased attention to shareholders from corporations have resulted in the Nikkei 225, a major Japanese stock exchange, reaching a 33-year high in 2023. The exchange index appreciated nearly 30% over the year, indicating the positive outlook that global investors have for their economy.

Conclusion

In researching this article, we had the opportunity to get in touch with the former president of the Japan Studies Association of Canada, Dr. Ken Coates, who provided incredible insight into how Japan tends to operate, with government and corporations working together for the sake of the country, rather than how it tends to work in the west where policies and reforms are imposed on the corporations and there isn't a collectivist culture for the sake of the nation.

This collectivist culture and cooperation between corporations and government will play a key role in the prosperity of the nation. Since Japan's economic situation is challenging and multi-faceted, it will require several changes from the corporations, the people of the country and government action to bring about the changes required for their economy to truly prosper.



From a societal point of view, there needs to be an active effort from the government, corporations and the people of Japan to encourage foreign investment and drive the growth of SMEs. Recent efforts like Beyond Japan, a program aimed at encouraging Japanese startup culture and wage hikes for SMEs at three-decade-long highs are steps in the right direction. It is easy to forget, but even massive corporations like Sony, Panasonic and Toyota who have contributed significantly to the Japanese economy were once startups.

From a corporation's point of view, there needs to be a substantial shift from lifetime employment practices and seniority-based wage systems into a merit-based approach. These changes will encourage employee excellence and promote the growth of young entrepreneurs. There are already indications of a shift towards this mindset as evidenced by Toyota's new CEO Koji Sato's commentary that the firm will embrace a more flexible and merit-based approach to rewarding and promoting employees. As we see more companies adopting this approach, it slowly chips away at the residuals of a bygone era of stakeholder prioritization, leading to more growth for the Japanese Economy.

Additionally, by further aligning themselves with the government's targets for wage growth, putting more money in the hands of the Japanese population and spurring consumer spending, and overhauling outdated systems like seniority-based pay, the corporations of Japan have an incredible role to play in shaping the country's economy for years to come.

Japanese corporations, which are at a nexus of age-old practices and modern reforms, now have the opportunity to become a true catalyst for a new era of Japanese prosperity. This opportunity, when fueled by change, may finally put an end to the economic stagnation that has become synonymous with their economy.

Technology:

From Dollars to Digits: Navigating the Shadows of a Cashless Society

Ali Ravjani, Leo Stetsyuk

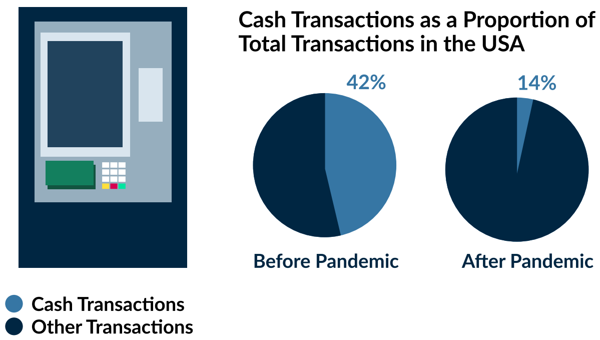
Illustrated by
Nirva Bharwada
Vivian Guo

Introduction: How Did We Get to a Cashless Society?

The landscape of financial transactions has undergone a profound transformation that steers developed societies towards a future less reliant on cash. This shift was orchestrated by a confluence of technological advancements and changing preferences amongst newer generations. The increased demand for digitized currency, fueled by the convenience of online banking and e-commerce has continuously been a driving force behind this evolution, especially in a post-pandemic society.

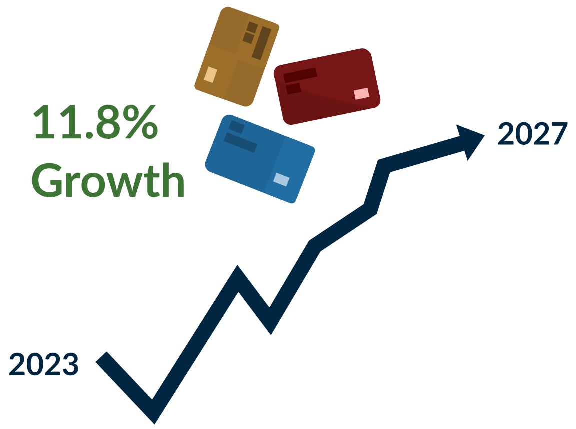
In a single generation, cash has experienced a sharp decline in its prominence as a payment method, raising concerns about its future. The transition towards a cashless society, beneath a facade of benefits, is marked by negative consequences, including disproportionate impacts on low-income individuals, financial illiteracy, and a heavy reliance on alternative payment methods such as credit. These consequences exacerbate economic disparities and accessibility for certain segments of the population.

These effects are witnessed firsthand within cash-centric industries such as the ATM industry, which is rapidly shrinking in the USA due to the lack of cash transactions, which have dropped to just 14% of total transactions from 42% prior to the pandemic.



Amid this declining utilization of cash, many banks have resorted to reducing the number of ATMs they control, with the total ATMs in the USA dropping by over 20,000 in 2022. The decline in accessibility of ATMs has had far-reaching implications, particularly within rural and low-income areas. As these physical cash access points dwindle, the impact is felt disproportionately in communities that heavily rely on cash as a means of transactions.

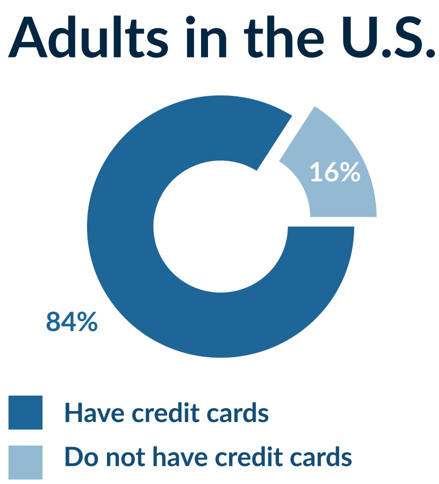
The decrease in cash usage is mainly driven by the middle and upper-class population that have instead moved to alternate mediums such as DeFi and online banking models. The advent of Decentralized Finance (DeFi) allows the population to perform financial transactions without relying on a medium such as a bank. Although potentially reducing costs and increasing anonymity, the platform raises questions about fraud and illicit activities. Credit and debit cards, on the contrary, are considered a safer medium compared to DeFi. They have played a central role in propelling society towards a cashless future, driven by the trifecta of convenience, speed, and security they offer. The transaction value of these mediums of payment is projected to increase by 11.8% between 2023 and 2027.



Beyond mere convenience, banks have regularly focused on promoting the use of credit cards by offering rewards such as points, due to the potential of earning higher fees from increased APRs for certain parts of the population.

