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The Corona Crisis: Mapping and Managing the (Western?) Financial Turmoil

— A Minskyan Approach —

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Abstract

This article uses Minsky's insights to analyze the fragilization processes related to the Coronavirus crises. To achieve this aim, it expands Minsky's thoughts in two innovative ways. The first one is bringing clarity to the distinction between financial fragility and financial instability, despite their close connection. Financial fragility is permanently operating in a capitalist economy and opens the ground in some circumstances to the unfolding of financial instability. Instability is a different situation in which the financial market becomes dysfunctional menacing the operation of the liquidity markets and the pricing of assets. The second contribution is related to the three intertwined fragilization processes that started with the corona crisis: a sharp increase in market liquidity risk, the collapse of cash inflows, and the insolvency problem related to impaired balance-sheets. This third process is not described by Minsky but plays an essential role in the crisis and can be integrated into his framework. The article also describes the coronavirus crises from the American and the Global Financial System and suggests policy measures to reduce its negative impacts.

Keywords: Minsky; Coronavirus crises; Financial Fragility; Global financial System
JEL Classification: G00; G01; G18; G21; G28

1 Introduction

The Corona-virus crisis has paralyzed huge parts of the planet in weeks¹. It not only infected the population but injected a gargantuan dose of uncertainty into the system. In that regard, as in many others, it is a phenomenon without precedent. As the time of writing (May-June 2020), we are witnessing, simultaneously, a health crisis, an economic crisis, and a crisis of global governance as well. In the forthcoming months, it can well turn into a financial, social, and political set of crises for which most governments and international organizations are ill-prepared to handle².

In this paper, what concerns us is the **financial dimension of the crisis**. This crisis has not run its full course, but its economic contours are visible and, we submit, can be mapped and managed to a certain extent. We adopt here a Minskyian analytical framework, starting from his "Wall-street paradigm" (Minsky:1982, especially chapters 3 and 5). That means we understand capitalism inherently as a financial system whose "deeper flaw centers around the way the financial system affects the prices and demands of outputs and assets" (Minsky, 1994: 19).

A key insight provided by Minsky's analysis of financial fragility, is that: "A financial system is robust when debt servicing can be readily satisfied by income cash flows and when portfolios contain sufficient cash and other financial assets not required by operations to absorb temporary shortfalls in cash receipts. A financial system evolves

¹ We would like to thank José Antônio Pereira de Souza, Adriano Proença, Jacques Kerstenetzky, Norberto Martins and Luiz Macahyba for questions, comments and suggestions that helped to improve both the arguments and their structuring. Obviously, they are not liable for any remaining flaws in our arguments.

² Here it is important to assert that so far, both the multipronged dimension of the crisis and its depth are much more prevalent in the "West" than in the "East". While the US, UK, Italy Spain, France and Brazil display clear traces of the three aspects mentioned in the opening, Taiwan, South-Korea, Vietnam, Japan, China, Singapore, and New Zealand display cases of much more robust public health system and much less damage to their economies and social fabrics. For the rest of Asia, as well as Africa, the jury still out but – apart from India, no alarms have sounded yet. As for Europe, a clear divide has emerged as well. While the countries referred above are clearly on the "loser's" side, Scandinavia, Germany, Austria, Switzerland and the low countries side with the "winners". In short, yes, it's a global pandemic but with extremely different impacts and potential outcomes.

towards fragility as the cash flows on liabilities increase relative to the relevant cash receipts and as units are "stripped" of liquidity"³ (Minsky: 1975, 4).

From this perspective, capitalism is essentially a system where finance is key, and "stability breeds instability" (Minsky: 1986). Furthermore, we understand that from a Minskyan point of view, all economic crises are essentially "Minskyan crises," since although they might not *start as financial crises, they are bound to develop, endogenously, into financial disorders*⁴. In this framework, financial fragility, financial instability, cash-flow shortfalls, liquidity crunches, insolvency threats and asset-liability restructuring processes are central elements, and they will take their place as we proceed.

Taking Minsky's analysis as our departing point, we extend it in two ways. The first relates to the distinction between financial fragility and financial instability. As far as we know, Minsky himself never made a clear distinction between those two concepts, using them, often, interchangeably. However, he oftentimes linked the emergence of the latter with the behavior of the financial system⁵. Here we propose a way to sharpen the distinction between them analytically, although they are interconnected.

³ "The instability that such an economy exhibits follows from the subjective nature of expectations about the future course of investment, as well as the subjective determination by bankers and their business clients of the appropriate liability structure for the financing of positions in different types of capital assets" (1982:152).

⁴ Which does not mean to equal crises with "crashes". The October 1929 Stock Market crash was not by itself a financial crisis, it evolved into one in the following years. The same is true for the OPEC 1973's oil shock. In itself it was not a crisis but a sudden cost impact to the whole economic system. The pre-OPEC 1971's "Nixon financial shock" along with the post oil-shock financial dynamics were the real culprits of the subsequent stagflation that, coupled with a progressively fragile international financial system, developed into a massive debt-crisis. In that sense, rising international financial fragility since the 1970's provides further evidence of the power of Minsky's framework.

⁵ Kregel (2007, 14) provides a sharp discussion of financial fragility and financial instability, but he does it – in contrast to Minsky -when discussing *the workings of the financial markets*. His concluding statement on that matter, addressing specifically the post-1929 banking crisis, converges with our proposed extension of Minsky's own framework: "Although legislation could not give bankers "superior wisdom," it could prevent their excessive optimism from finding an outlet in excessively risky, illiquid assets and limit the damage that would be caused. Thus, the structure of the system would not prevent fragility, **but it should be regulated so as to be able to control the transmission of fragility into instability and crisis**. (our

Financial fragility is a long-lasting process. It is a standard feature of economic expansions and "results from changes in the liquidity preferences of bankers and businessmen as represented by changes in the margins of safety required on liquidity creation produced by maturity transformation" (Kregel:2007, 6). Financial fragilization is a function of the decreasing ratio of cash inflows to outflows (debt commitments) for every agent in the system⁶. Its degree depends upon the mixture of hedge, speculative, and Ponzi finance, including the ratio of private to public debt (Minsky: 1964, 1975, 1982, chapters 3-6).

Financial instability is much more dangerous and short-lived. It emerges when a shock, or sequence of disturbances, threatens the financial system's orderly functioning. The system's dysfunctionality implies compromising its asset's liquidity transformation and pricing capabilities. These shocks can drift to the financial system, or, even more alarmingly, can be endogenously produced by financial "competitive behavior by means of financial innovation." That systemic contagion is the crucial event in creating a generalized credit freeze, which morphs into a run for liquidity inside the financial system, an asset fire-sale and – in the absence of central bank intervention - to an asset-price collapse, and a financial crash (For passages emphasizing these links, see Minsky 1982: 32, 188-9, 290, 299, 300 and especially 1986 chapter 10)⁷.

In short, financial instability is a creature of the financial system which gyrates it into a dysfunctional set of organizations not only for every other agent in the economy but especially for itself. It results from the fall in the rate of expansion of lending, which ensues the fall in prices triggering a debt deflation. It is the change in liquidity

emphasis). However, the lack of clear definitions of both concepts(financial fragility and financial instability) persists.

⁶ Except for sovereign governments whose liabilities are held in the same currency it issues.

⁷ "Supply and demand analysis – in which market processes lead to an equilibrium-does not explain the behavior of a capitalist economy, for capitalist financial processes mean that the economy has endogenous destabilizing forces. **Financial fragility, which is a prerequisite for financial instability**, is, fundamentally, a result of internal market processes"(Minsky 1986, pg. 280, our emphasis). Although nor a sharp distinction between the concepts, neither the "transmission mechanism" from one to the other are provided, financial fragility is clearly understood by Minsky as a previous process – and a different one - from financial instability.

preferences of the banks that eventually leads them to stop liquidity creation (Kregel:2007,13). The "music stops" (Blinder: 2013) when the expected levels of "Ponzification," in the sense of growing indebtedness against shrinking or vanishing collateral, is suddenly deemed as toxic and not tolerated anymore⁸. If not quickly contained, by Central Bank's intervention, this process is bound to engender a sudden financial market freeze followed by a cluster of banking crashes - a financial crisis - and a deep economic recession or, likely, a depression⁹.

