COVID-19 Policy Brief - 01

Uncharted Territory:

Assessing the Landscape for Ontario's Economic Recovery Post COVID-19

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Executive Summary

With COVID-19 abatement measures continuing in earnest to 'flatten the curve', Ontario's economy is expected to endure great hardship. Funding will be needed to ensure the health care system is able to meet increased demand, and the economy will require stimulus to ensure it can continue to function through abatement measures like social distancing. Together, satisfying these needs will come at tremendous cost. Initial economic analysis has suggested sovereign debt levels could increase by 20 percent — though the weight of such estimates are exceeded by their lack of precedent in modern history.

Many of Ontario's businesses have spent the better part of the past bull market investing in illiquid capital, such as machinery or intellectual property, to strengthen their competitive edge in global markets. Accordingly, most do not have the operational flexibility or capacity to maintain themselves through COVID-19 abatement measures, especially given the pandemic's unpredictability. The inability of businesses to cope with the pressure marks the beginning of what could be a swift deterioration of invaluable economic structures, irreparably harming Ontario's future. If such structures, including supply chains, markets, private investment, and credit facilities are to survive the pandemic intact, all three orders of government must collaborate on a comprehensive plan that encompasses monetary policy, fiscal policy, and health policy.

Understanding that overnight rates are near their effective lower bound, and that the economy will require an immense amount of relief if it is to be preserved through COVID-19 abatement, unprecedented relief and stimulus measures will likely be required. Government must prioritize valuing economic relief for what it could save in relative terms, not for what the absolute cost of the relief is. The most effective relief measures will be those which immediately alleviate businesses of short-term operating expenses, allowing them to maintain staff and meet short-term liabilities. By contrast, deferring liabilities, such as taxes and extending credit, while also extremely helpful, come at the cost of adding more risk to an already highly uncertain future. Now is not the time for prolonged program testing and deliberation; it is trial by fire and the stakes are high. Confidence in the government's ability to see the economy through the pandemic must be palpable if markets are to remain liquid.

While relief measures look to mitigate the economic crisis, shortening the length of the crisis is of fundamental concern. Strict adherence to containment policies and the late onset of COVID-19 have served Canada well in limiting domestic spread of the disease. As a result, the Public Health Agency of Canada recently suggested we are afforded an uncommon opportunity to shorten the curve, and see a precipitous end to the crisis (Figure 1, blue).[1] If we are to seize the opportunity, exhaustive testing and tracing of the disease will be needed in compliment of continued adherence to epidemic control measures, such as social distancing. If successful in both depressing the height and shortening the length of the curve, the economic harm caused by COVID-19 would be markedly reduced, as recovery would come sooner and require a shorter amount of time.

As most recently demonstrated in the 2008 financial crisis, the Canadian financial system and regulatory framework is world-renowned for its stability and foresight. Though our success is far from certain, Canada and Ontario have done well so far in managing the potentially exponential growth of the novel coronavirus. Now is our opportunity to once again demonstrate our dexterity in overcoming highly complex and nuanced industrial challenges. Working in concert with our health care system, Ontario commerce will once again demonstrate that our economy is one of the most resilient in the world.

[1] Public Health Agency of Canada. "COVID-19 in Canada: Using data and modelling to inform public health action" Technical Briefing. (April 2020).

Glossary

BULL MARKET

Occurs when investors are hopeful for the future and markets are strong. In contrast, a bear market occurs when investor outlook is more tepid or even pessimistic.

CREDIT MARKET

A credit markets is a market where all kind of debt, including short-term credit and investor grade bonds, can be bought or sold.

EFFECTIVE LOWER BOUND (AKA ZERO LOWER BOUND)

The effective lower bound is a macroeconomic problem that occurs when the short-term nominal interest rate is at or near zero, causing a liquidity trap (a phenomenon that occurs when interest rates are so low that all investors prefer to hold cash over bonds). Because the interest rate is so low, the central bank has limited capacity to stimulate economic growth.

LEVERAGE

Leverage refers to the act of using debt to finance capital investments in assets such as machinery or property. A firm is considered over-leveraged when their income is barely or in-sufficient to cover the interest charges on debt obligations.

LIQUIDITY

Liquidity refers to the degree to which an asset can be quickly bought or sold (i.e. converted into cash) in an open market. A liquidity crisis occurs when wide-spread market inactivity prevents companies from selling assets to cover short-term liabilities or obligations.

MONEY SUPPLY

Money supply refers to the total value of money available in an economy at a given point of time. Money supply can be increased or decreased through monetary policies used by a central bank.

MORAL HAZARD

In an economic context, moral hazard occurs when an individual or organization is incentivised to increase their risk exposure because they do not bear the full costs of that risk. For example, a company may take on greater risk (e.g. developing on a flood plain or over-leveraging itself) if is confident that the government or an insurance policy will bail it out.

SOLVENCY

Solvency refers to the degree to which a company is able to meet its current liabilities with its current assets. Solvency may also refer to a company's ability to meet its long-term fixed operating costs with long-term growth.

STICKY WAGES

Sticky wages refers to the inability of wages to adjust quickly to changing economic conditions, especially in times of economic contraction or recession.

RISK AVERSION

Risk aversion refers to the level of risk an individual or firm is willing to take in order to realize a gain. Higher risk investments tend to yield higher gains, but at a greater risk of loss; while lower risk investments yield lower gains and at a lower risk of loss.

UPSTREAM (SUPPLY CHAIN)

Upstream refers to goods producers which produce the goods or inputs that ultimately become part of other goods. Examples could include microchips for computers or cars, or the anti-viral fabric materials used in breathing masks. This is contrasted with **downstream**, which refers to the reverse direction.

UNIVERSAL BASIC INCOME

Universal Basic Income is an innovative approach to ensuring all citizens have access to living essentials such as food and shelter. In the approach, every citizen would receive a reoccurring sum of money. Then, depending on the model, those who need the money would use it, and those who do not would receive a commensurate increase in their income tax. The approach has gained popularity due to the enhanced liquidity it could offer the labour market and its relatively low administrative costs when compared to other means-tested methods, such as employment insurance.

VALUE CREATION CHAIN

Originally defined by Michael Porter (Harvard University), value creation refers to a firm's ability to increase the worth of a variety of goods and services by combining them and altering them through a value creation chain. Simply put, it could refer to the ability of a pencil company to assemble graphite, wood, and rubber into a pencil, which when finished production, is worth more than the value of the graphite, wood, and rubber used to create it.

Introduction

The COVID-19 pandemic has caused global economic disruption and triggered unprecedented responses as governments and central banks enter uncharted waters. In a recent publication by the Center for Economic Policy Research, *Mitigating the Economic COVID Crisis*, more than forty of the world's leading economists urged governments around the world to "act fast and do whatever it takes" to both contain the virus and ensure the economy survives the COVID-19 epidemic.