A majority of consumers are increasingly finding greater use of digital channels of transactions such as DeFi and online banking. Each channel has risks accompanying its benefits. DeFi allows the population to have more ownership of their assets and creates more accessibility compared to traditional financial systems.

However, risks such as the volatile cryptocurrency environment and regulatory uncertainties nurturing illicit activities conducted through this medium are much less discernible by the average consumer. Additionally, Online Banking, through the use of credit and debit cards, provides a convenient and secure method of conducting transactions, leading to 84% of U.S adults owning a credit card.



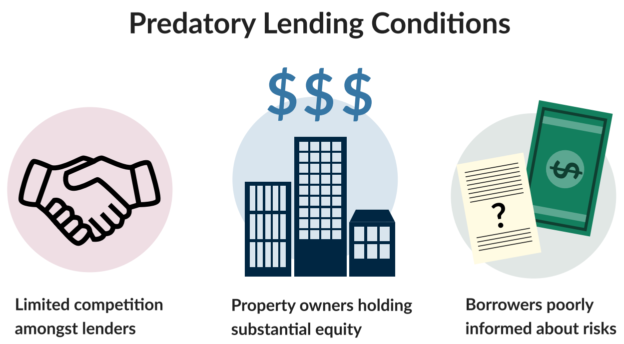
These also pose risks for segments of the population who have not been educated about the mechanics of interest rates and overdraft fees, which banks tend to capitalize on.

Section I: The Psychology of Cash and Cashless Transactions

Understanding the psychology behind the various cashless transaction mediums provides crucial insight into consumer behaviour. With their tangible nature, cash transactions evoke unique psychological responses compared to cashless alternatives such as credit, cryptocurrency, and the recently popular Buy Now, Pay Later (BNPL) arrangements. A study by the National Library of Medicine found that non-cash payments not only reduce the "pain of paying", but also evoke a "pleasure of paying", potentially increasing the tendency to make impulsive purchases. Cash payments on the other hand trigger a heightened awareness of risk factors associated with purchase decisions, leading consumers to scrutinise product quality and evaluate health risks more attentively.

Amidst the transition to cashless payment methods, a crucial question emerges: Are people sufficiently educated about non-cash mediums such as credit or BNPL? A 2022 survey conducted by ISPSOS revealed that one in three American adults is financially illiterate. This is occurring despite a focus in 18 states to integrate "personal financial education" within their curriculums. However, a deeper dive into the content reveals that the focus remains limited to basics such as spending responsibly and building saving habits. Attempts to educate the population on effective usage of digital banking methods must take into account the specific issues that uneducated lendees have faced historically. The historical context, particularly when focusing on the Great Financial Crisis, reveals that banks have often taken advantage of the lack of financial literacy within the population. Predatory lending (defined as imposing unfair or abusive loan terms on a borrower) towards subprime borrowers was criticized for being one of the major factors that led to the 2008 financial crisis.

Larger financial institutions were notorious for using deceptive tactics to offer unfavourable loans that capitalized on the financial literacy of consumers. Predatory lending thrived in specific market conditions: limited competition among lenders, property owners holding substantial equity, and borrowers being poorly informed about risks.



All the aforementioned market conditions are still prevalent in the modern day banking environment. This unethical practice often targets individuals with poor credit histories and low incomes and is further fueled by the increasing dependence on digital currency which banks are continuously looking to exploit.

Section II: The Impact of a Cashless Society on Diverse Segments

The relentless push towards a cashless society has triggered a cascade of effects on various segments of the population with distinct repercussions emerging especially in the aftermath of the pandemic. The pandemic, while reshaping global realities, also left a permanent mark on the financial situations and customs of the population which many people at the time thought would only be temporary. As people grappled with the economic fallout, there was a discernible trend of an increased debt burden and a surge in delinquency rates post-COVID despite the decrease in the poverty rate attributed mainly to stimulus checks.

The low-income population, a demographic where 50% of the population segment relies on cash for a majority of purchases, faced distinctive challenges amidst this push toward other mediums of payment.

50% of the low-income demographic relies on cash for majority of their purchases

The shift has, in more cases than one, exacerbated the financial vulnerability of this group. Additionally, the aging population, holding a substantial 83% of U.S. household wealth, found themselves grappling with a new technological focus in banking. Despite 81% of the older generation owning a smartphone, over half have not transacted through a digital medium. This disconnect stems from concerns about security, limited capabilities, and a preference for personal interactions.

Security risks loom large in the wake of an increasingly digital method of payments.

As financial transactions move online, the vulnerabilities to cyber threats and fraud multiply. The convenience of digital payments must be harmonized with robust cybersecurity measures to mitigate the risks and ensure financial safety.

Conclusion: Navigating the Cashless Horizon

As societies traverse the evolving landscape of financial transactions, the inexorable shift towards a cashless future is both evident and complex. Since the pandemic, cash transactions make up just 14% of total transactions which can be seen through an uptick in the closures of ATMs, a once ubiquitous symbol of cash accessibility. With one-third of these closures occurring within low-income neighbourhoods, this shift has not occurred uniformly and the repercussions are starkly disparate, impacting rural areas and low-income earners disproportionately. A segment of the population, where almost half the demographic relies on cash for a majority of their transactions.

Understanding the psychological nuances behind cash and cashless transactions unravels the intricate tapestry of consumer behaviour. The appeal of non-cash payments and the heightened risk awareness associated with tangible cash transactions shape how individuals interact with the evolving financial landscape. Historical echoes of predatory lending during the 2008 crisis serve as a stark reminder of the focus on financial literacy within the population. This is slowly being mitigated with the rise of educational boards in the USA increasingly focusing on cultivating strong financial literacy within their students, albeit with a curriculum that could be improved to include more information on digital banking policies.