The second extension we propose to Minsky's financial fragility framework is an additional process, namely, an insolvency induced "asset-liability restructuring process." This process was not central to Minsky's theory or to his financial instability analysis. It falls more into Richard Koo's discussion, focusing primarily on the outcome of the Japanese financial bubble, a process he named a "balance-sheet recession" (Koo: 2003). Later, Koo expanded his argument to other countries (Koo: 2018). Here, we submit, that this is also a "Minskyian" process, an additional outcome of financial fragilization, but bound to escalate "after - or shortly before- the music stops"; and especially in situations where financial layering is thick and speculative and Ponzi agents are conspicuously present, highly leveraged and heavily indebted. In that sense, they are particularly suited for Minsky's "Money Manager Capitalism" (For a thorough analysis of the latter, see Tymoigne and Wray: 2014).

As noted, these insolvency and bankruptcy problems surface right away once a financial crisis develops, but their magnitude tends to peak later in the recession phase. Their resolution generally outlasts recessions, and sometimes, even recoveries. In those financially fragile and dysfunctional environments, Schumpeterian "cleansing" processes

⁸ In the 2007-2009 crash, we suggest the Bear & Stearns problems (starting in June 2007) would signal the morphing of financial fragility, which started to build-up since 2001, into financial instability. The crash is marked by Lehman's day (September 15, 2008), and the FED's (The Big Bank) full force in "financial firefighting" dating from September 16 (the AIG bail-out).

⁹ Kregel seems to concur with this point. In a brilliant piece applying Minsky's 1964 analysis to the 2008 Mortgage crisis he writes "The money and capital market institutions are involved in underwriting and brokering or making markets in assets [...] It is these institutions that play a major role in the evolution of financial instability; in particular those who deal in debt" (2010, p.36).

of (market-led) creative destruction do not work^{10 11}. Minsky's big bank has to step in, along with the Treasury and other government bodies, to clean the financial mess and guide the balance sheet restructuring (or, more often, bail-out) of both financial and non-financial corporations. Especially, those business operations who acquire the status of "Too big to fail." By incorporating this third process into Minsky's analytical structure, we offer a way to broaden his theory.

The paper is divided into four sessions. Following the introduction, the second section maps the financial dimension of the corona-virus crisis through an extension of Minsky's financial fragility analysis. The result is a three-pronged analytical frame that encompasses financial fragility, financial instability, and insolvency-triggered asset-liability restructuring processes. These are seen as three distinct but interconnected

¹⁰ Probably the best-known claim in that direction comes Herbert Hoover's Treasury secretary, Andrew Mellon, who advocated a response to the Depression that amounted to financial nihilism: "Liquidate labor, liquidate stocks, liquidate farmers, liquidate real estate," he told Hoover. "It will purge the rottenness from the system...people will work harder, live a more moral life." (Mellon, quoted in Carter: 2020, p 225). It didn't work well. Due to this "liquidationist" policy perspective and the timidness of both the FED and the Treasury between 1929 and 1933, Mellon's wishes largely materialized in the US economy. A process of broadening financial fragility evolved towards a wave of bank failures and financial instability that peaked on March 1933. On his inauguration day (March 4th, 1933) Roosevelt faced a fully-fledged banking crisis. On Monday, March 6, FDR declared a national bank holiday. For the next week, the banks remained closed. On reopening, more than two thousand of the more than seventeen thousand banks shuttered on March 4 would remain closed. But every bank that survived did so with an implicit government guarantee that the government would pay the liabilities of any bank that got into trouble (Rauchway: 2015, Carter: 2020, p.231). It was Minsky's "Big Bank's" debut.

¹¹ In fairness to Schumpeter, let us note that despite several pronouncements attesting the "cleansing" properties of recessions, a concept he often fuses with depressions, in *Business Cycles* (1939), the author provides a very clear statement of his position. Probably deferring to the reality of the state-led recoveries in Germany and Japan, the New-Deal and, perhaps, Keynes, he writes "...it has been repeatedly emphasized that depression, unlike recession, is a pathological process to which no organic functions can be attributed. *The case for government action in depression remains, independently of humanitarian considerations, incomparably stronger than it is in recession*" (Schumpeter: 1939, chapter 3, p131, our emphasis).

"financial fragilization processes." The third session dissects how these three processes are being managed as they unfolded, since March 2020, underlining the key policy interventions and institutional innovations introduced so far, and suggesting further measures for addressing the forthcoming stages of the financial turmoil. The fourth session concludes the paper by pointing out the results as we finished the writing, and by highlighting our intended analytical contribution to Minsky's theoretical framework.

2 Mapping the financial turmoil

The framework we propose to map consists, as noted, of **three distinct but interconnected processes** evolving simultaneously, but with different dimensions, timings, and potential outcomes. In the present COVID-induced crisis, a starting point for their unfolding was perhaps January 23th when Wuhan and nearby cities were put under lockdown¹². (Stamos and Wu: NYT- April 17, 2020). These events injected, as noted, a massive dose of uncertainty into the economic system which reversed both short and long-term expectations and sparked, on March 12, a hefty sell-off in New York stock exchanges that extended around the world, triggering a **market liquidity crunch**¹³. This crunch, compounded by the extremely high levels of existing private debt, **precipitated the first process: the early signs of previously existing financial fragility turning into financial instability**¹⁴.

More precisely: the following losses and asset-price falls, set off by the stock-market turbulence, posed the threat of an unfolding credit freeze within the banking sector and,

¹² Wuhan is a major business hub for both domestic and international corporations, which implies its lockdown had immediate consequences, for both production flows and financial contracts, way beyond China or Asia (Business Insider, January 25, 2020 <https://www.businessinsider.com/wuhan-coronavirus-outbreak-business-hub-2020-1>).

¹³ Crockett (2008, pp 13) defines market liquidity as "the ability to undertake transactions in such a way as to adjust portfolios and risk profiles without disturbing underlying prices. In normal times, liquidity is available and cheap. Market infrastructure is efficient – low cost of transactions and narrow bid-ask spreads, and there are a large number of buyers and sellers that adjust to any movements in prices. The assets transacted in a liquid market have transparent characteristics. Dealers buy and sell them all the time backed up by liquidity lines from banks, allowing portfolio managers to execute their risk strategies continuously. Market liquidity is, therefore, a product which is solidly based on interdependency" (pp 13). Therefore, market liquidity is subject to sudden stops, and that's when financial fragility risks turning into financial instability.

¹⁴ From a strictly theoretical reasoning, an increase of financial fragility, springing from an economic expansion, precedes financial instabilization and, therefore, should appear as the first process to emerge. And this holds, to a point. Climbing levels of private debt and riskier "shorts" were in place before the turmoil. Empirically, however, in the Covid crisis under analysis, the *sudden increase in financial fragilization immediately sparking signs of financial instability* was triggered by an external shock whose first reaction occurred in the stock-market with immediate turbulences in the financial system, as we explain below. That's why we picture the market liquidity crunch as the first process to emerge, and the massive cash-flow contraction – an outcome of the shutdowns - as a follow-up.

thus, turning financial fragilization into financial instability, and eventually leading to a financial crash¹⁵. The transmission mechanism for this process is bank's sudden increase in its liquidity preference. This impact poses a severe threat to all economic agents already facing asset price falls, cash-flow shortfalls, but persisting, and even growing, liabilities, and especially to the financial institutions themselves, as their web of credit and debt contracts risks breaking-up. (Kregel: 2007, Sorkin: 2010, Blinder: 2013, Tooze: 2018). The only remedy for these situations is Minsky's "Big bank" to step in, and it quickly happened, as we will see in the next section.