In underscoring the gravity of the situation, economic thought leaders have suggested previously inconsiderable measures to avoid nearly certain economic catastrophe. COVID-19 is a highly infectious disease; the intensity of public health measures that have been taken to flatten the curve are only quantified in the devastating, yet highly necessary, effect they have on the economy. In a macabre catch-22, it is the economy that must take the brunt of the onus if our health infrastructure is to sufficiently meet demand. While the short-term economic consequences of failing to flatten the curve would be less dire than if COVID-19 abatement measures succeeded, the long term-term consequences could have grievous effect due to the exceptional human cost. If COVID-19 were left unbated, the humanitarian fallout would be unfathomably large with ramifications reaching far beyond those of an economic nature. As pictured in Figure 1, in addition to dealing a devastating blow to society, a curve left unabated would likely exacerbate labour shortages and instill mistrust within the international community of Canada's ability to contain the epidemic.

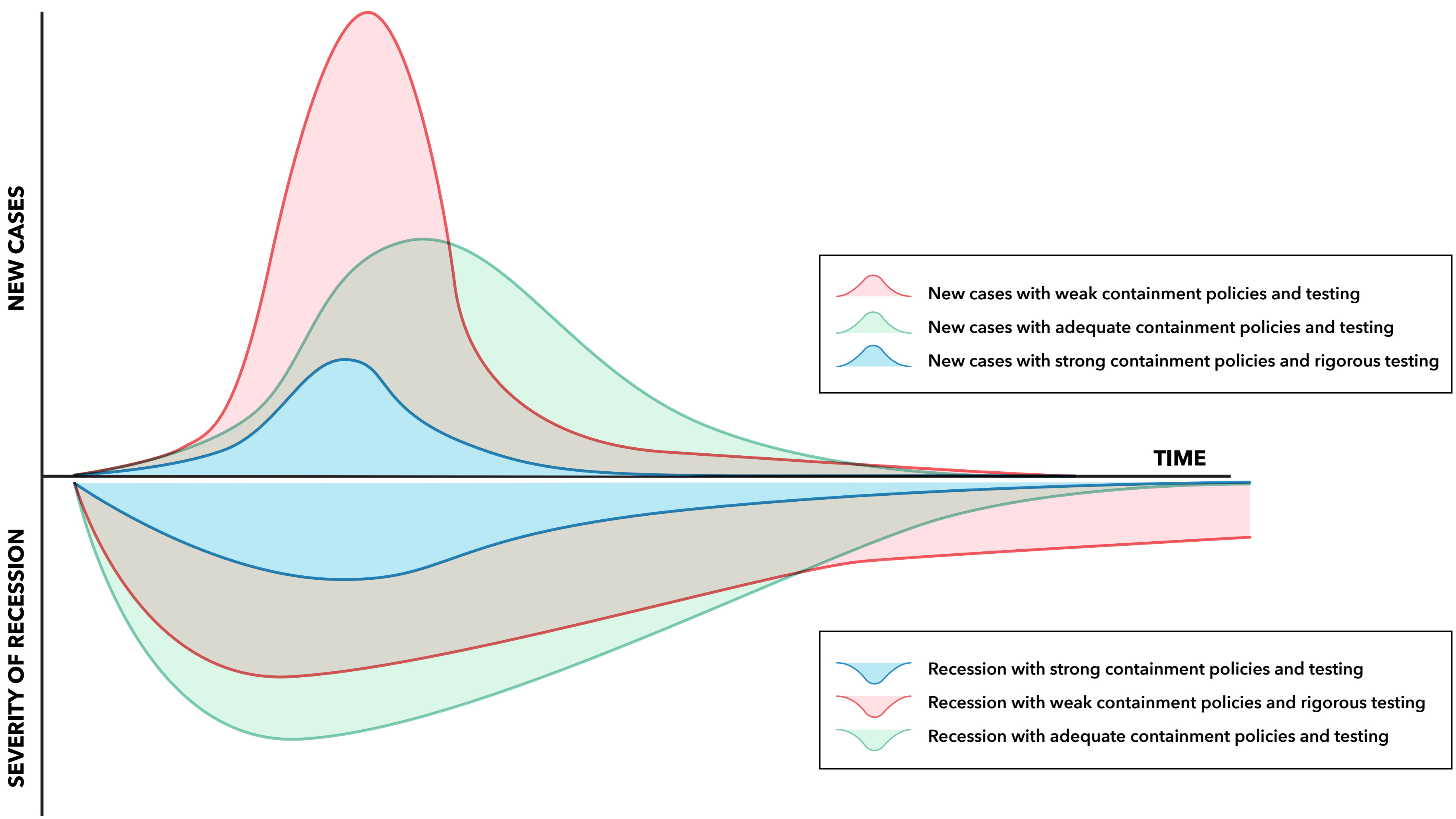
Fortunately, thanks to exceptional efforts to contain advancement of COVID-19, Canada has so far avoided falling into the red line, illustrated in Figure 1, which other countries like Italy dangerously approached. Our obstacle moving forward will be to avoid the green line, which demonstrates the startling, long-term effects continued social distancing and other associated COVID-19 abatement measures could have on the economy. If we are unable to bring an early decline to COVID-19 cases, and COVID-19 abatement measures continue well into 2020 with individuals self-isolating in an effort to weaken acuity of the 'curve', the potential unemployment rate will be tremendous. To put this into perspective, at its peak in 2008 the unemployment rate reached approximately 10 percent. By contrast, successful flattening of the curve could see a temporary joblessness rate extend beyond 50 percent.[2] The economic contraction being experienced is now the fastest on modern record. However, it appears Canada and Ontario are currently presented with a precious opportunity to see a both a precipitous end to COVID-19 and escape the enduring hardships of COVID-19 abatement measures. Canada has done comparatively well in containing advancement of the coronavirus. Should stringent social distancing measures continue in compliment with meticulous testing and tracking of the disease, we may have the fortune of tracing the blue line as opposed to the green.

The pandemic's influence on the economy is unique, in that it poses an exogenous threat to economies throughout the world--meaning that the economic fall-out, unlike almost all prior recessions in modern history, is not due to any financial imprudence or impropriety. Beyond war, the instantaneous adverse effects that COVID-19 abatement measures have dealt to the economy carry little to no economic policy precedent. Nevertheless, lack of precedent does not mean there is any shortage of ideas in meeting current challenges. In the modern era of economic and monetary policy, there are an arsenal of tools at the disposal of governments and central banks to ensure the worst is avoided. The Ontario Chamber of Commerce believes that a thorough exploration of all possible solutions will be needed. If relief measures are efficient in their implementation and effective in mitigating risks, they could provide the economy with operational flexibility to endure the pandemic, and perhaps even allow it to be more responsive to the growing, yet temporary, demands of the health care sector.