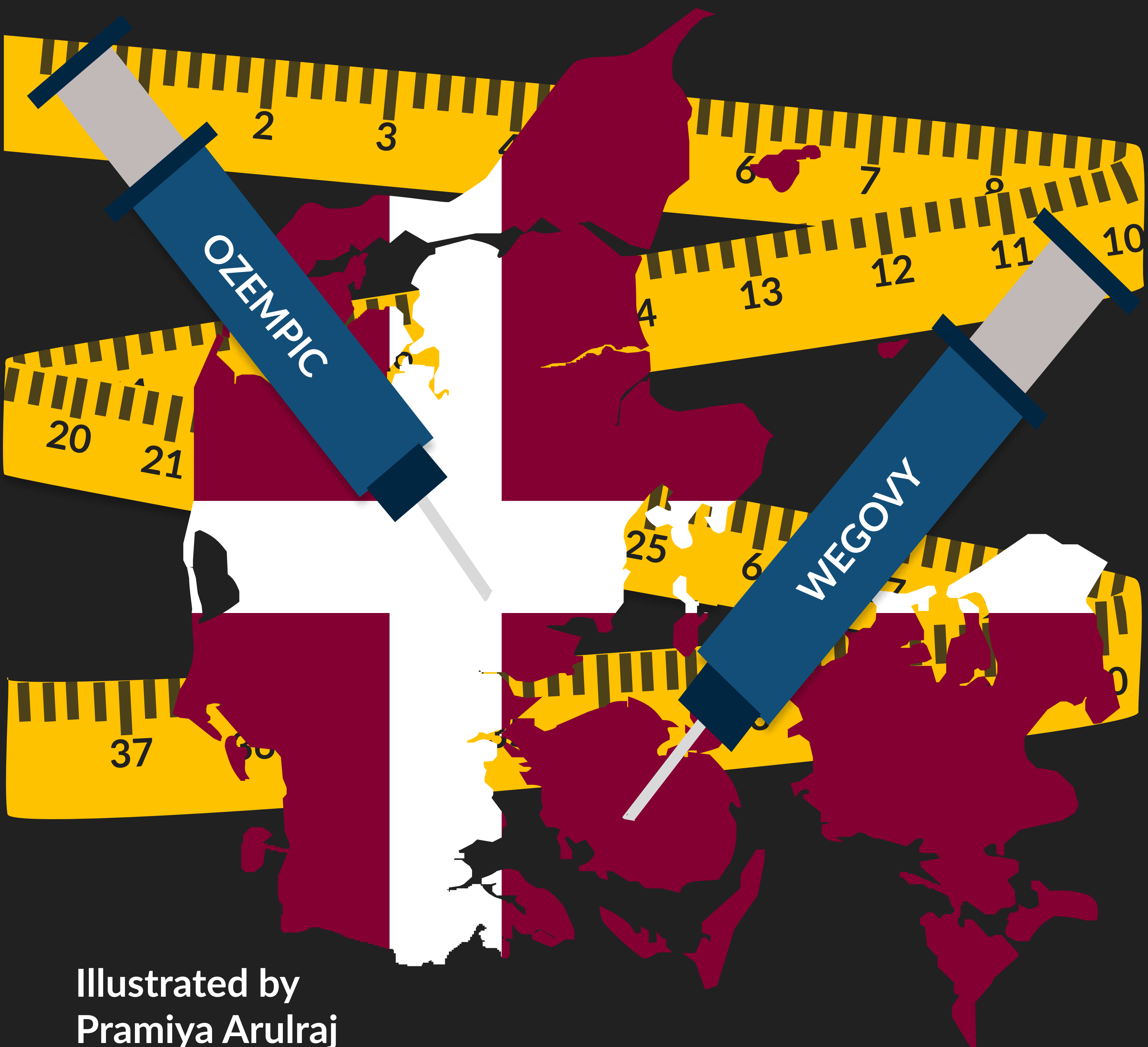
The impact of this transition to a cashless society has affected many diverse segments that make up the population. The low-income population faces unique challenges as their main medium of transactions is being phased out quicker than imagined, the older generation grapples with adapting to the digital age and unfamiliar banking environments, and the looming spectre of cybersecurity risks that are intrinsic to a digital banking model.

Navigating this cashless horizon demands a thoughtful approach that addresses not only the technological advancements, but also the economic, psychological, and societal dimensions, ensuring a future that is inclusive, informed, and secure. While the transition to a cashless society can be alluring, and provides a multitude of benefits when utilized correctly, people must be aware of how this transition will only increase the risks associated with transactions.

Business Strategy:

GLP-1: Novo Nordisk's Gain, Denmark's Risk

Sophie Hsieh, Kabir Singh Bajwa



Illustrated by
Pramiya Arulraj

Novo Nordisk's Eruption may Eliminate an Entire Economy

With the rise in popularity of using GLP-1 injections for fast and easy weight loss, Novo Nordisk, a pharmaceutical company based in Denmark has had massive economic success. Market capitalization of the company is $428.99 billion, a 52.25% increase from the prior year. Their weight loss treatments continue to unsustainably bolster their growth, and the Danish economy is heavily reliant on this growth. The European Commission's 2023 economic forecast for Denmark notes net exports for pharmaceutical products like Novo Nordisk's being the driving force for the 1.2% increase in the country's GDP, with a lagging domestic demand. This trend of reliance will cause Denmark to suffer from the economic phenomenon of Dutch disease, with increasing supply chain challenges, intensifying competition, and tightening regulations for Novo Nordisk arise.

Introduction

Amidst escalating global health concerns, the pervasive issue of obesity continues to drive the need for innovative solutions. In 2020, more than 988 million people globally were estimated to be obese. According to the World Obesity Atlas, this number is set to project to 1249 billion in 2025, indicating prevailing healthcare challenges within our global environments. With the continuous increase in public and

Global overweightness and obesity 2020 - 2025

Quantity and proportion of people ages 6+ who are overweight and obese

	2020	2025	2030	2035
Number of overweight or obese individuals (BMI≥25kg/m²)	2.6 B	3.0 B	3.5 B	4.0 B
Number of obese individuals (BMI≥30kg/m²)	988 M	1.2 B	1.5 B	1.9 B
Proportion of population that is overweight (BMI≥25kg/m²)	38%	42%	46%	51%
Proportion of population that is obese (BMI≥30kg/m²)	14%	17%	20%	24%

Source: World Obesity Federation, World Obesity Atlas 2023 personal health concerns regarding weight, there has been growing popularity in the use of GLP-1 injections for fast and easy weight loss.

Originally used to treat type 2 diabetes, GLP-1 injections like Ozempic works to improve blood sugar and reduce the risks of a stroke or heart attack. A side effect of taking this injection is the loss in appetite, as well as a slowdown of food digestion time. This key side effect, popularized by celebrities like Elon Musk, has propelled Novo Nordisk, the company behind the injection to massive success within the weight loss market.

Success of Novo Nordisk

As the largest public company in the European market, Novo Nordisk is a pharmaceutical company, focused on the development, research, and manufacturing of insulin, GLP-1 treatments, and rare disease biopharmaceuticals.

A majority of Novo Nordisk's sales in the past few years have come from Ozempic and Wegovy sold in the United States. Wegovy was a treatment made to be similar to the aforementioned Ozempic, however, its main purpose was marketed for weight loss. According to their Q3 financial reports, their obesity care sales grew by a whopping 174%, while their rare disease sales contracted by -18%, totaling to an overall 33% sales growth in the first 9 months of 2023.