The second process, a contraction in current and expected cash-flows versus existing debt commitments, was mainly triggered by Governments-mandated shutdowns. Italy started its localized lockdown at the end of February, moving to national lockdown shortly after. Other European countries followed suit, and by mid-March, most of Europe was closing or closed. On March 19, California closed, and by March 22, New York followed. As an immediate consequence, profits, incomes, jobs, rents, and tax revenues contracted or even disappeared. These developments produced a classical Minskyan **increase in financial fragility, turning numerous hedge agents into speculative and pushing speculative into Ponzi units**. The mitigation of this process required a second round of policy interventions, as we will see.

Nevertheless, even counting on the success of these "second round measures," the covid-related *massive financial fragilization* will persist. A whole host of business, small and big, will close as entire sectors of the economy are facing, or will face, bankruptcy¹⁶. It is

¹⁵ This is what happened in the US in 1930-33 (Galbraith: 1961, Kindleberger: 1973, Vague: 2019) and partially happened again in 2008, following the fall of Lehman Brothers. Just one day after letting Lehman go, the FED – which was already making emergency lending to several banks since the Bear Stearns troubles showed up - had to “jump in big” to recue AIG (September 15,2008), and, from then on, started serially bailing out both financial and non-financial corporations (Blinder: 2013 provides an excellent discussion of the whole period). These interventions prevented the acute financial instability in place from turning into a banking crisis that would likely drag the whole economy into a depression comparable to 1929-33.

¹⁶ Note that, following the Minskyian approach, what concerns us most here is private debt, in contradistinction to public debt which is, always, the main focus of debates among most economists and economic commentators (“An economy with private debts is especially vulnerable to changes in the pace

precisely the crisscrossing of broad financial fragility with a deep economic contraction that sets the stage for **the third process. An "insolvency flood" requiring substantive asset-liability restructuring to address debt servicing and restructuring, as well as solvency and bankruptcy problems.** This process is undoubtedly the most troublesome of the three given the stock of financial assets at stake and, both, the legal and party-politics complexities involved. Depending on how it unfolds, the outcome can boomerang back to the financial system restating the dangers of financial instability, and its degeneration into a financial crisis and a long-lasting recession or a depression. Therefore, the shape of this third process will be crucial to help, or handicap, the recovery, and subsequent expansion.

Having tried to map these unfolding financial fragilization processes, for analytical and policy-action purposes, let us reiterate that although distinct, they are closely interlinked. Their management requires bold state involvement in several fronts. The central Bank and the Treasury are front and center in all of them, but full-scale restructuring will likely require "entrepreneurial action of first resort". Risk-taking, extensive lending, and strategic spending, as well as the collaboration of other government agencies such as development banks and agencies, auditing and regulatory bodies, as well as bankruptcy courts.

of investment, for investment determines both aggregate demand and the viability of debt structures".
(Minsky: 1982, 152)

3 Managing the turmoil

The covid-related economic turbulences started the three processes discussed above¹⁷. The global stock's sell-off, beginning on February 19, and the subsequent market liquidity crunch, showed the first signs of its conversion into financial instability. This process started, as noted, with the perception of the deepness of the public health crisis in most of the West – crystalized by worsening expectations embedded in the information flow coming from China, the first wave of government-mandated travel restrictions, shutdowns, and hospitalizations. An "unknown virus's swiftly spreading" and *Pandemic* quickly took over the news and upended business transactions and daily routines.

These events immediately reached the financial markets producing **a liquidity crunch and the risk of financial contagion, hence reinforcing the signs of financial instabilization**. One of its first, and most decisive moments, started on March 9 and took place in New York. Schrimpf, Shin, and Shushko (2020) describe this event as follows: "The US Treasury market suffered one of its most severe bouts of volatility in March. The initial phase of investor de-risking through early March saw orderly flight-to-safety into treasuries. The 10-year yield fell to historical lows, sparking discussions of whether it could go negative. However, from March 9, the market experienced a snapback in yields and extreme turbulence, especially for long-dated treasuries". Their unfolding prompted a further increase in the financial system's financial fragility. It sparked instabilization: a run for liquidity within the financial system that would trigger a fully-fledged financial instability process if not immediately stopped¹⁸.

¹⁷ However, as noted, their respective shapes, intensity and duration greatly differ.

¹⁸ Some investors sounded alarms about the Covid-19 outbreak as it hit China, but the brutality of the equity-market sell-off has been so extreme and rare, no one would dare have predicted it in detail. Trillions of dollars in investment strategies premised on muted volatility, ample demand for corporate credit, an inverse relationship between stock and bond prices and ample liquidity have come unspooled. John Roque, technical strategist at Wolfe Research, noted that on March 12, the S&P tumbled at least 22% below its 50-day average for only the 85th day since 1929. Of those days, 65 were from 1929-1940, the Great Crash and Depression. The rest were in 1987, 2002 and the financial crisis collapse in 2008. (Santoli, M: CNBC. March 22)

The perception of a possible collapse led a sell-off treasury to rise of their bid-ask. The spread increased from its usual level of 0,1% to 0,48% in a matter of days. The FED had to intervene to avoid worsening the market turmoil, and the spread of panic. In the three weeks after March 16, it bought almost US\$ 1 trillion in government bonds, the same number of treasuries held by the dealers in mid-February. By the beginning of May, the FED's interventions had brought bid-ask prices back to more 'normal' – although still high – levels (Duffie, 2020).

The private, corporate, bond market was also affected. As the seriousness of Covid-19 became clear, there was a rush out of 'prime' money market funds, which invest in corporate debt, to the safety of government funds — which were already receiving massive inflows as investors got out of riskier assets. In March, \$160bn were withdrawn of, prime, private bond funds, and \$790bn flew into government funds, according to Crane Data, changing the shape of the over-\$4tn market.

The Federal Reserve smelled trouble again: "it started lending money to banks so they could meet fund redemptions and started buying commercial paper to make sure companies had access to cash. Despite this, both Bank of New York Mellon and Goldman Sachs were forced to prop up some of their prime funds in the face of withdrawals" (Armstrong, FT: June 2, 2020). This led the monetary authority to reinforce its commitment to act, which showed in their latest report: "As Federal Reserve purchases gradually increased, market functioning improved, though bid-ask spreads for off-the-run vintages remain somewhat elevated" (Financial Stability Report: May 2020,p.12).

In this "financial firefighting", the FED was by far the most aggressive and innovative player in its response, but it was not alone¹⁹. Alongside other key central banks – but more aggressively – the FED quickly started to buy all sorts of assets to provide liquidity to the financial system (Appendix: Table 1).

¹⁹ That is true, especially for the current situation, but in several fronts the FED was preceded by the Bank of Japan. In that respect, see Anderson: 2019 and Taggart Murphy: 2020.

The European Central Bank (ECB) initial response was quite different. In March 12, while referring to calls for the ECB to ease borrowing costs for highly indebted European countries, president Christine Lagarde's response was "We are not here to close [bond] spreads. There are other tools and other actors to deal with these issues". (Lagarde: FT, March 13, 2020). The statement's meaning was quickly caught by financial markets: from the Chair's point of view, this issue should be addressed by the fiscal authorities, a well-known "problematic and politically charged" dimension of the European Union.

This statement was an apparent U-turn from Mario Draghi, the then ECB president, 2012's "whatever it takes" declaration. Immediately, the interest rate on 10-year Italian bonds jumped from 1.3% to 1.8% as investors thought that European State bonds would lose its full protection from the ECB (Tooze, 2020).

Chairwoman Lagarde's unfortunate statement, not surprisingly, worsened the problems that already surfaced a few days earlier, in the US Treasury bond market. However, the ECB quickly changed course as the interest on Italian- sovereign bonds jumped, and three days later announced additional long-term refinancing operations (LTROs) for banks, more favorable LTRO terms in upcoming operations, additional asset purchases, temporary capital, and operational relief to banks (Collins and Gagnon: 2020). Since then, the ECB activism only strengthened, and on June 4, the bank announced it would buy an extra €600bn of bonds in a bid to revive the eurozone's pandemic-stricken economy (Lagarde: FT: June 4, 2020).