The following analysis provides a cursory review of the economic risks moving forward and the policy tools at the disposal of the Ontario and Canadian governments and the Bank of Canada to meet such risks.

[2] Pierre-Olivier Gourinchas. "Flattening the pandemic and recession curves" (2020). Centre for Economic Policy Research

Figure 1: Relationship Between Strength of COVID 19 Abatement Measures and Economic Recession[3]



[3] Figure 1 offers a combination of a figure offered by economists Richard Baldwin and Beatrice Weder Di Mauro in their March, 2020 paper Mitigating the COVID Economic Crisis: Act Fast and Do Whatever It Takes, which illustrates the relationship between containment measures intended to flatten the curve, such as social distancing, and the associated potential economic costs; and, a recent figure offered by Health Canada in its April, 2019 technical briefing *COVID-19 in Canada: Using data and modelling to inform public health action.*

Structural rigidities within the Ontario economy, or within businesses themselves, can hinder the ability of the economy to adapt to changing market dynamics. Such rigidities can include **sticky wages**, lack of foresight, costs associated with adjusting physical capital or temporarily transitioning between sectors, and inflexible fiscal and regulatory structures. Within the context of an economic crisis, these rigidities present an array of risks, all which have varying short- and long-term consequences.

As we move through stages of the pandemic's impact on our economy, it is important to quantify these risks, so that policy measures can be sufficiently valued for their ability to mitigate a given risk. Barriers to preserving operational and economic flexibility must be sought out and defined, to allow policy makers to enact focused fiscal and monetary relief measures. Though we are in a state of emergency, associated costs must still be given due consideration. It is only through active assessment of risks that relief efficiency and efficacy can be maximized.

PROVINCIAL GOVERNMENT BUDGET RISKS

In its 2020 Economic and Fiscal Update, which substituted a delayed 2020 Budget, the Ontario government outlined a robust plan to combat the health risks associated with COVID-19. While unprecedented action is needed to avoid a public health catastrophe, COVID-19 abatement measures threaten to severely disrupt economic structures. Current government revenue models are reliant on these economic structures and their ability to produce continuous growth; their failure would put government revenues in peril. In the Update, the Province provided estimates of just how reliant revenue structures are on economic stability and growth, and the various sensitivities it has to economic shock.

Table 1: Selected Economic and Revenue Risks and Sensitivities [4]

Economic Factors	Revenue Sources	2020-21 Sensitivities
Nominal GDP	Total Taxation Revenue	$700 million revenue change for each percentage point change in nominal GDP growth. Can vary significantly, depending on the composition and source of changes in GDP growth.
Compensation of Employees	Personal Income Tax, Ontario Health Premium and Employer Health Tax	$440 million revenue change for each percentage point change in growth in compensation of employees.
Household Consumption Expenditures	Harmonized Sales Tax	$197 million revenue change for each percentage point change in growth of household consumption expenditures.
Net Operating Surplus of Corporations	Corporations Tax	$100 million revenue change for each percentage point change in growth of net corporations operating surplus.
Housing Resales and Resale Prices	Land Transfer Tax	$29 million revenue change for each percentage point change in growth of either the number or prices of housing resales.
Ontario Population Share	Canada Health Transfer	$42 million revenue change for each one-tenth of a percentage point change in Ontario's population share.
Ontario Population Share	Canada Social	Transfer $15 million revenue change for each one-tenth of a percentage point change in Ontario's population share.

[4] Table 1 - Selected Economic and Revenue Risks and Sensitivities
Source: Ontario Ministry of Finance

The array of sensitivities evidence both how dependent the provincial government is on healthy consumer and industrial markets, and how revenues from the land transfer tax, harmonized sales tax, and corporate tax are reliant on economic growth. Ultimately, tax structures like these are dependent upon economic value creation.

Failure to support the economy and its continued growth through this health crisis would not only risk a long-term recession, but the revenue-viability of the government. If existing economic structures fall apart, drastic re-orientation of government revenue and spending models would be needed to both adjust to weakened economic output, and the undoubtedly altered economic structures produced by the crisis.

SOVEREIGN AND SUB-SOVEREIGN DEBT

Much of the economic relief response will require funding through debt markets. Importantly, governments can borrow at rates that are nearly negative in real terms. Simply put, the government will ultimately repay little more or even less than what it initially borrowed. Despite offering a negative interest rate, investors are still keen to buy government bonds, especially in times of economic uncertainty since they present safe harbour for investments that would otherwise have relatively larger down-side risk exposure.

While prudent fiscal management is generally important, this is not the time to fear large government debt and deficit. The risks of economic stagnation due to COVID-19 abatement measures are too severe to simply wait out using conventional fiscal measures. As demonstrated by Figure 1, if the curve is to be flattened to a level that existing public health infrastructure is able to effectively accommodate, the financial relief needed to stave off the collateral economic damage will be immense. Those concerned about increased debt must remind themselves that Ontario does not exist in an economic vacuum; it is an instrumental player in the Canadian and world economy. Failure to provide necessary support to the economy could threaten the viability of Ontario's economic recovery.

As has been recently suggested by economist Paul Krugman[5], COVID-19 abatement measures are akin to putting the economy in a medically induced coma to avoid catastrophic damage. Therefore, if the economy is to maintain semblance of what it was prior to COVID-19, it must essentially be put on life support, requiring resources and support to keep it alive until containment measures have concluded. Without the ability to sustain itself in situ, invaluable economic structures, such as supply chains, markets, and distribution channels, will fall apart — only to be reassembled later at immeasurable cost.

CREDIT MARKETS

Credit markets could dry up as creditors adjust their risk calculations to account for macroeconomic shocks associated with COVID-19. While there is no ideal timing for a pandemic, the advent of COVID-19 came at a time when economists were already warning of consumer over-indebtedness and the possibility of a recession. In addition, the overnight rate was at near rock bottom, or what is technically referred to as the **effective lower bound**. This leaves little to no room for the Bank of Canada to further lower rates to encourage investment during COVID-19 abatement measures. In addition, businesses themselves just experienced a lengthy **bull market** and took advantage of low borrowing rates to invest in their businesses. This means that, amidst economic uncertainty, many businesses are over leveraged and over-exposed to market fluctuations.

The degree to which a firm decides to leverage itself is a highly subjective decision usually dependent on both the risk aversion and the potential profitability of invested capital - two considerations that are moot in a pandemic. There is virtually no cap on how much a given firm may leverage its capital. The more a given firm is leveraged, the more exposed it becomes

[5] Paul Krugman. "Notes on the CoronaVirus." April 2nd, 2020. Salt Lake Tribune.

to economic and market volatility. Therefore, some firms will be expected to suffer more hardship than others. Businesses that carry a lot of debt (i.e. highly **leveraged**) face contending with a grave liquidity crisis should economic conditions become worse.