With the explosion in popularity backed by strong financials for the company, it is easy to see why there has been positive sentiment surrounding Novo Nordisk. Ozempic and Wegovy have been at the forefront of many speculative articles that predict exaggerated and unrealistic impacts that these treatments will have on the global economy.

As Novo Nordisk's rise in popularity continues, sustained by remarkable financial success and breakthrough treatments, there is a looming threat—known as Dutch Disease that concerns Denmark's long term prosperity.

Dutch Disease

According to the International Monetary Fund, Dutch disease refers to an economic phenomenon where dramatic increases in a country's income, due to an overreliance on one export, leads to negative effects on the country's economy as a whole. An important indicator of Dutch Disease is a thriving export sector that becomes responsible for an increase in currency appreciation for the country. This results in the spending effect, where exports become more expensive, and therefore less competitive, decreasing exports in their traditional export sectors. At the same time, more capital and resources will be allocated to the growing sector, known as the resource movement effect.

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As outlined by the characteristics of Dutch disease, the current economic success of Denmark can be attributed to the success of Novo Nordisk, Statistics Denmark recorded in the first half of 2023 indicated that including Novo Nordisk, the economy’s GDP grew by 1.7%. If excluded, the economy would have contracted by 0.3%. This overreliance is also evident in examining Denmark’s GDP with Novo Nordisk’s market capitalization. According to the International Monetary Fund, Denmark’s 2023 GDP is set to reach US $405.62 billion, while Novo Nordisk’s current market capitalization exceeds this figure at US $428.99 billion. In 2022, pharmaceutical products were Denmark’s largest export category at 15%, with a majority of these exports being attributed to Novo Nordisk’s US exports. According to Statistics Denmark, this sector’s exports have been steadily increasing year over year. However, this is an outlier in comparison to Denmark’s other exports. For example, their second biggest sector at 13% of exports is machinery and nuclear reactors, and from 2021 to 2022, they experienced a decline in exports. This is the case for many of their sectors like transportation, agriculture, and energy. These sectors dealt with a contraction due to a multitude of factors like the freight recession, geopolitical conflicts in Europe, and a decline in exports to China, Denmark’s 4th largest market for exports.

The economy is heavily reliant on the success of Novo Nordisk, with many resources being allocated to help sustain the growth. 21,000 of approximately 60,000 total employees at Novo Nordisk are from Denmark, with Novo Nordisk being the most widely held stock in Denmark. Any troubling developments like supply chain issues, intensifying competitions, and stricter regulations for the company have the potential to have catastrophic effects on Denmark’s financial health as outlined by the effects of Dutch Disease.

Supply Chain Issues

As a consequence of the success of GLP-1 injections like Ozempic and WeGovy, Novo Nordisk has been struggling to keep up with the demand, specifically in the United States. With supply chain challenges like shortages arising, growing concern for these vulnerabilities makes the Denmark economy extremely volatile to changes in the market. Supply shortages are forecasted to last until March 2024, and diabetic patients who are in actual need of these treatments, are suffering with varying levels of blood sugar spikes. Without access to a steady supply of Ozempic, they are at high risk of experiencing heart disease, kidney disease, and stroke. This, in turn, forces patients to search for the treatment at various pharmacies, with limited luck, or pay premium prices to compete with users seeking the treatment for weight loss. In the case of Wegovy, although Novo Nordisk is actively producing all doses of the treatment, demand is simply outpacing the supply. This leaves gaps in the market for competition to increase their market share, leading to Novo Nordisk having a weaker market position due to more options available to consumers.

To curb this supply disruption, and to continue to prioritize current users, WeGovy shipments in the United States are being made in limited quantities to wholesalers for distribution at retail pharmacies. In order to increase production for key active ingredients like GLP-1 used in their treatments, the company is planning on spending over $42 billion Danish kroner to expand its production facilities in Kalundborg, Denmark, as well as $15.9 billion Danish kroner to expand another production facility in Hillerød, Denmark. These expansions are estimated to create over 1000 additional jobs for the Denmark economy.

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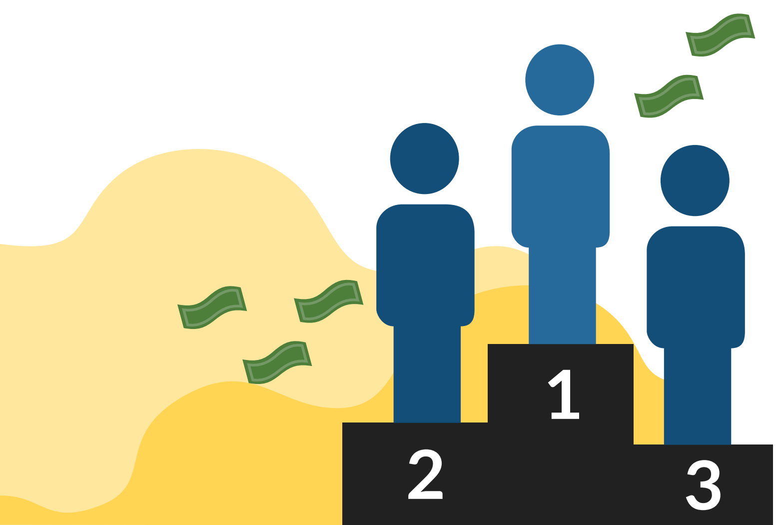
These investments will be a double-edged sword for Denmark, as the increase in job creation will positively impact Denmark's employment rate, but in turn, increase the reliance that Denmark has on Novo Nordisk.

Competition

With Novo Nordisk unable to keep up with growing demand, similar pharmaceutical companies like Eli Lilly and Pfizer have been developing treatments akin to Ozempic and WeGovy to capitalize on this supply gap. With the rising costs of Ozempic and Wegovy due to supply challenges, competitors like Eli Lilly and Pfizer aim to price their treatments at a lower price and easier consumption.

Examining Eli Lilly further, on November 8, the pharmaceutical company received FDA approval to market their anticipated obesity drug under the name “Zepbound”, which will be cheaper than Novo Nordisk’s “Wegovvy” at list price. Eli Lilly’s “Zepbound” has a list price of $1,060 which is 20% cheaper compared to Novo Nordisk’s “Wegovvy” which has a list price



of $1,349. This approach from Eli Lilly is representative of how they are willing to trade the price of the product for the volume of production even when demand for these obesity drugs is extremely high. Eli Lilly is also offering discounts on “Zepbound”, including a 50% off discount for consumers who don’t have coverage through their insurance providers. This means that consumers without insurance would be paying $550/month and consumers with insurance could be paying as low as $25/month. The president of diabetes and obesity at Eli Lilly, Mike Mason, stated that the company had set lower prices for “Zepbound” as a way to bring broader access to anti-obesity medication.