These operations shored the banking sector, and large parts of the financial system, for now, from the financial crisis that almost destroyed the whole financial system immediately after the Lehman collapse in September 2008 (Sorkin: 2010, Blinder: 2013, Tooze: 2018). Alongside with this domestic liquidity injection, the FED also reinstated its dollar swap lines, thus extending this liquidity to other central banks and banking systems around the world. It became, once more, the global lender of last resort (Tooze: 2020). Simultaneously, it also joined other central banks in lowering its interest rates to

almost zero, indicating its willingness to both alleviate the interest burden for indebted corporations and reduce the costs of borrowing (Appendix: Tables 2 and 3)²⁰.

These measures successfully allowed banks and capital markets to continue providing liquidity for investors and to price financial assets and thus restored confidence in the fulfillment of their payments and contractual obligations. Therefore, they prevented the conversion of liquidity shortfall into a wave of financial instability. In short, Minsky's "big bank" stepped in, quickly and aggressively, and the worst-case scenario for the "first process" – financial fragility turning into financial instability and blasting a financial crisis - was avoided.

However, although aggressive and robust, these interventions **were insufficient to halt the second process: extensive cash-flow contraction spreading system-wide financial fragility**. The sudden economic stop sparked, consequentially, disturbances in payments, debt-serving, and contractual obligations in general. This second process remained mostly unaffected by the provision of liquidity from the central bank to financial institutions. Families, non-financial corporations, and local governments – entire sector of the economy - still face a tighter survival constraint for, at least, the remaining of 2020 and for 2021 as their sources of revenue are still down, many of them gone forever.

Therefore, mitigating this ongoing and long-lasting financial fragility process required a second round of interventions tailored for the maintenance of the cash flows for all those affected by the collapse in revenues. Here Central Banks and Treasuries re-entered the scene and innovated. To that respect, Bank of England's Governor declared, on March 23, that "The Bank of England has taken a number of steps in recent weeks to support the UK economy through the economic shock caused by COVID-19. On Monday, a new

²⁰ Different from the start of the 2008 crisis, this time, the central problem was not a lack of liquidity of the dealers. Still, the post-crisis regulatory constraints introduced on the total amount of treasuries they could hold on their balance sheets acted as a drag. As large sellers needed to increase their cash holdings in US currency, they had to sell large amounts of treasuries in a brief period. This decision, along with more substantial margin collateral asked by the regulatory authorities, caused a significant increase in the net inventories of the dealers, as they operate as warehouses of the bond market. As a consequence, they reached, in a few weeks, their regulatory capacity to absorb new sales. To remedy this process, the Fed provided massive acquisitions of these excessive treasuries, to restore "market order."

lending scheme, the COVID Corporate Financing Facility, will open to help businesses manage through this period of uncertainty. Combined with steps taken by the Government, this will help companies through this difficult time and support the needs of the people of this country" (Bailey: 2020, March 23)²¹.

The US Treasury followed and also started funneling cash to the Internal Revenue Service (IRS), which started direct payments to US residents (Keshner: May 12, 2020). By doing that, central banks and Treasuries followed another stabilizing measure proposed by Minsky, one which he learned from the New Deal. Governments became employers of last resort. As long as these measures are in place, they will mitigate – but not solve – workers and household's financial fragility. Nevertheless, the scale of the corona crisis-induced cash-flow contraction is massive. In situations like that, new credit operations – the expansion of private debts – constitute another essential element for alleviating the ongoing fragilization process.

However, despite central bank's interest rates at zero or in negative territory, commercial banks and other private credit suppliers are skeptical about originating these loans. Even if provided with liquidity injections by central banks, room to expand their balance sheets, and having the central bank as a major guarantor for around 70-80 percent of these loans, those financial institutions maintain they are unable to properly price the risk involved in producing them. Therefore, until "business as usual" more-or-less resumes²², risk aversion by private financial institutions will remain a potential drag here. In short, Minsky's Big Bank and Big Government have to stay on call.

²¹ Additionally, the UK Government has taken action to support employment, largely via the Coronavirus Job Retention Scheme. That Scheme will reimburse businesses 80% of the usual salaries of employees that are furloughed during the outbreak, up to a value of £2,500 per month. This is designed to encourage companies to retain their staff where possible and safeguard the incomes of those employees. For the self-employed, the Government will provide a direct cash grant of 80% of average profits, also up to £2,500 per month. Income tax payments due in July 2020 under the self-assessment system will also be deferred to January 2021.(BoE: 2020, "Monetary Policy Report" May, pg. 19).

²² An old say sums it up: Banks are traditionally known as institutions that offer you an umbrella when it is sunny and pleasant, just to claim it when it starts raining.

Furthermore, to restore the short-term corporate credit market, central banks, along with Treasuries, also re-issued several financial rescuing instruments that were successfully used in the 2008 crisis. The Commercial Paper Funding Facility provides an example. The CPFF is a special purpose vehicle (SPV) created by the Federal Reserve to purchase commercial paper, to ensure commercial paper markets to stay liquid. It was created on October 27, 2008, and reestablished on March 17, 2020, in reaction to the financial impact of the COVID-19 pandemic, including the 2020 stock market crash. This vehicle's main goal is to support the flow of credit issued by financial institutions to support businesses and households. This facility is tailored to eliminate the risk of an eligible issuer by rolling over the maturities of their commercial papers, using a US\$ 10 billion credit protection the Treasury offered to the Federal Reserve.

On this subject, the FED stated that it aims to supply "credit and funding for auto loans and mortgages as well as liquidity to meet the operational needs of a range of companies. By ensuring the smooth functioning of this market, particularly in times of strain, the Federal Reserve is providing credit that will support families, businesses, and jobs across the economy" (Fed Report: March 2020). These policy interventions were, as noted, quick, aggressive, and worked in managing - so far- the twin processes of massive financial fragilization and its conversion into financial instability, spreading a financial crisis.

These multiple credit instruments were, by and large, successful. In regard to mitigating unemployment and funneling credit to small and medium corporations, they were immediately effective in Germany, France, the UK, and Scandinavian countries, but less so in the US, where the number of unemployment claims quickly spiked reaching 38 million by the middle of May. Lines of credit largely failed to reach the small and medium business. Nonetheless, the US CARE act ("unemployment insurance on steroids" in the words of Senator Chuck Schumer) along with food stamps seem to be providing, after a rocky start, "a lifeline to workers who have lost their jobs as a result of the lockdown" (Krugman: NYT, May 5, 2020). The key political question here is for how long can they keep going?

Their downside, are soaring levels of both private and public debt, vastly expanded central Bank's balance sheets and huge insolvency and bankruptcy' risks. But as Tooze correctly

remarked, "To the conventional wisdom – and most economists (our addition)- debt must be eventually repaid through surpluses generated through tax (or revenue) increases and/or spending cuts. History – and theory (our addition)- suggests, however, there are also other alternatives" (Tooze: 2020, p 4). Those alternatives range from (moderate) inflation to tax reform, debt restructuring, and debt forgiveness. It is likely that they all will play a role in the unfolding of the current financial storm.

Substantial private debt and insolvency risks are the operational words here, and where we face the **third process in our scheme**: the looming - and also potentially massive - insolvency and bankruptcy's crises coming in, and perhaps the most significant dimension of the financial turmoil. As noted above, it is already clear that thousands of firms, and entire sectors, will not only increase their financial fragility, but, as noted, will be badly hurt by solvency problems, and will not reopen. Besides small firms in every industry, the whole "physical" entertainment industry is at risk²³. Airlines, cruises, movie chains, theater districts, restaurants, major sports events are cases in point. The same holds for local states and municipalities. Before a vaccine becomes available and is widely spread, none of these businesses nor tax revenues will get back to "normal." This means that an insolvency wave is already visible²⁴.

²³ As opposed to “digital” which is prospering and whose major players are poised to become the big beneficiaries of the economic shutdown.