As demand dries up due to COVID-19 abatement measures, **solvent** but cash-constrained firms will become illiquid. Ontario firms that are already highly indebted have restricted and will continue to restrict outflows of cash to employees, accounts payable, and inputs before they begin defaulting on their long-term debt commitments. This is evidenced by the large number of individuals who have been laid off during the crisis. It is important that firms experiencing liquidity/cash flow problems receive relief before they are forced to make choices concerning these long-term commitments. Focused policies intended to free up cash flows would likely be successful in avoiding dangerous disturbance to credit markets. Tax deferrals and debt purchases, and, more critically, guarantees of private, unsecured and uninsured debt are precision relief policies that could prevent credit markets from drying up. If policymakers do not intervene swiftly, even temporary shocks could lead to a liquidity crisis with long-lasting damage that the market will rightly discount.[6]

Importantly, policymakers must understand that measures intended to stabilize **credit markets** are intended to mitigate the fallout of an exogenous risk, meaning that action taken to calm credit markets is not needed due to any lack of foresight or financial impropriety. Discussion of **moral hazard** is a non-sequitur in this context, as there is no reason for firms to weaken their long-term risk adversity due to COVID-19 financial relief. COVID-19 is like an economic no-fault accident; the economy as a whole must pay a price so that it may survive in its current form moving forward.

OPERATIONAL FLEXIBILITY

A firm's value is dictated by the **value creation chain** it is able to offer market demand, and, Influenced by an abundance of forces, such as economic cycles, technology advancement, climate change, and social norms, market demand is constantly in flux. In response, firms must meet changing demands if they are to maintain their market viability and economic value; if they fail to do so, they risk becoming irrelevant. A firm must therefore be operationally flexible in its offering if it is to endure the capricious nature of markets.

As firms cultivate operational flexibility to become more adaptive to meeting changing demands, so does the economy as a whole. This means, as with demand, the pressure for businesses to increase operational dynamism or flexibility will always be present. This pressure is perhaps most prominent in times of economic weakness or transition, such as now. COVID-19 will have an enduring effect on future demand, and firms are scrambling to find ways to maintain market viability. Indeed, many will likely need to adapt their value creation chain or business model to suit altered market demands. It is this ability to adapt that defines operational flexibility.

Development of operational flexibility is and illusive endeavour—instead of aligning their value creation chain to what a firm is most capable of, firms must align value creation to what the market requires of it at that moment. While potentially more profitable, cultivating operational flexibility is a costly endeavour, as firms must both invest in defining demand and how they might best position themselves to meet it (i.e. marketing), and constantly invest and transform/liquidate capital into assets which can assist them in doing so.

The cash flow problems that COVID-19 abatement measures impose on firms limits their ability to maintain their operational flexibility. In effort to meet short-term obligations many firms will look to liquidate valuable assets that would otherwise prove useful in re-asserting themselves within the 'new' economy once COVID-19 abatement measures have begun to subside. This problem highlights the need for relief capable of allowing businesses to preserve their full operational flexibility through COVID-19. If the economy is to maintain the prominence it had prior to COVID-19,

[6] Antonio De Vito, Juan-Pedro Gomez. "COVID-19: Preventing a corporate cash crunch among listed firms" (2020).

firms must be capable of quickly adapting to 'new' economic environment once they resume operation.

In addition to adapting their value creation chain to meet external demands, firms must also ensure that their value creation chain is suited to the workers which comprise the firm and the inputs required to create the firm's service or product. Understanding this, firms will likely have to adapt to volatile input prices as supply chains work to re-establish themselves.

Critically, firms will also need to ensure that their work environment adequately acknowledges and implements workplace measures capable of benefiting COVID-19 abatement measures. Such measures might include partitions for customer-facing roles, enhanced telecommunication infrastructure to lower the number of employees needed in a workspace, or other operational best practices intended to minimize physical interaction. Such measures will be critical to maintaining operational flexibility, as they're the only way to maintain business continuity under threat of resurgence of the virus. As it stands, many essential businesses are experiencing problems with retaining 10 – 15 percent of staff, as employees fear that safeguards are insufficient in their ability to prevent spread of the disease. This problem is twofold:

- Businesses which do invest in costly capital capable of both benefiting COVID-19 abatement measures and keeping employees safe are unfairly penalized if other businesses are able to maintain business continuity without making similar investment.
- Failure to invest in capital able to slow the spread of COVID-19 will further slow the economy's transition to operating at capacity once COVID-19 abatement measures begin to be lifted. Eradication of COVID-19 will be much slower than its arrival. Businesses will likely be staggered in their re-entry into the market, based on both their necessity and risk. If a given industry, sector, or individual firm is unable to prove that it has sufficiently implemented its own COVID-19 abatement measures, its likelihood of been re-established within the economy will be tempered.

The above is exacerbated by the fact that eradication of COVID-19 will not be a steady decline, but exhibit considerable volatility, as smaller, recurring outbreaks, arise in the months and possibly years to come. Therefore, though presence of COVID-19 may be limited at times, the measures needed to keep it at bay will likely need to be maintained.

Exhaustive testing and tracing of COVID-19 will also once again play a significant role in ensuring workers' safety upon their return to work. Such measures would allow quick identification of workplaces, or other areas of common congregation, which may be at elevated risk of transmitting the virus, and in turn allow for expedited implementation of localized isolation measures to curtail further spread.

SUPPLY CHAIN

When a shock suffered by the economy is as pervasive as COVID-19, all businesses will endure hardship either directly or indirectly due to supply chain shocks. If an **upstream** supplier is unable to attain enough credit to remain afloat, the firms' **downstream** will be unable to attain the inputs needed to fulfill their value chain. This is often referred to as supply contagion. Similarly, if firms downstream are unable to stay afloat, firms upstream will be unable to find a buyer for their product. Given that the pandemic is now global, all supply chains will be impacted by COVID-19, the extent to which is largely dependent on the ability of individual nations to cooperate in both their abatement efforts and subsequent economic revival.

SUPPLY CHAIN CONTAGION

The impacts of supply chain contagion already being felt due to supply chain disruptions in China. China is a large supplier of intermediate goods to producers around the world, particularly automotive, electronics, and machinery equipment. The disruption in production in China has been felt by downstream businesses that require Chinese-made goods to produce their own goods. Given that a large portion of Ontario's economy relies on complex manufacturing, upstream supply constraints could be particularly problematic for Ontario. Though the effects may take some time to filter down, many of Ontario's manufacturers are reliant on complex, fragile supply chains spanning multiple continents. Failure of a given point within the supply chain could be harmful if experienced at a vulnerable or centralized point.

Supply chain disruption may also be experienced as businesses that have previously played an integral part within a supply chain, will have to alter their supply chain to accommodate changing demands due to the critical needs of the health care system or those of containment measures. These disruptions to the supply chain will add to business costs during and at the conclusion of COVID-19, as damaged or altered supply chains will have to re-assemble themselves at the conclusion of COVID-19 abatement measures.