Eli Lilly is taking a different approach compared to Novo Nordisk as they are trying to cater to the millions of Americans who don’t have insurance coverage on anti-obesity medication, and is why they are entering a pricing battle with Novo Nordisk. It is reported that around 50 million Americans have some sort of insurance coverage on anti-obesity medication, even though over 100 million Americans suffer from obesity. By offering lower prices for their obesity medication, Eli Lilly is catering its drug to the millions of Americans without any sort of insurance coverage on anti-obesity medication. These lower prices could help Americans save roughly $3,470/ year with “Zepbound”, as the annual cost for “Wegovy” is $16,188 and “Zepbound” is only $12,718.

For the longest time, it was only Novo Nordisk operating in this space, but with big pharmaceutical companies entering now like Eli Lilly and Pfizer, it’s only a matter of time till Novo Nordisk’s market share starts to drop. Denmark’s economy is heavily reliant on the success of Novo Nordisk, and specifically their anti-obesity medication, as the pharmaceutical industry in Denmark has seen their exports nearly quadruple since 2019 (Novo Nordisk is by far the biggest player in Denmark’s pharmaceutical industry). This exponential growth in exports has created a very favourable trade balance for the Danish economy, but if more competitors are entering the space with cheaper and easier-to-use anti-obesity medication, it's only a matter of time till the demand for Novo Nordisk starts to drop. With the Danish economy so heavily reliant on Novo Nordisk continuing to find success, increased competition in the anti-obesity space could serve as a major blow to the Danish economy.

Regulation

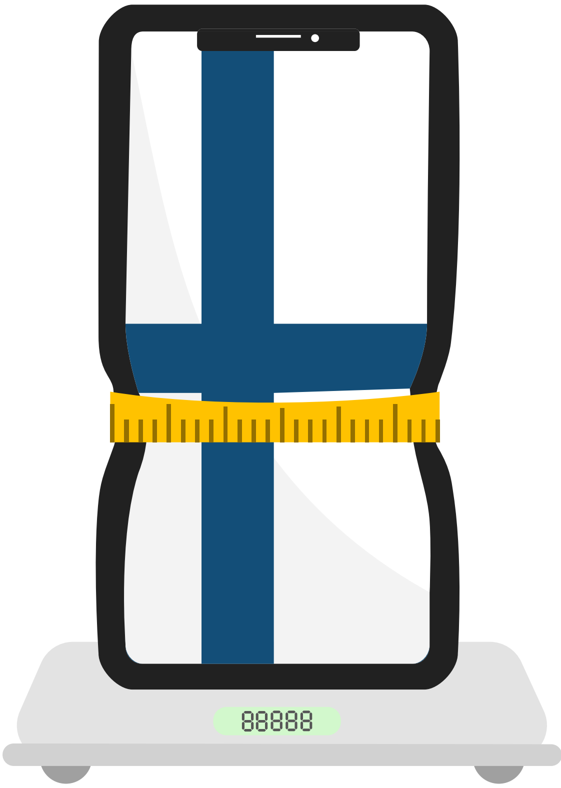
Another hidden cost of going viral is the looming uncertainty around the GLP-1 treatment's long-term functions on health. Many articles outline the addictive nature of Ozempic, as users develop a dependency on the treatment, as without it blood sugar will begin to rise and cravings will come back. Furthermore, in trying to get FDA approval for Ozempic for children as young as 6, many concerns have been raised on potential gastrointestinal and muscle loss issues linked with the semaglutide treatments. Thus, many governments around the world have tightened regulations to prevent drugs like Novo Nordisk’s “Ozempic” from being prescribed as a weight loss treatment. The FDA has only approved “Ozempic” to be prescribed as a diabetes treatment and is actively trying to prevent it from being prescribed as a weight loss drug. In April of 2023, we saw exports of Ozempic from British Columbia to the USA drop 99%. Many Americans were buying Ozempic for a cheaper price from BC pharmacies to help treat their obesity, which was decreasing the supply of Ozempic for users in BC who needed it to treat their diabetes. The BC government enacted regulations preventing this from happening and made sure that people with diabetes could get their dosage of Ozempic. Furthermore, a Texas-based doctor with a license to practice in Nova Scotia allegedly prescribed Ozempic to American residents. He was temporarily suspended after writing 17,000 prescriptions for the medication that was shipped to the U.S.

Many governments are following suit and are enacting regulations to prevent Ozempic from being prescribed as a weight loss drug to ensure people suffering from diabetes can get their dosages. For example, Britain recently imposed a strict regulation for clinics to only prescribe Ozempic and other GLP-1 treatments for only their licensed use, and not for weight loss. Similarly, Belgium announced a new law that banned doctors from prescribing Ozempic for weight loss if patients aren't considered obese and have at least one underlying health concern.

The combined impact of the regulatory actions could result in lower Ozempic sales, which would pose a serious threat to Novo Nordisk's overall revenue. In the event that governments around the world continue to enact more stringent regulations, Novo Nordisk faces the possibility of a prolonged downturn in Ozempic sales. This would be a major blow to the Danish economy, as it contracted 0.1% when there was a 10.6% decline in the pharmaceutical industry's output, so a decline in Novo Nordisk's revenue could lead to contraction in the Danish economy. The cascading effects of regulatory constraints on Ozempic highlight not only the potential health risks but also the economic vulnerabilities associated with over-reliance on a single pharmaceutical company for Denmark.

Case Study: Finland and Nokia

The story of Novo Nordisk and Denmark is not a new one, many decades ago Finland experienced a similar phenomenon with the phone company Nokia. At one point, 4% of Finland's GDP , 70% of Helsinki's stock market capital, 43% of corporate R&D, 21% of total exports, and 14% of corporate tax revenues were all made up by Nokia. The rise of Nokia was primarily due to it being the first to mass-produce a mobile GSM phone (similar to Novo Nordisk being the first to mass-produce anti-obesity injections). Nokia maintained dominance over the mobile phone industry until an industry giant we are now familiar with called Apple came and took the world by storm with its iPhone. Nokia saw its dominance disappear and its exports fell by half causing the country to enter a deficit and a decade-plus of economic stagnation began. Many Finnish people saw themselves lose jobs and the per capita income in Finland decreased.



Denmark risks itself becoming another example of Finland with Novo Nordisk, as they run the risk of putting all their eggs in one basket (Novo Nordisk). Much like Nokia with mobile phones, Novo Nordisk was the first company to start mass producing anti-obesity injections but with competitors like Eli Lilly and Pfizer offering cheaper and potentially better alternatives, the question of how long can Novo Nordisk hold its dominance over the industry is posed. With cheaper alternatives being offered, especially with such an expensive medicine, many consumers will shift their preference away from Novo Nordisk leaving the company exposed and in turn causing the exports of Denmark to decrease and causing harm to the economy of Denmark.