²⁴ In the US, chain retailers Niemann Marcus, J Crew, Pier 1, Modell Sporting Goods, J. C Penney, Lord & Taylor, Food First, Papyrus and Hertz rental cars filed for chapter 11, Macys and many others are on the verge of filling. The process has been labelled “Retail Apocalypse” by the media. In this regard, Larry Fink had a stark message for a private audience recently: “As bad as things have been for corporate America, they’re likely to get worse”. The BlackRock CEO said he expects a cascade of bankruptcies, empty planes, cautious consumers and a corporate tax rate as high as 29%. Fink’s words carry particular clout at the moment: He’s been advising President Donald Trump on how to navigate the effects of the coronavirus pandemic, and BlackRock is playing a key role in the Federal Reserve’s efforts to stabilize markets. Others seem similarly fearful. An analysis of earnings calls show corporate America is more scared now than in 2008. Small businesses are worried as well: 52% expect to be out of business within six months, according to a new survey (Josh Petri: Bloomberg News. May 6,20). In the UK, half a million firms are at risk of collapse, according to insolvency experts (Bebbies Traynor, Financial Times, 1/5/20). In Latin-American countries such as Brazil, Mexico and Argentina, the outlook is even worse. Africa and South-Asia remain a puzzle.

If we look at public actions and statements, there are reasons for optimism. The US Congress authorized a stimulus package north of 2US\$ Trillion (Oberlo: April 2020). Japanese Prime Minister Abe pledged an additional set of measures worth 1US\$ Trillion, supplementing what's already in place, and literally delivering the world's most significant stimulus package, as we write (Yuko and Hirokawa: May 27, 2020). Emmanuel Macron has announced that "no company, whatever its size, will have to face the risk of bankruptcy." Germany pledged "unlimited loan support via KfW, its public development bank. France and Spain are offering loan guarantees of up to €300 billion and €100 billion for companies, respectively. Italy and others are also putting in place massive business support programs. Several countries plan to offer tax deferral programs (Becker, B; Ulrich, H; and Mella-Barral, P: 2020).

However, in this regard, Chairman Powell recently remarked an obvious, but essential, point: the FED – and every well-structured central Bank- has tremendous lending power but lacks spending power (cf. Powell interview to CNBC: May 2020). This constraint is key since it brings in the fiscal dimension of these policy interventions and highlights the need for a fine-tuning between central banks, treasuries, and private finance in addressing the solvency crisis ahead. The re-shaping of business will require a financially "heavy" and legally complex asset-liability restructuring effort involving central banks, developing agencies, and treasuries – along with private financial institutions, auditing alertness, and regulatory changes. In short, the need for a genuinely Minskyan fine-tuning between "Big Bank" and "Big Government", along with private finance, to properly link the lending packages in place with the fiscal stimulus necessary to manage to restructure and turn recovery into expansion.

There are, at least, four dimensions where the fiscal component is crucial for managing the financial storm: 1) restarting confidence in the economy, therefore, reversing expectations and creating employment and income both via direct and induced spending that has a direct impact of the cash flow of families and corporations; 2) restoring local

states tax revenues which are dependent on resuming economic activity; 3) helping restructured, but indebted, corporations - and households – to service their debts; 4) making sure expansion follows recovery so that productive capacity is in place to avoid inflationary pressures coming from "excessive QE" and disrupted production chains.

In the previous crisis, in the US and the EU, both processes, crisis and recovery, had their epicenter in finance and were led by financial institutions. The financial restructuring process required a significant role from central banks but also had ample room for their hand-picked private financial dealers. J.P. Morgan and Bank of America provide the best example for the US. Barclays would be the equivalent for the UK. The Assets-liabilities restructuring - encompassing M&A's, asset stripping, bankruptcies, and regulatory reforms – was fairly complex. It took more than six years (the bulk happening between 2007 and 2013) and involved more than 100 big banks, big financial and non-financial corporations world-wide (Sorkin: 2010, Paulson: 2010, Irwin:2013).

If we jump to the present corona-induced collapse, it's bound to be even more complex. What we have now in the US, large parts of Europe, Southern Asia, and Latin-America is – as noted - virtually the whole economic system skating on the thin ice of financial fragility. Both the needs and complexity of combining financial restructuring with a strong recovery in investment and employment will likely dwarf what happened in the previous crises. Who will be the "winners" and "losers"? Who will absorbing/buying whom? On what conditions? Those are not purely "technical", but rather **big political questions**.

Furthermore, the scale of the process leaves us with very few precedents. The New Deal provides, perhaps, a roadmap to the tasks at hand. Then, as now, liquidity, solvency unemployment, and hunger problems were intertwined and encompassed the whole economic system. In its two bursts of institutional innovations, around twenty major

federal programs were created, configuring a vast cluster of "institutional creative-destruction"²⁵ (Leuchtenburg: 1963, Barber: 1988, Rauchway, E., 2015).

We can argue that many of the required agencies to deal with the present crisis, the bulk of the creatures of the New Deal, already exist and are in use ²⁶. However, we inhabit a very different economic, financial, social, and technological landscape. A new wave of institutional innovations will be required to manage the current financial turmoil. Some were already created. A few further suggestions would include:

- A public financial restructuring corporation co-headed by the Central Bank and the Treasury, assisted by regulatory bodies to provide "rules and conditionalities" for financial assistance and lines of credit,
- A public infrastructure – physical and digital- reconstruction corporation co-headed by the Treasury and the ministry of industry and technology (or equivalent) and funded by the Central Bank (and/or public banks),
- Direct financing by developing agencies - acting also as loan's guarantors and backed by central banks - funneling funds - via public SIV's – for troubled but

²⁵ The programs and agencies include The Emergency Banking act, The Banking Act (Which included the Glass-Steagall legislation) The Securities Act (Which led to the creation of the SEC in 1934)The Civilian Conservation Corps (CCC), The Civil Works Administration (CWA), The Tennessee Valley Authority (TVA)The Farm Security Administration (FSA), The Agriculture Adjustment Administration (AAA),The National Industrial Recovery Act (NIRA), The Social Security Administration (SSA),The Puerto Rico Reconstruction Administration, The Reciprocal Tariff Act, The National Labor Relations Act , The Works Progress Administration (WPA) relief program (which made the federal government by far the largest employer in the nation),The Social Security Act and new programs to aid farmers and migrant workers. The United States Housing Authority, The Farm Security Administration (FSA), The Fair Labor Standards Act of 1938, which set maximum hours and minimum wages for most categories of worker and The Food Stamp Plan of 1939 (Leuchtenburg :1963).

²⁶ In a subsequent expanded version of our analysis, the “Japanese New Deal” under Finance Minister Takahashi Korekiyo (the “Japanese Keynes”) and the country’s fast recovery would have to be looked at. The same applies to Hjalmar Schacht’s – the “credit Tsar” - policies to revamp the German economy after 1933. The fact that both countries evolved towards a military-keynesianism poses an uncomfortable question for us, since they were the first to achieve recovery, expansion and full employment. As for the US, the New Deal did not achieve that. It was only military buildup and “Pearl Harbor” - military-keynesianism again- that provided them (Schacht: 1967, Tooze: 2008, Taggart Murphy: 2014, Best: 2018).

potentially viable corporations. The collateral for those lines of credit would be their assets and future earnings capacity,

- Direct lines of credit by public authorities to finance M&A's, along with proper supervision, conditionalities, auditing and regulation by dedicated bodies,
- A targeted set of stimulus packages – and grants - to help the expansion of "post-pandemic" strategic sectors,
- Issuance of public securities with positive interest rates, but no maturity dates (perceptual), aimed at individual retail investors²⁷,
- The conversion of the employment-relieve schemes in place into a robust jobs guarantee program²⁸ .
- A basic income program to assist informal, unemployed and unemployable workers²⁹.