To avoid supply contagion, businesses must retain operational flexibility so that they can adapt to changing market dynamics and maintain operational capacity. Priority must therefore be given to preserving firms in their entirety; it is the value that firms provide to their respective supply chain that represents their value to the economy as a whole, not simply the absolute value of the goods and services they produce. If funding relief comes only once firms begin defaulting on long-term debt, the relief will be supporting a firm in name only; the valuable organs of the firm will have been liquidated along with its supply-chain value.

If firms face liquidity problems, they will begin to append short-term costs and liabilities, of which many are needed to support operational flexibility. This operational flexibility could prove valuable in both hastening supply chain adaptation, but also in adapting production methods to cater to the more pressing needs of the healthcare system.

INTERNATIONAL SUPPLY CHAINS

The world is more integrated and inter-dependent than ever before, with supply chains spanning multiple continents for even the most trivial of goods; trade represents approximately 50 percent of global economic growth. The nations of the world cannot survive in isolation; maintenance of international supply chains is critical to the survival of dense, interconnected economic structures that the world economy relies on. All nations are experiencing economic hardship due to COVID-19, therefore they must be coordinated in their efforts to both suppress exponential spread of the virus and mitigate the economic fallout.

Despite verbal commitment to remove barriers to exporting pharmaceuticals and medical personal protective equipment, many countries have yet to lift export bans. Restricting the flow and supply of drugs and medical equipment will only harm the world economy's ability to produce them at volume, and hinder the collective ability of the world's nations to overcome the economic and health challenges posed by COVID-19. Turning to protectionist measures to ensure that supplies are created and managed domestically foregoes the efficiencies offered by an international supply chain network. International supply chain networks exist for the efficiency they offer production methods, such networks must be leveraged in effort to ensure that goods needed to preserve the economy and medical supplies are produced at high volume and low cost. Despite 'wartime' measures being enacted to ensure COVID-19 is contained, trade policies must not be used as a tool to assert international dominance.

Nations of the world must also be transparent in their management of the virus and scientific developments in abating it. The virus does not respect borders; inhibiting global discourse and advancement of a vaccine or other medical intervention is to the ultimate detriment of the global community. Contributing to the advancement of global medical and epidemiological research, and transparently reporting infection rates, is to the benefit of all, as inconsistencies in research or understanding will all be laid bare as time progresses. States must avoid entertaining trivial and incidental difference which serve the interest of nationalist or populist sentiment. In commenting on how COVID-19 could transform the global milieu, Jennifer Welsh notes: [7]

"…The coronavirus, and how it is addressed, will have a significant impact on the shape of the multilateral order that will emerge in its aftermath. One possible lesson states could draw is that countries ought to come together—not just to better defeat COVID-19, but a host of other catastrophic risks as well. But the signs are not encouraging. The other lesson—that countries need to stand apart in order to better protect themselves— is gaining much traction, and speaks to the favoured narratives of populist politicians around the world who stoke xenophobia and demean efforts at international cooperation as part of a false promise of 'globalism'. Ultimately, then, this pandemic tests not only the capacities of particular institutions, like the WHO, but the entire edifice of a system of multilateral cooperation that was already under significant stress."

BULL WHIP EFFECT

Another problem in need of attention, especially when considering the immediate criticality of medical supply chains, is risk of supply chain bullwhip. The supply chain bullwhip effect occurs when suppliers have to rely on imperfect information (which is always) to formulate their demand predications and resulting production quotas. The end result is similar to what occurs in a game of telephone: upstream suppliers must rely on information that gets passed to them by downstream suppliers. Therefore, the further upstream you go along a supply chain (or down the proverbial telephone line), the more distorted the predictions become, as upstream suppliers rely on fractured pieces of information to formulate their predictions. Suppliers then misinterpret demand needs, and massive bottle necks begin to accumulate with increasing excess or shortage of inputs.

This bullwhip effect could prove itself an acute problem in the near future as supply chains struggle to remain intact. The effect risks becoming more pronounced as established supply chains—which have worked over lengthy periods of time to build robust upstream/downstream communication networks—become fragmented and strained due to COVID-19 abatement measures. The consequences would be grievous, as end users are unable to access needed products (e.g. medical supplies), and suppliers experience heightened cashflow issues as inventory accumulates or inputs become more costly.

STAGFLATION

Once we have reached the tail end of a hopefully flattened curve, the economy will be lifted from its proverbial coma and firms and individuals will once again become economic actors, re-igniting demand for goods and services. However, if the economic structures that once existed, such as supply chains and markets, are not present to meet the rapid increase in demand, the economy risks entering a very dangerous state called stagflation. Loosely defined, stagflation (or recession-inflation) is an economic condition in which the inflation rate is high, the economic growth rate is slow or slowing, and unemployment is high. If handled improperly, COVID-19 abatement measures could have the potential to create ideal conditions for stagflation, as **money supply** could drastically increase due to monetary measures, such as quantitative easing, which increases inflation; and, the economy will have a crippled labour market due to both high unemployment and a depleted workforce as individuals take time to physically recover from illness.

If stagflation were to occur, the government and central bank would have little to no recourse: policies intended to lower inflation could have the corollary effect of exacerbating unemployment. The economy and labour force would have to endure chaos as firms scramble to both re-orient

[7] Jennifer Welsh. "Briefing: International Cooperation and the COVID-19 Pandemic" (April, 2020). Max Bell School of Public Policy, McGill University.

themselves within the supply chain and rehire staff, while drowning in a high-inflation environment and a likely credit crunch.

One way to avoid stagflation is to ensure that the supply chain is well prepared to meet demand when it returns, ensuring individuals remain in their jobs through the duration of the health crisis and that firms have the capacity to preserve operational flexibility. If we are successful in flattening the curve but are unable to follow the blue line as described in Figure 1, a large number of individuals will still be sick and unable to participate in the labour market once demand begins to return. Therefore, it is important that any impact labour-shortage has on production capacity, due to either abatement measures or sick leave, be minimized.

PRIVATE INVESTMENT

During times of great uncertainty, such as now, investors increase their risk aversion and pull investment from more high-risk or high-yield assets and put them in safer investments such as government bonds. This has the added convenience of increasing the bond market's capacity for sovereign debt in a time of great need.

Then, at the conclusion of COVID-19 abatement measures, a tremendous amount of money will have piled up in what is essentially forced savings due to the simple fact that individuals and some firms had restricted opportunities to spend money. Some have estimated that the North American private sector will have added several trillion dollars to its savings. Funds that were not committed to safer investments are expected to be spent in the short term following the conclusion of social distancing measures or the pandemic itself. If this is the case, there will likely be a temporary spike in inflation as demand for goods and services rises to make up for lost time. If this were to come to fruition, it would be an opportunity for central banks to increase interest rates.