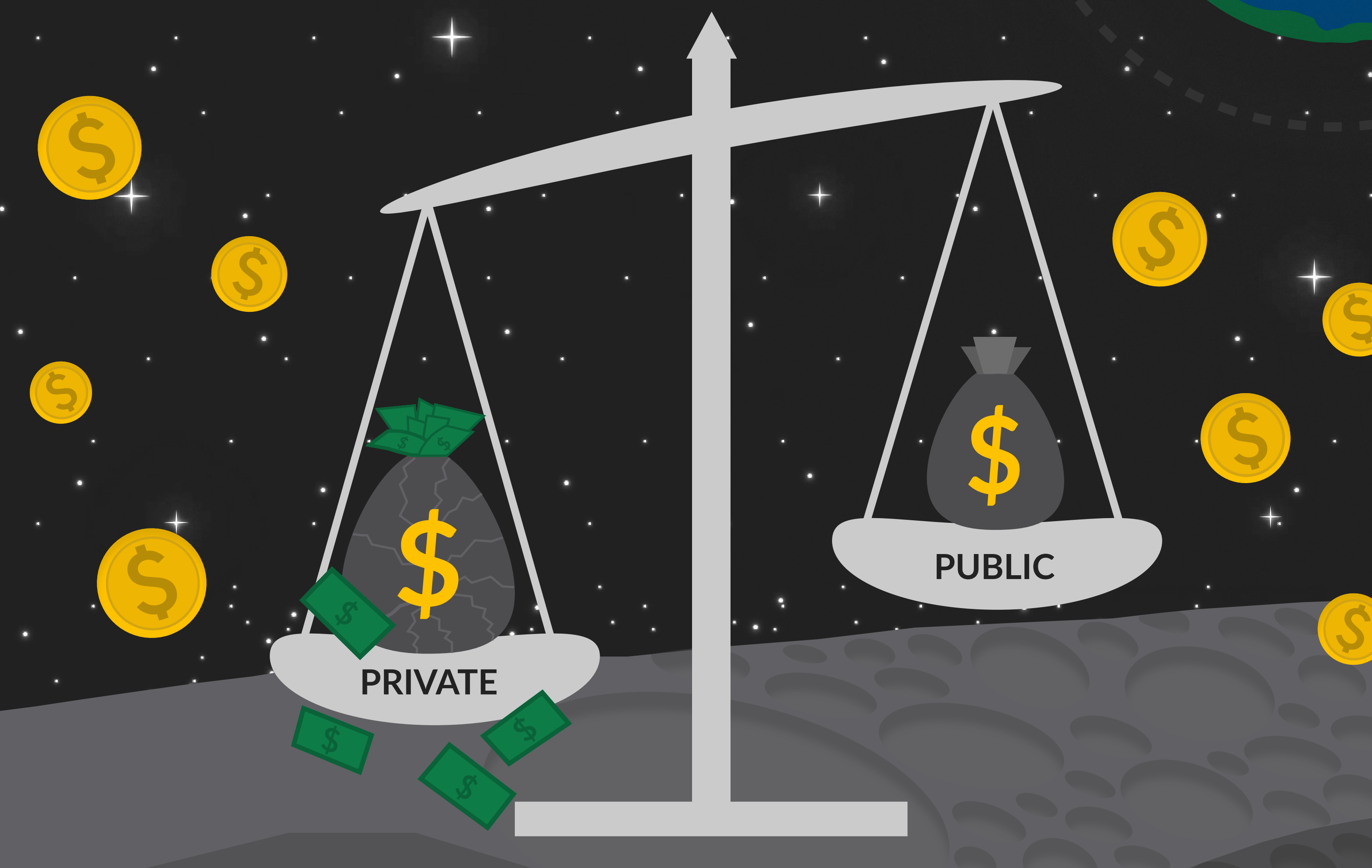
Conclusion

In considering the various challenges Novo Nordisk will have to overcome, it's safe to say that the Denmark economy will be extremely sensitive to the future outlook of Novo Nordisk. Their exponential growth has not only contributed substantially to Denmark's GDP, but surpassed the size of the national economy itself. The success of the company draws many parallels to a traditional Dutch disease scenario, leading to growing concerns of Denmark's over-dependence. It's evident that, to avoid a situation akin to Finland and Nokia, collaborative efforts should be made between Danish policymakers, the government, and Novo Nordisk to focus on fostering sustainable growth, along with investing in Denmark's lagging economic sectors.

Business Strategy:

Space: The Misguided Promise of Privatization

Ansh Farmah
Sofia Suleman
Yukttha Siva



Illustrated by
Yukttha Siva

Introduction

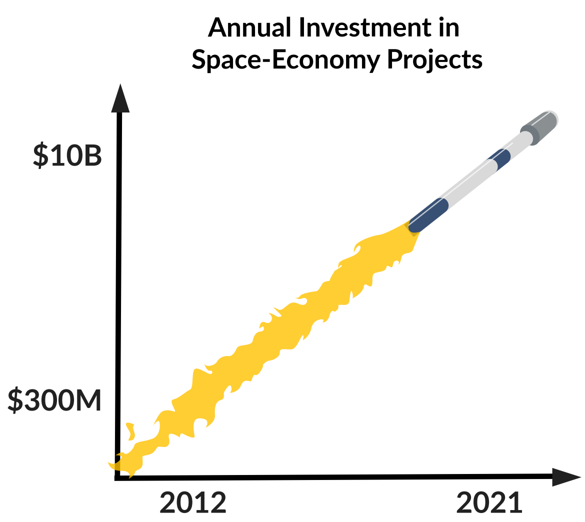
In the 1950s, the space race kicked off to a frantic start, with the Soviet Space program and NASA working to get their feet off the ground and out of the atmosphere. Each agency was fueled by establishing its political superiority as well as ensuring that it could not be threatened from the indefensible front of space through the Cold War. Space exploration has since been tied very closely to the governments of interested countries - even as the focus shifted from national defense to research and development, funding has consistently been sourced from ever-increasing budgets of 77 space agencies, led by NASA, the Russian Roscosmos, and the European Space Agency.

Since then, huge progress has been made in terms of research and establishing space programs and travel, but there exists huge potential still in applications that have not yet been achieved. Recently, with the rise of technology and the increase in private sponsors with huge amounts of funds, these expeditions have been slowly turned private, and have become out of the hands of government agencies and leaning into the aspirations of private citizens and their corporations. It is important to note that public and private companies have different agendas; public companies are held accountable for general well-being and welfare, whereas private companies focus on achieving profitability and maximizing shareholder value, often resulting in significant advancements in the development of technologies. Throughout history, the privatisation of industry has often led to greater efficiency and rapid advancement, but conflicting priorities lead to definite and distinct challenges. As these private space companies make further advances into practical exploration and industrialization, their priorities, in the long run, do not align with the good of the public or scientific ethos, which will lead to an overall decline in benefit and advancement.