The establishment of all these agencies, programs, and operations will take time, financial craft, and (difficult to organize) political coalitions³⁰. **They would, however, restore families and corporations' cash-flows, create employment and income, raise tax revenues, and productivity – not crush them by reinstating austerity programs.**

²⁷ This proposal was recently made by Soros (2020) using the well know label of “consols”.

²⁸ Tcherneva: 2020 has a fine blueprint for such a program.

²⁹ Which will be essential to help cope with automation and technological unemployment, both likely to accelerate “post-pandemic”.

³⁰ In that regard, Finland provides an encouraging example. The Government’s has introduced a number of fiscal measures for companies including :Loan guarantees for firms (4% of GDP), most notably via Finnvera, the state’s financing and export credit company; Increase of grants (0.1% of GDP): the public funding agency Business Finland’s grant authorizations are increased to permit immediate business support measures;

Faster lay-off procedures to avoid bankruptcies (i.e. the notice period is shortened from 14 to five days); Temporary reduction in employer pension contributions; and other tax measures (cf. Petter von Bonsdorff, *Next Finance*: May,4,2020)

All this will come, as noted, with climbing public debt, which, we read everywhere, will bankrupt entire nations and handicap future generations. The enormity of the tasks ahead is rightly scaring economists, financial managers, the general public, and heads of governments. However, both history and theory give us reasons not to engage with this, largely misunderstood, source of fear (For the theory, see Wray: 1998 and 2012, Newman: 2013, Mitchell and Wray: 2019, Kelton: 2020).

A quick glance at history reveals the United States emerged from its independence war with a public debt to tax receipts ratio of 457 percent (Mc Craw: 2012). The United Kingdom ended its victorious campaign against Napoleon with a debt to GDP ratio of over 200 percent (Salsman: 2017). Both nations finished World War II with public debt to GDP ratios of 112 and 240 percent (Best: 2018, Salsman: 2017 respectively. Appendix tables 4 and 5). In 2010 the US debt to GDP ratio was back to 106 percent (Appendix: Table 6). However, instead of bankruptcy and next-generation sacrifices, the periods following these destructive episodes were marked by sustained growth. Today, Japan's debt to GDP ratio is north of 230 percent but adjusted to population decline, its per capita income growth parallels the US, and the country is the third richest in the world (Koo: 2003 and 2018, Anderson: 2019 and Appendix: table 7)³¹.

The subject is a contested one, but the data cannot be. The takeaway here is that sovereign public debt *per se* is neither a black hole nor a threat. All public sector liabilities are someone else's assets. Whoever holds these assets wants a liquid and safe source of income, not "debt full repayment". If public debt happens to be fully paid – as so many economists suggest it should - this liquid and safe asset would disappear, and all debt holders (the "Market") would start to complain.

³¹ Let's recall that Japan is an archipelago with a population of 126 million habitants, a land mass smaller than California and possesses very scarce sources of raw material. Nevertheless, it still stands as one of the biggest producers and exporters of Hight-tech.

Furthermore, debt restructuring and debt stabilization are possible and have happened over and over in history without harming debt holders or bankrupting nations³². In a nutshell, debt restructuring requires fiscal consolidation and low-interest rates – not austerity (Yun-Casalilla, B., O'Brien, P.K., O'Brien, P., and Comin, FC eds: 2012). Debt stabilization or reduction requires GDP growth rates equal to or higher than interest rates.

Jumping back to today's macro landscape, we see a sobering, but still much less dimer picture than the one provided by previous historical references. Public debt ratios will be well under 150 percent (except for Japan and probably Italy), governments issue debt in the same currency they create³³. Central banks are much more powerful and knowledgeable; interest rates are zero, close to zero, or in negative territory. Inflationary pressures have not shown up, although they can, but that is for the future. The tax burden on corporations, millionaires and billionaires has plenty of room to go up, and public infrastructures in most western countries are in tatters.

The implications are straightforward. In the land of "free money" (and potentially higher taxes and/or curbed tax-loopholes), both the "tolerable" levels of public deficits and debts have gone substantively up (Blanchard: 2019, Summers and Furman: 2019, Kelton:2020) at the same time, a robust public infrastructure rebuilding program is certain to raise productivity, create jobs, multiply income, raise tax revenue and cash-flows so that debt service can be addressed and debt to GDP ratios stabilized in the medium run.

³² Which does not preclude any of these from happening. If debt is contracted in foreign currency, the implications are very different. Similarly, if debt is "restructured" by hyperinflation or by defaulting on creditors by a new power coalition (Russia after the Bolshevik revolution is a classic example), losses will happen. The point is that is not inevitable, and history gives us plenty of examples of different outcomes.

³³ Here, we have to raise – but not discuss- a fundamental issue regarding the European Union. Financially, the EU is not constituted by sovereign states, since they do not issue their own currencies. The Euro is managed by the European Central Bank, not by EU member states. In that sense, the nineteen nation states in the Eurozone are not sovereign states but resemble the US local states. From a sovereign debt management perspective, this poses further complications and potential conflicts, as the 2008 financial crisis evidenced (Tooze: 2018 provides an excellent description and analysis of that problem).

4 Conclusion

At the time we finish this first version of the paper (June 2020), it's our hope that the proposed extension of Minsky's analytical framework supplied a useful starting point for theoretical advancement. Furthermore, the three financial fragilization processes we laid out embody an effort towards broadening Minsky's perspectives on institutional analysis and policy interventions. From that perspective, our "mapping and managing the (largely western) financial turmoil" exercise suggests the following outlook: *the containment of the first process*³⁴ worked, so far. This accomplishment happened mainly due to speedy, bold, and creative actions from Central Banks and Treasuries. The FED's action, in particular, played – and is still playing – a crucial role. Furthermore, Chairman Powell statements have been decisive in restoring the financial market's confidence and igniting their expectations and actions. In fact, by June 3, the S&P 500 rose for a fourth straight day, trimming its year-to-date loss to just 3.3%. But, will it solidify?

As for *the second process*³⁵, *although far from perfect, it is more-or-less working*. As the US and most of Europe starts to "reopen", economic activity is resuming, jobs are (slowly) being re-created, and production chains don't look worryingly disrupted. However, a recession is already in place, and the key question is "how deep and destructive"? The implication is that the elimination of cash-flow and liquidity shortages cannot be taken for granted, especially if a second wave of infections occurs³⁶.

To answer that question, *the outcome of the third process in place is crucial*³⁷. As noted above, the way it's shaped and handled, will be crucial to help, or handicap, the asset/liability restructuring processes, as well as the recovery and subsequent expansion

³⁴ The market liquidity crunch signaling financial fragility morphing into financial instability and triggering a financial crash.

³⁵ The mitigation of massive financial fragilization resulting from cash-flow shortages vis a vis sticky debt commitments.

³⁶ And we see some signs of this happening, as we conclude the paper.

³⁷ The solvency and bankruptcy risks of entire sectors, in key western countries.

ahead³⁸. This operation is still in its infancy, which means that uncertainty is still overwhelming, regarding the magnitude of the "potential solvency storm" already shaping up. Will it have a soft or a hard landing? That's an open question. No reliable answer is available now, nor will it be in the near future.

In closing, let us underline that the State is back, and most likely on steroids³⁹. Yet, the financial turmoil – whose first and second processes are seemingly, and respectively, mitigated and contained, so far - is only one dimension of the incoming economic and social disturbances, or even disruptions, ahead. Bold public action will surely be called for. Perhaps the time has arrived for the materialization, in the West, of Hubert Henderson's bold suggestion dating back to 1943.

In an exchange with Keynes, his co-author wrote: "What I really suggest is that the State should assume the role of Entrepreneur-In-Chief, directing the flow of productive resources to the employments in which can best serve human needs" (Henderson: 1955 [1943])⁴⁰. However, the key question in search of an answer remains: in whose interests? That is not clear.

The corona crisis is, in fact, an extremely challenging cluster of crises, and its financial dimension, though contained for now, is likely to become more complex and multi-layered. We would like to think the Minskyan extended approach we started to develop here allows us not only to map it more precisely but also to highlight the contours of its

³⁸ The key implication here is that not even the (super-shored) financial system is completely "off the hook". The size of the solvency and bankruptcy troubles – especially debts to the financial system – could boomerang back to banks and other financial creditors, jeopardizing their own solvency capacity.