Policy Responses

The unprecedented nature of the pandemic and its pervasive effect require that similarly unprecedented economic policy measures be taken to meet the challenge. When deliberating how best to assemble a portfolio of economic policy options to combat the economic fallout of the COVID-19 abatement measures, four considerations should be acknowledged:

1. ABSENCE OF MORAL HAZARD

COVID-19 is an exogenous threat, meaning that the current economic crisis was not caused by any financial imprudence or inconsistency in economic structures; COVID-19 was imposed on the immaterial structures of the economy by a physical threat: a virus. Unlike the 2008 recession, our current predicament does not owe to a lack of foresight. Accordingly, economic relief measures will not affect the economy's ability to internalize risk. As described by economist and investor Campbell Harvey,[8] "*It makes a lot more economic sense to get businesses over the hump than to let them fail.... This is not the result of small businesses doing a bad job.*"

2. ECONOMY-WIDE, ASYMMETRIC SHOCK

As described by risks like supply chain contagion and stagflation, the COVID-19 abatement measures pose the risk of a system-wide shock, many of which have already been felt. However, though system-wide, these shocks are asymmetric, meaning they will affect businesses in different ways and to different degrees, based on how much they are leveraged and how sensitive they are to effects like supply contagion. All businesses will experience cash flow problems, and many will simply not have the available capital to support operating costs.

In acknowledging the asymmetric nature of the problem, relief policies must prioritize areas of greatest need to allow businesses to adapt more swiftly to changing dynamics. Economic relief must be efficient in its ability to deliver value in eliminating barriers with surgical precision and effective in its ability to achieve the desired effect of preserving the operational flexibility of businesses. Put more simply, governments must identify what components of the economy it feels will be most valuable in preserving economic viability and flexibility, such as workforce retention, credit, and liquidity, and then work to establish policy responses that directly alleviate barriers to preserving them. By virtue of being a system-wide shock, there is no singular origin to which the government can focus its relief; COVID-19 will affect industries differently. Similar to how forest fires are tackled, the government must work to contain and anticipate flares as they arise.

3. NECESSARY ECONOMIC HARDSHIP

Prioritization and acknowledgement of efficient and effective approaches are made even more critical by the fact that the nature of COVID-19 abatement measures, and the spread of the disease itself, will change over time. If we are successful, and the curve is flattened, the transition back to normalcy will be slow. This in turn places even greater importance on preservation and even active cultivation of operational and economic flexibility. Industry will have to constantly re-assess how they can alter their value propositions and business plans to meet transitioning demands, as the penetration of COVID-19 is hopefully slowly diffused.

4. SITUATIONAL IMMEDIACY

With the above points in mind, perhaps the one advantage that the current situation offers is also its greatest difficulty: the economic consequences have been both immense and sudden--therefore, any effort to alleviate barriers should be felt immediately. The availability of immediate feedback will provide valuable insight into the usefulness of what will likely be otherwise largely untested and unproven measures.

[8] Antoine Gara. "There's No Moral Hazard In Saving The Economy From The Coronavirus" (March 2020). Forbes Magazine.

MONETARY POLICY APPROACH

While, as a sub-jurisdiction, Ontario lacks a central bank, the monetary policy measures taken by the Bank of Canada will greatly influence this province's recovery trajectory. Capabilities innate to monetary policy, such as influence over demand and control of money supply could compliment fiscal policies implemented by both the provincial and national governments. As fiscal approaches look to curtail risk in credit markets by guaranteeing loans and transferring cash, monetary policy has the ability to stimulate overall economic growth and recovery by incentivising private sector investment.

The Bank of Canada and US Federal Reserve have taken ambitious moves to lower interest rates to a level that may dip in the negative once inflation is accounted for. This has enhanced the liquidity of valuable credit markets. However, because interest rates are so low, there is not much room to go lower should the situation become more dire. Therefore, the Canadian government has begun a regime of quantitative easing for the first time in history. Central bankers have also begun consideration of the previously inconsiderable, such as 'helicopter money'.

QUANTITATIVE EASING

Given that the Bank of Canada has already begun to challenge precedent in how low interest rates can go, known as the **effective lower bound**, it must turn to other measures to supplement existing and possible monetary and fiscal approaches for economic relief.

For the first time, the Bank of Canada has begun quantitative easing or what is technically termed 'money creation'—otherwise known as printing money. This highly potent monetary tool was used with great success by the US Federal Reserve to avoid economic collapse in 2008.

The methodology underlying quantitative easing is clever as it swaps a valued asset--in this case government bonds--for its value in newly created cash. This allows the commercial banks holding the bonds to sell them back to the Bank of Canada and commit the resulting newly created cash to their reserves. Then, with their increased reserves, commercial banks are able to lend more money, providing greater capacity within the credit market, which in turn provides greater incentive for investors to move towards more risky assets (such as securities) and encourages investment in industry. The Bank of Canada has taken to the approach cautiously, promising to buy at a minimum $5 billion worth of bonds every week until the economic recovery is underway. Though this seems like a tremendous amount of money, it may not be considering the pandemic, according to many estimates, is responsible for $1.6 billion of economic losses per day in Canada. Ultimately, Canada's roughly $2.5 trillion annual economic output that is at stake.

As with any measure that involves creating new money, quantitative easing poses some inflationary risk. However, by virtue of exchanging one asset (i.e. government bonds) for another asset (newly created money), the Bank of Canada is able to inject money into the economy at a reduced risk of inflation. Inflationary risks are also mitigated by the fact that deflationary pressures are higher than normal during times of economic stagnation and that the amount of quantitative easing used is relatively small. The Bank of Canada can also reverse the process in times of economic prosperity (i.e. sell debt and destroy the money attained) to reduce money supply and in turn slow inflation.

HELICOPTER MONEY

Up until now, the idea of helicopter money has been one of pure theory. However, given current circumstances, it is beginning to be seriously considered by central bankers. The name, originally theorized by the economist Milton Friedman, is a novel and simple idea: the government, in conjunction with the central bank, would print a large sum of money and then drop the money from a helicopter onto the populace. While the use of the theory in the real world would obviously dispense with the helicopter, use of the printing press would be very real. The practice would be able to provide immediate financial relief to those in need and have the convenient benefit of not adding towards the government's debt (domestic currency) or increase in taxes. However, and unlike quantitative easing where printed money is 'exchanged for an asset', the printed money would essentially be paid for by everyone through a commensurate rise in inflation.

Conveniently, the Bank of Canada released a detailed paper prior to the advent of COVID-19 in late February[9] that largely rejected the use of helicopter money as a tool to stimulate the economy. However, it did briefly concede that such a measure may be justified in "extensive-margin considerations, including the non-economic factors that could influence the size, form and timing of fiscal programs." Interestingly, this is precisely the situation we are in now: a time when immediate and focused relief is direly needed due to a situation that largely exists external to the economy; one which alters the 'the size, form and timing of fiscal programs.'