A Brief History of Privatization and Space

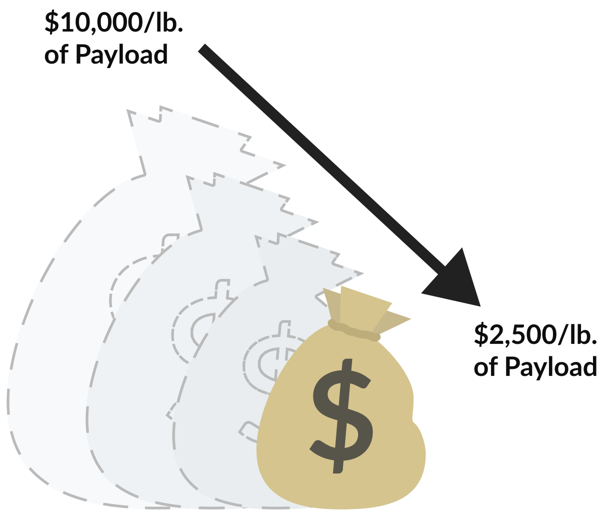
Privatization of an industry involves the transference for ownership from a public organization - like the government - to private parties. Historically, governments often chose to nationalize widespread activities, taking control of the governance and funding going toward public good services, primarily in areas of research, healthcare, transportation and education. The government's role, explicitly (with regards to privatization) was to create a foundation for emerging industries that the market would not be able to support on its own. Throughout the 1980s, issues were recognized in the management of widespread nationalist programs, specifically pertaining to the lack of efficiency created by a monopolist structure: when a stable budget is allocated and only one player is permitted to create goods and services, the incentive to make the structure of providing those services more efficient decreases. Hence, movement into the deregulation and liberalization of these industries become a popular method to reintroduce competition to stagnant markets.

Space exploration developed as a nationalized program for two main reasons. Rapid development spurred by the race with the Soviet Union, in the interest of national security and pride. Throughout the Cold War, the American government



poured immense amounts of funding into keeping up with the Soviets: the annual federal spending on space expenditures increased by six billion dollars between 1957 and 1964, much of this being attributed to defense funding research and development. As a result, NASA prevailed in 1969, sending Neil Armstrong to the moon, allowing the United States to establish their political superiority. An added benefit was preventing the threat of missile attacks from space, thus achieving both national defense and pride. It is important to consider that the space industry at this time was not profitable and merely a basis for establishing dominance via technological advancements and marvels. As of present day, space exploration is focused primarily on research and the collection of knowledge, and the promise of profitability has slowly been becoming more apparent. Yet to do so, significant investments into R&D must be made to allow for the creation of the technology needed to achieve profitability in space. Thus, spending on exploration has continued to increase, with just under $31 billion in budgetary resources awarded to NASA for 2023 in the United States, with a global government spending of $103 billion for dedicated space programming. The private industry has also begun funding projects more aggressively, as annual investment towards space-economy projects has grown from $300 million to over $10 billion dollars between 2012 and 2021.

Different forms of private involvement have long collaborated with NASA in the form of outsourced labour: NASA continuously contracts external agencies who have the capacities and expertise to actually construct their equipment. A prime example of this outsourcing is the long-standing partnership with Boeing as the prime contractor for the International Space Station in 1993, after working with the company and contracting their manufacturing capabilities for the Lunar Orbiters, or the Saturn V rockets used in the Apollo moon missions. The inflow of NASA funding and research further allowed Boeing to develop their own air and marine craft lines as well as prompting their own line of space-specific manufacturing capabilities, such as a satellite launching platform in the Pacific Ocean, or the current Starliner ship. Given this successful long-standing relationship, it's important to recognize the differences in structure and impact as new-age private space companies make their marks in the space industry.



The Pitfalls of Privatization

Privatization is beneficial for a myriad of reasons - generally, contributing to higher efficiency and faster, more focused advancement in research and practical application than when in the hands of more bureaucratic agencies. Private companies may only remain in business for as long as they bring results, and in the scientific field, the applications of medical instruments, for example, have been motivated by the inherent need to turn development into a profitable business model. This is mirrored in the space industry, for as long as companies are pouring funds into research, they intend for that research to have practical, marketable applications that they can use to gain a hefty return. Already, SpaceX's profit motivated system has allowed for huge cost reductions - from $10,000 to $1,200 per pound of payload - in launch capabilities with the development of liquid fuels and recoverable spacecraft, and is how the primarily American body that supports ISS transfer missions replaced the Russian actors used for the past decade. Even in the past, partnerships between massive federal agencies and specialist private contractors resulted in higher efficiency and mutually beneficial advancement, as seen with Boeing. However, the independent growth of new age space enterprises fundamentally differs from the partnerships of the past, and are motivated by much narrower aspirations. Privatization creates an environment of proprietary, private information, and an increase in commoditized knowledge. This attitude hinders potential progress and works against the nature of scientific discovery. In an industry that was founded for the good of the people, and depends so heavily on intensive research expeditions, commoditized knowledge translates into patents, intellectual property licenses and overall obstacles to the sharing and transfer of information. As progress is made by individual researchers working below independent enterprises, there exists no incentive to share information - anything that the company releases can be capitalized upon and used by its competitors, which works directly against the interest of the company. This prevents the brightest minds from working together to solve problems and contribute to discoveries, instead creating false competition in which progress is slowed. This collaboration is not limited to space-specific applications; already NASA is responsible for over 2,000 spin-off developments from heat protectant jackets to material simulations that are used in mining and materials work. Without the publicly available and accessible research coming from the obligations of a federal agency, the loss of related creation decreases the current economic and scientific benefit of working with theoretical research. Furthermore, as much of scientific space advancement is resource and time intensive, firms aiming to safekeep their findings from other researchers result in a waste of resources in repeating and rebuilding the tools needed for discovery instead of sharing the cost for the greatest chance of success. Especially in space, where first-movers have the ultimate advantage, the privatisation of the industry leads to firms trying to maintain their competitive edge at the explicit expense of progress.