³⁹ In point of fact, it never went away. Taking the US as example, what happened is that the priorities have turned to tax reduction schemes, cybersecurity, intellectual property protection, financial deregulation and trade wars.

⁴⁰ Here, it's worth noting that the Asian Developmental State, and especially the Chinese "entrepreneurial state", largely materialized Henderson's suggestion (as well both Keynes and Minsky's propositions regarding the "socialization of investment"). China's developmental trajectory also validates Schumpeter's arguments about the superiority of (his) "Socialism" over Capitalism regarding accelerating growth, innovation diffusion and policy coordination. For a discussion of these issues, see Burlamaqui: 2019 chapter 10).

management, so that, if the proper political coalitions are set in place, fixing public health, renewing public infrastructure, providing a decent livelihood, financial security and social justice - the crucial threats ahead- can be met.

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Appendix

Table 1: Central Bank's activism

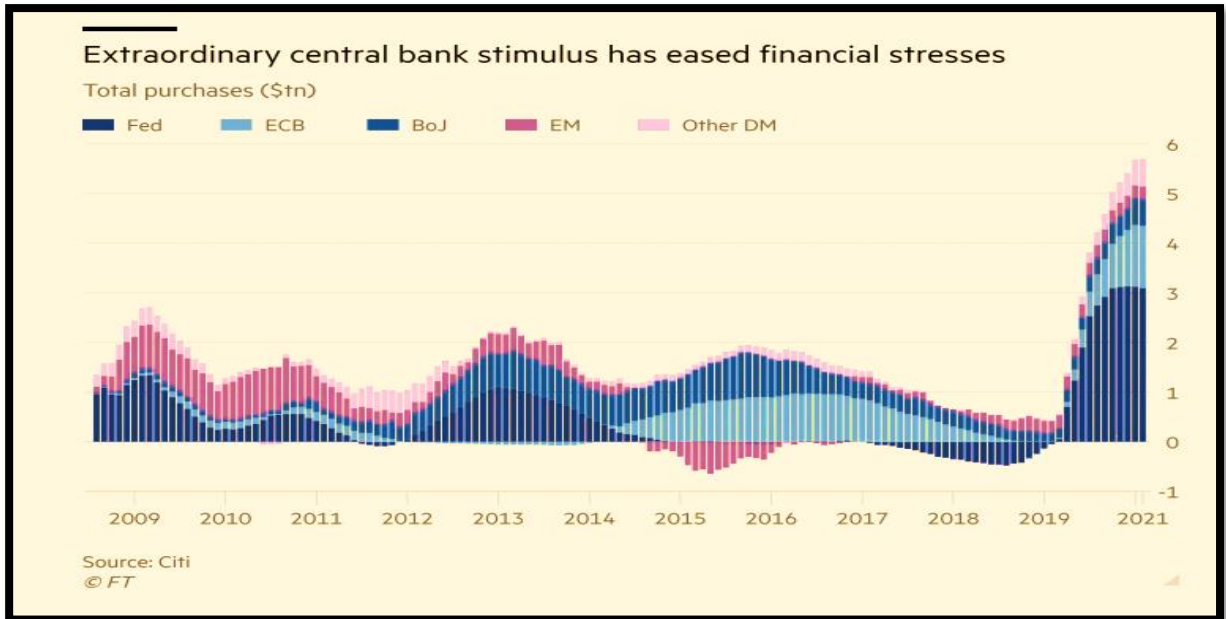


Table 2 FED's Prime rate:

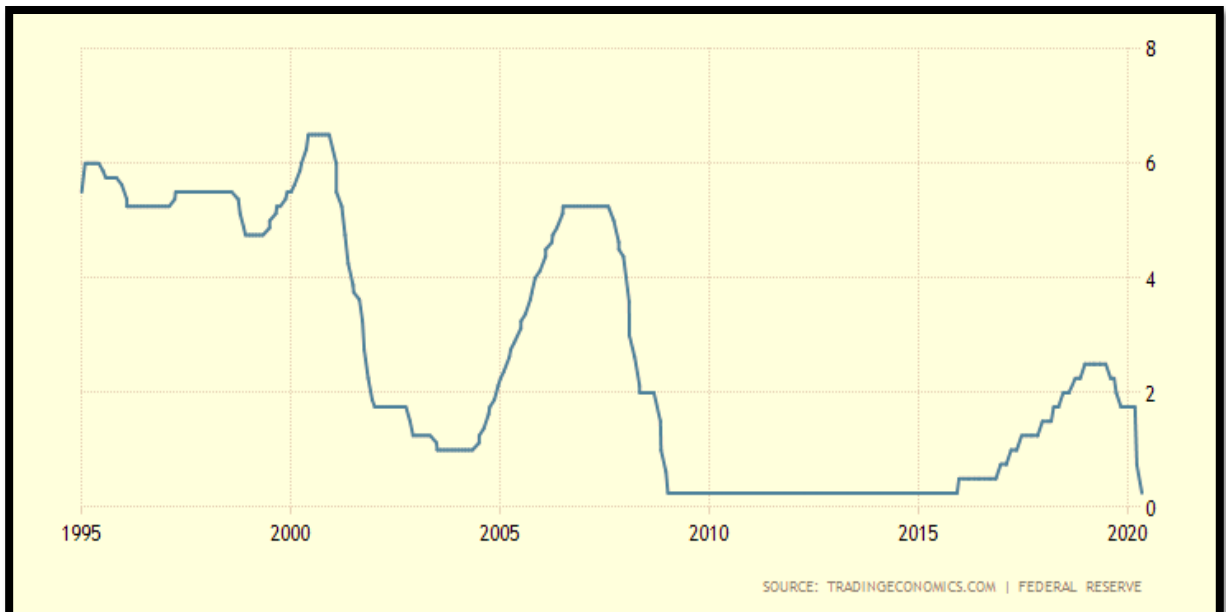


Table 3: UK's European Countries' long-term interest rates

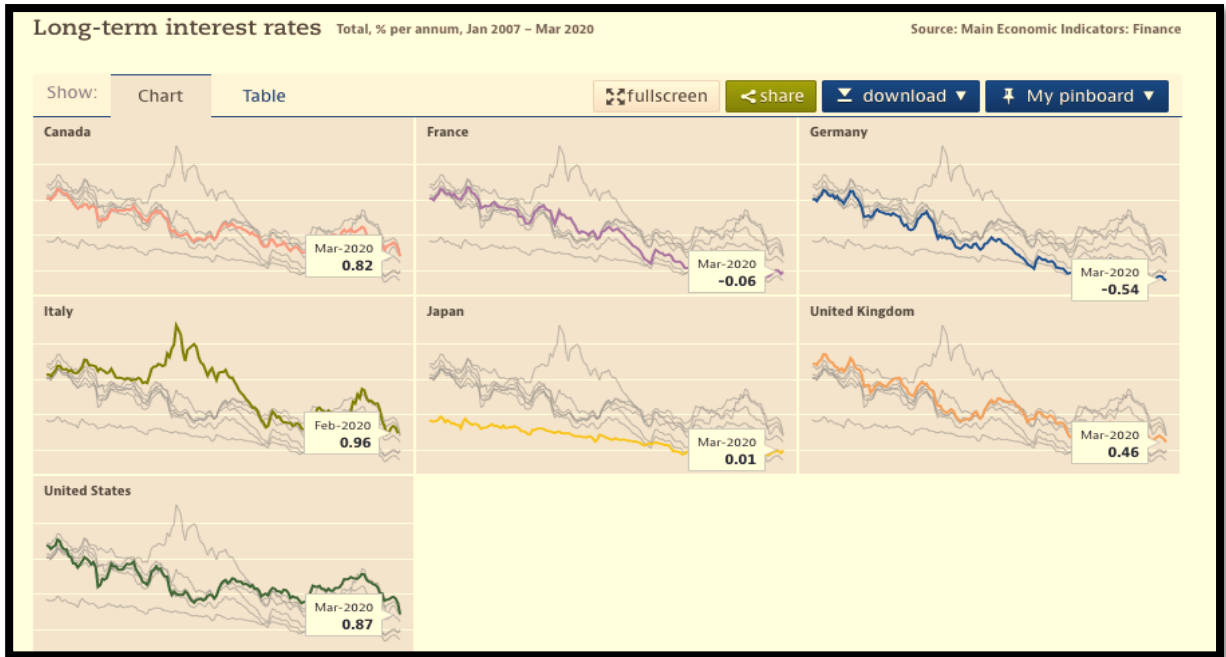


Table 4: UK's Public Debt 1910-2020

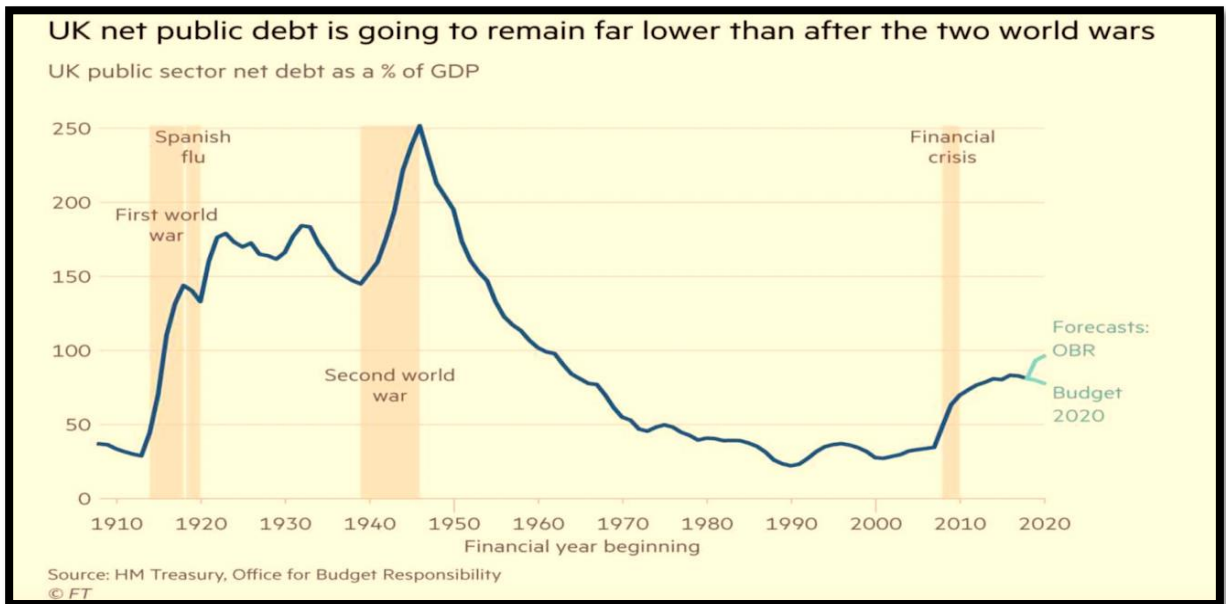


Table 5: US Debt/GDP: 1945-60

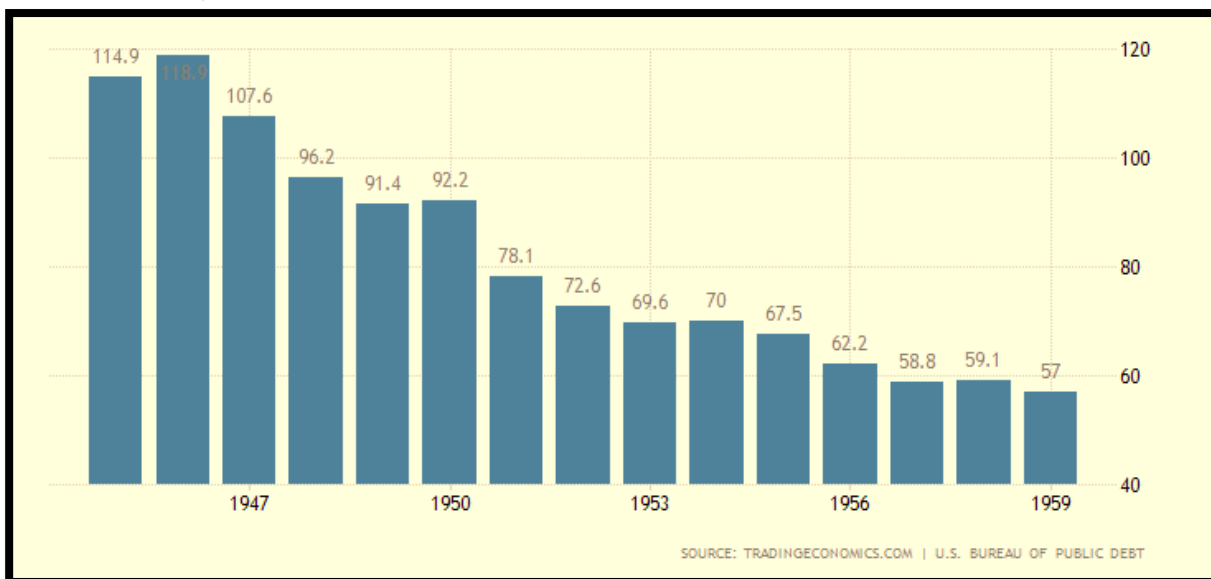


Table 6: US Debt/GDP: 2010-2020

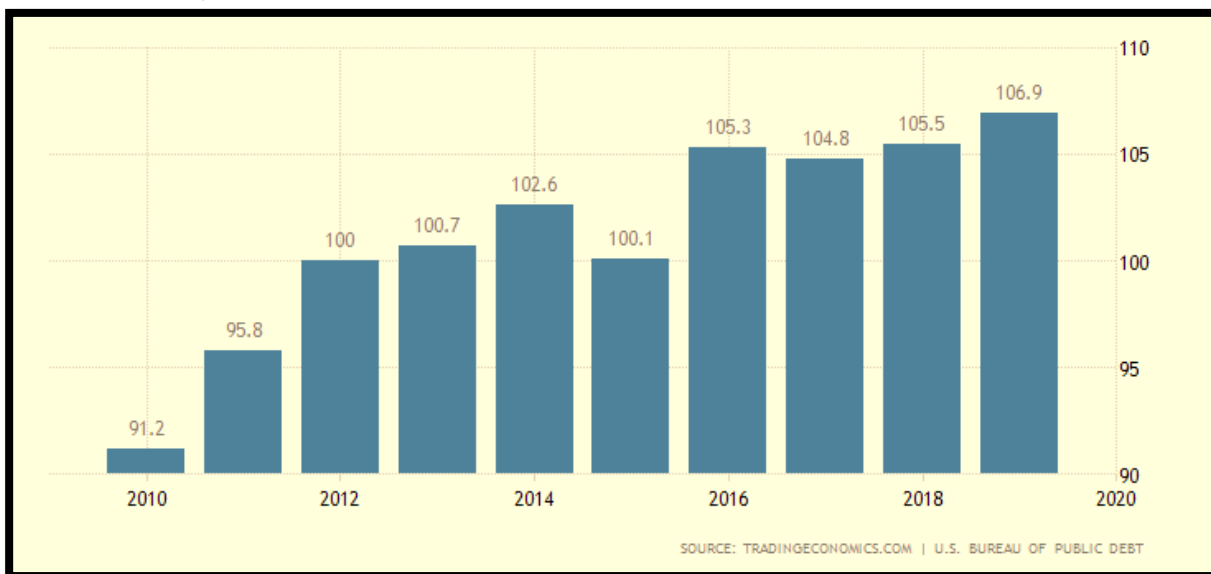


Table 7: Japan Debt/GDP: 1991- 2019