FISCAL AND ECONOMIC POLICY APPROACH

Unlike central bankers, political policy makers do not have the ability to manipulate interest rates or print money. Their available responses are far more simplistic in design, as they are essentially composed of cash transfers, loan guarantees, and tax deferrals--all of which are ultimately costs borne by the government itself. However, given the unprecedented nature of the problem, use of monetary policy in direct conjunction with fiscal relief programs could be warranted as it could alleviate much of the debt burden associated with fiscal relief. The Bank of Canada has already been given unprecedented permission to buy sub-sovereign, municipal, and even corporate debt using newly minted money (i.e. quantitative easing). A combined fiscal and monetary approach could be even further explored when considering the potential administrative efficiency offered by an emergency **Universal Basic Income.**

CASH TRANSFERS

Immediate cash transfer responses can include everything from tax relief to direct spending measures. The most effective measure, yet to be used by the Canadian government, is a relief package intended to ensure that employers have enough capital to maintain their workforce. This has the critical effect of staving off mass layoffs and a skyrocketing unemployment rate. The cost to hire and layoff employees comes at a great expense to businesses and even greater expense to the employees themselves. Ensuring that those on payroll remain employed both lowers the economic costs of the COVID-19 abatement measures and ensures that consumer markets do not suffer what could be a fatal blow.

However, existing measures put in place may fall short of salvation. Businesses and those who rely on their viability (e.g., employees, supply chains, and investors) require relief funding immediately. Some governments such Denmark, the United Kingdom, and the United States have prudently taken to existing credit markets to supply forgivable loans. By contrast, the Canadian government has elected to use a time-costly approach by building out Canada Revenue Agency channels to distribute funding. While more cost effective and ultimately convenient for both business and government, it is likely that such an approach will simply take too much time, leave too much room for abuse by deceitful actors, and be administratively cumbersome.

DEFERRALS

Local governments have taken the commendable action of deferring property tax adjustments, which will provide businesses with better foresight into their budgets for the year ahead. Other provincial, municipal, and federal taxation deadlines have been moved forward to minimize costs. Such an approach is extremely efficient, in that it

[9] Carter, Thomas J., and Rhys R. Mendes. "The Power of Helicopter Money Revisited: A New Keynesian Perspective" (Jan 2020). Bank of Canada. No. 2020-1. 2020.2020.

comes at comparatively little administrative and overall cost to the government and has the ability to deliver highly valuable leeway to businesses in a time of great need. However, deferred taxes are not cancelled taxes – and a second wave of financial pressure on businesses caused by deferred taxes coming due may prove to require further government action.

LOAN GUARANTEES AND FORGIVENESS

Loan guarantees provide the government with a highly efficient way of ensuring that credit markets retain the capacity needed to keep businesses afloat. Not only do they advantage existing credit channels that are well established within industrial networks, but they de-incentivise bad actors. In guaranteeing a line of credit, businesses, depending on the structure of the guarantee policy, may still be required to pay back the loan and are therefore incentivised to manage relief funding carefully. These characteristics make loan guarantees a far more efficient fiscal relief tool than cash transfers or deferrals.[10]

Use of existing credit channels also allows businesses to access relief immediately. While private lenders front the initial amount of money, the government is able to take time to properly assess the loan application's 'worthiness' of being forgiven (for example, Canadian programs such as the Canadian Emergency Business Account (CEBA) do well to advantage these efficiencies but cap the total amount that may be forgiven). In contrast, the US Paycheck Protection Program (PPP), a program specifically designed for COVID-19 economic relief, more efficiently ties forgiveness to preserving critical economic structures: maintained workforce and operational flexibility. By utilizing existing credit channels to distribute the money, the American government is affording itself valuable time to assess PPP applications for forgiveness.

[10] Antonio De Vito, Juan-Pedro Gomez. "COVID-19: Preventing a corporate cash crunch among listed firms" (2020).

In addition to mitigating COVID-19's economic impact, governments throughout the world are of course endeavouring to ensure medical services and health care infrastructure are appropriately funded to meet the crisis. While economic and health policy measures are distinctly separate, in that the economic hardship is collateral damage from public health measures implemented to avoid a calamity, they overlap when it comes to testing. Enhanced testing offers the opportunity to both proactively flatten the curve and shorten the timeframe that economically restrictive measures must be put in place--in essence to both flatten and shorten the curve (as suggested by the blue line in Figure 1). Such a solution may still be within Canada and Ontario's reach, given COVID-19's relatively low penetration rate compared to other Organization for Economic Co-Operation and Development countries.

In 2008, South Korea experienced an outbreak of the deadly virus MERS (Middle East Respiratory Syndrome). Using its experience combating the MERS crisis, South Korea has achieved relative success in abating COVID-19. The key, as heralded by many South Korean officials, is to test. If the economy is to return to normal and the curve is to be flattened expeditiously, comprehensive, rigorous, and onerous COVID-19 testing is needed. It is only through testing that hotspots can be revealed and dealt with proactively. The need for comprehensive testing is made even more critical by recent discoveries that a large portion of the population appears to be asymptomatic when they have in fact contracted COVID-19, providing an insidious opportunity for the disease to spread. A more comprehensive testing regime may also provide increased access to blood plasma of those who have overcome the virus, which can be used to inoculate others who are more vulnerable to the disease. As described by Foreign Minister Kang of South Korea in a recent World Economic Forum blog post:[11] *"Testing is absolutely critical with a fast-travelling virus like this... We have tested over 350,000 cases so far – some patients are tested many times before they are released, so we can say they are fully cured."*

As a result of their success (Figure 2), South Korea has relied on relatively lighter abatement measures and plans to re-open many of its schools in April. Though, in relaying the success that Korea has had in combating COVID-19, it emphasised that beating COVID-19 does not by any means mean that it is no longer a threat.