Historically, not only was it scientists' aim to unlock the secrets of our universe, but also their responsibility to share these discoveries with the world (considering their funding came from their respective nation's resources). However, privatization results in the hoarding of discoveries and associated information, preventing knowledge from being shared with the public. Considering that one of the main areas of social progress is to increase the information available for free to the public, the Office of Science and Technology Policy announced the intention to make all federally funded research available to the public within a year of private publication just last year. Based on much of existing space research being sourced from NASA or other nationalized players, that information has been free for the public to use and has allowed further research. In a practical sense, barriers to the flow of information within the scientific world have definite drawbacks in advancement, but the same barriers pose threats to the ideological goals of ensuring that the knowledge we keep about the world around and above us belongs to humanity as a whole, and not just to those who have resources to wrangle it. Censorship is an example of these barriers, allowing only the most privileged people to have access to the most important or unique data. National space agencies are much more involved in public opinion than privately held enterprises are. NASA derives its budget from federally allocated funds, and consequently, it is accountable to the American government regarding its goals and allocations for those funds. It follows that the resulting missions, research, and discoveries are aligned with public interest. Private companies build their funding elsewhere, often from wealthy individuals or private equity and venture funds, so their interests sit squarely within how to build profit as rapidly as possible. Unfortunately, this motivator often leads to unsustainable practices on the social side of business. For example, in pursuit of making launch processes less expensive, SpaceX built their own launch site, called Starbase, in Texas. This base is used for both research, production and launch testing, allowing SpaceX to make huge progress in bringing down their launch and payload costs, which cannot be shared with other organizations as easily as if it were just a single agency. It has also led to

concerns regarding air pollution, noise pollution, water contamination and wildlife protection, with the company being cited on 75 different environmental factors to be adjusted before continuing with their program.

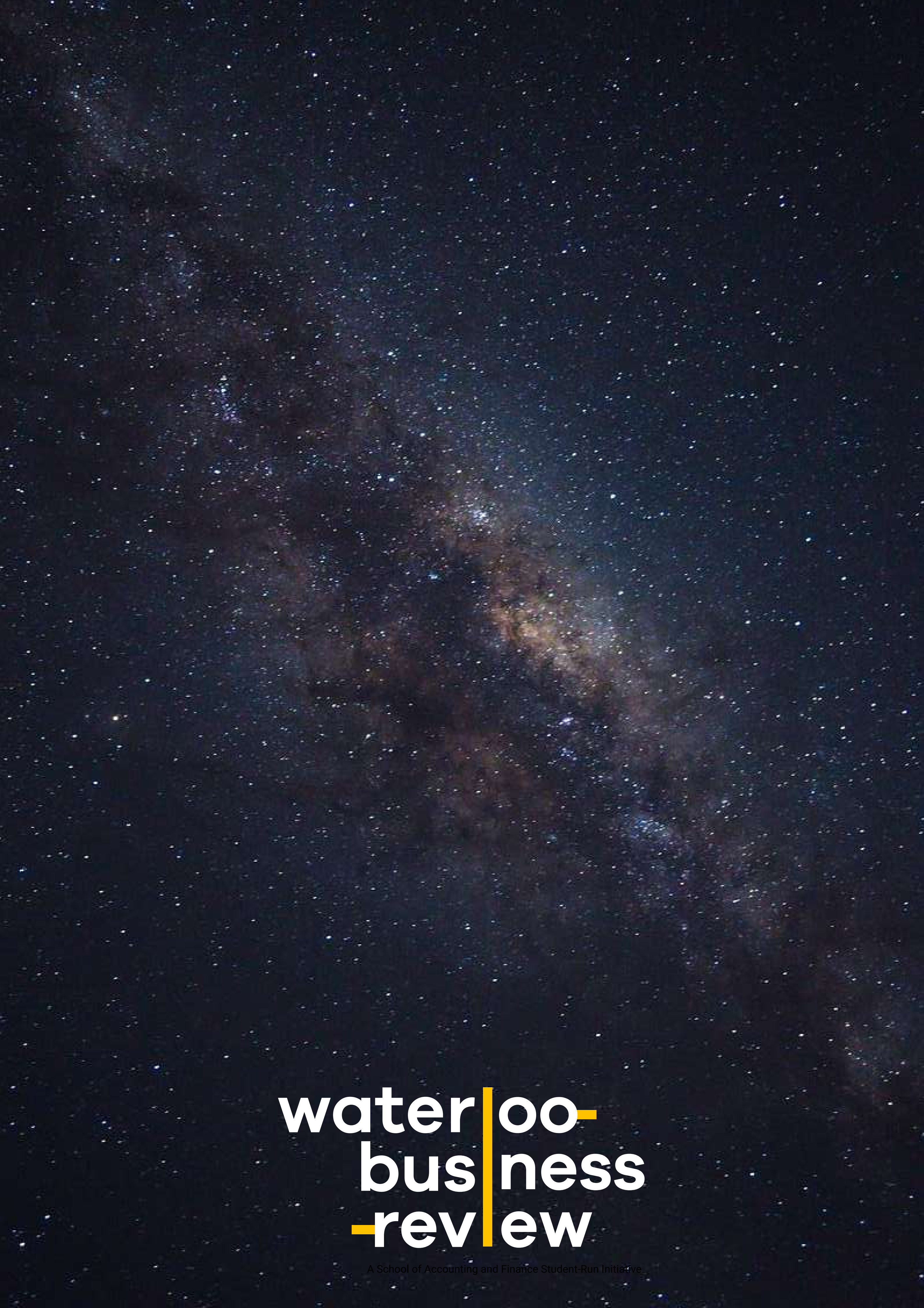
This concern expands to more players as one considers the impact of more individual launch sites as well as the space junk being littered in low earth orbit- a challenge that currently has no solution. Profit-motivated enterprises often have these considerations on the back burner, leading to unrestricted and unregulated harm coming in tandem with technological progress. Especially in an industry as unregulated and unexplored as the space industry is currently, allowing private companies complete freedom over historically nationally managed resources which poses a threat to the protection of public interests.

Future Considerations

As the adoption of privatization continues in the space industry, other concerns related to the nature of private operations arise for further discussion. Concerns include the development of complex industries such as commercial tourism, deep space research, manufacturing in space, asteroid mining, etc. Other concerns surround the nature of profitability such as cost-cutting and the impact on safety in high-risk environments. On that note, a large amount of regulation is yet to be established and thus concerns regarding jurisdiction, legislation, and emphasis of exploration arise.

Conclusion

While it is indisputable that space holds huge potential for profitable opportunity in the development of the industry and infrastructure, as well as within the space-for-space and space-for-earth markets, the drawbacks of a privatized movement need to be recognized in order for the industry to grow most efficiently. It is in the interest of everyone - federal space agencies, private companies, as well as public benefit - for the space industry to advance effectively and efficiently, which may not be completely aligned with the natural goals of a completely privatized industry in such a new space. Unregulated privatization, while having explicit benefits to advancement, may not be what works best as of yet: the sharing of information and accountability of public institutions build the strongest foundations for what will eventually become a thriving stand-alone economy. Thus, while privatization may lead to the development of a flourishing space economy, their priorities in the long-run do not align with the interests of the public and hinder the expansion of our civilization here on Earth.



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