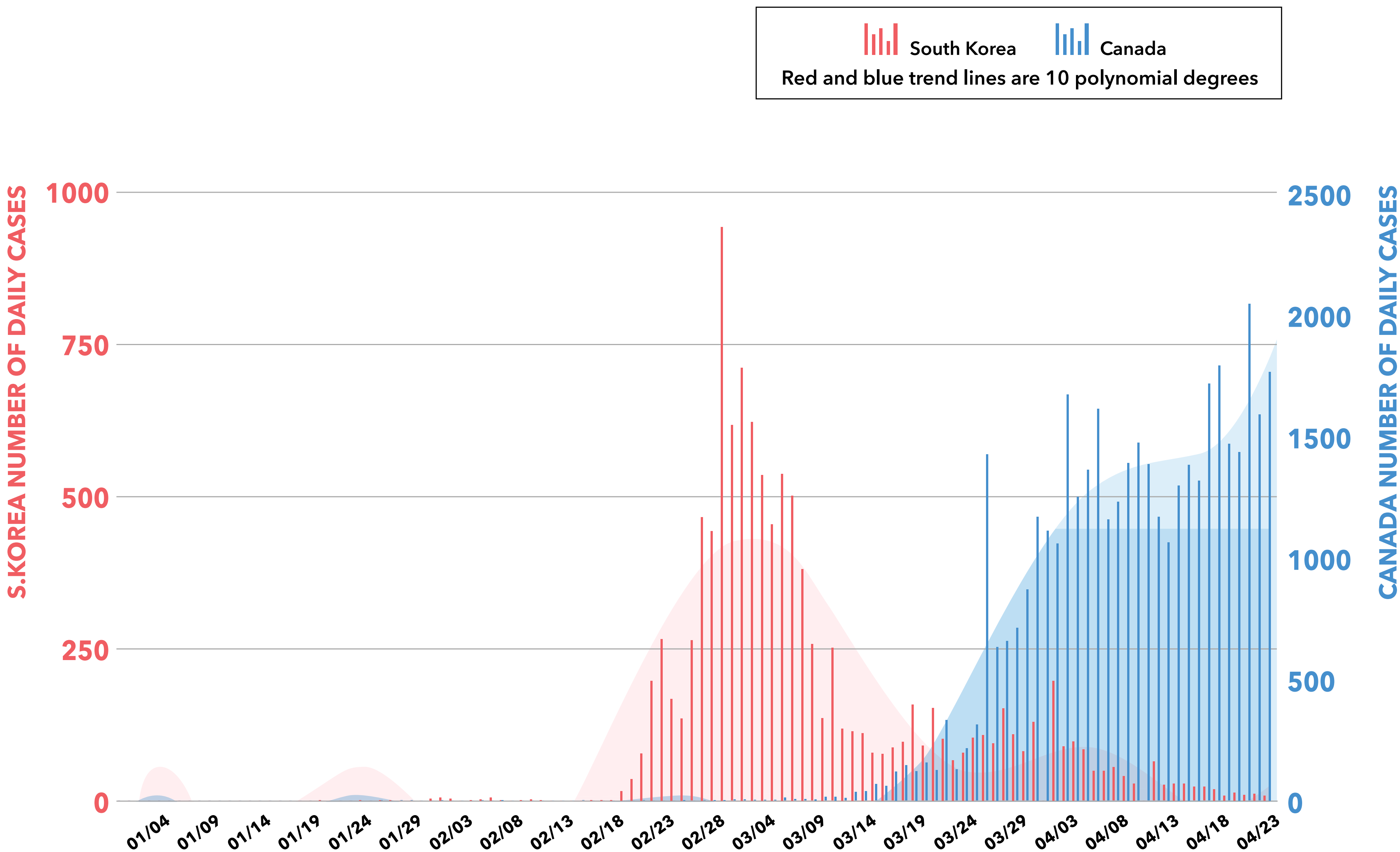
Additionally, transparency appears to be critical to maintaining market and societal confidence. Businesses and society must be frequently updated on the impact these measures are having and the consequences of failing to abide by COVID-19 abatement measures. The inability of businesses to plan for the future is an obscure yet highly destructive risk, especially for businesses that rely on long-term horizons to evaluate opportunities and challenges. While the government may be uncertain, it is important to outline in detail the reasons and expectations of each measure, so that businesses can plan and adapt accordingly. In describing how being open with people and securing their trust is vitally important, in the same interview, Foreign Minister Kang also explains that: *"The key to our success has been absolute transparency with the public – sharing every detail of how this virus is evolving, how it is spreading and what the government is doing about it, warts and all."*

When considering the curve and at what point we are in the process of flattening it, there are three inflection points one can anticipate. First, the initial increase in the number of COVID-19 cases. Second, the crescendo in COVID-19 penetration as daily new cases begin to drop and, third, the eventual dissipation as the total case load begins to reduce. As Korea endeavours to pass the final two inflection points, we must have confidence that reaching a milestone similar to South Korea's sooner than later is possible if we follow its lead. Given that Canada has different demographics and population density than South Korea—or any other nation—we are afforded little foresight into how our efforts to battle the pandemic will play out.

[11] Sean Fleamming. "South Korea's Foreign Minister explains how the country contained COVID-19" (March, 2020). World Economic Forum.

[12] European Centre for Disease Prevention and Control

Figure 2: Canadian vs. South Korean Daily COVID-19 Cases [12]



Conclusion

The economic shocks posed by COVID-19 abatement measures are many. Priority must be given to preserving operational flexibility and capacity through the pandemic. Abatement measures, such as social distancing, have dried up consumer markets and prevented--with good reason--individuals from working and otherwise gathering in groups. As outlined here, this has had some troubling consequences for the economy: demand has deflated, and barriers have been erected within the supply chain. If action is not taken immediately to preserve operational flexibility and capacity, the economy risks falling apart at the seams as businesses suffocate under restricted cash flows. Should this happen, rebuilding the economy to what it once was will be an insurmountable task, given the very likely fierce competition and re-orientation of global supply chains. We do not want to be busy cleaning up economic debris while other economies are defining a new normal.

Fortunately, being a modern economy, Canadian governments and the Bank of Canada have a variety of economic policy tools at their disposal to preserve and cultivate operational flexibility and capacity while attention is drawn to eradicating COVID-19. Once re-awakened from its proverbial coma, the economy must be able to quickly adapt to a new normal, as global economic structures, such as markets and supply chains, will have shifted--the extent to which is still unknown. Economic wealth is not an absolute, but a relative number; the governments of Canada and Ontario must be sure the economy is prepared for global competition when ready to be re-opened. Some countries will be more effective and efficient in preserving economic structures and realizing a swift end to COVID-19. Canada and Ontario must ensure they are among the more prosperous if they're to maintain a strong presence in the global economy.

Unlike COVID-19's swift entry through the front door, its exit through the back will be slow; by virtue of depressing the curve, the recovery period will be tumultuous and prolonged. Importantly, this period of struggle can be shortened by meticulous and broad testing. The insidious spread of the novel coronavirus is largely enabled by its ability to propagate through unknowing or asymptomatic hosts. The sooner we are able to test more individuals--even those who are not displaying symptoms--the sooner we are able to restrict contagion.

Once we have prevailed, a few silver linings may begin to finally show their sheen. Ontario's economy has long struggled with flexibility. Many of our industries are capital intensive, which makes it more difficult for them to adapt to changing markets, and accessing capital is more challenging compared to their American peers. Given the solution to this crisis is, in part, maximizing credit market liquidity, we may see policy makers and industrial leaders forced to develop innovative ways to ensure that liquidity. At the conclusion of this pandemic, perhaps we will have a better understanding of what opportunities lie ahead of us in the global economy and how best we might go about advantaging what we have learned.

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ISBN: 978-1-928052-65-4