

# International Monetary Review

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Political Economy of COVID-19: With Reminiscences of Past Global Crises

**Nout Wellink**

Looming Debt Problems

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COVID-19 Exposed: Markets and Finance Are Disconnected from Society

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China's Economic Outlook under Covid-19 Crisis and Its Impact on World Economy

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The Role of IMF in Fighting Against COVID-19 Pandemic and Recovering Global Economy

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Rationale Behind the Development of Hong Kong as an International Financial Center and Practical Foundations to Withstand External Shocks

**Andrew Sheng and Xiao Geng**

Rivalry with China a No-win Strategy for US

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Following the "general theory of macro-finance", IMI aims to become a world-class think tank, focusing on the studies of international finance, in particular the international monetary system and RMB internationalization. Despite its relatively short history so far, IMI has established itself as a leading research institution and important forum, where industry leaders, policy makers and academic experts from home and abroad share their insights and expertise.

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# Macro-Finance Salon Online Series on COVID-19 Crisis

## Editor's Note:

*As the COVID-19 pandemic spreads throughout the world, human beings are confronted with a severe global crisis. The pandemic has disrupted our social and economic order at lightning speed and on a scale that we have not seen before. The global economy is experiencing an unprecedented contraction. In this context, the International Monetary Institute has launched an online series of the highly acclaimed Macro-Finance Salon and invited distinguished experts in the field of economics and finance to discuss the impact of the pandemic on the global economy from different perspectives. The speakers include Dr. Han Seung-soo, the Former Prime Minister of the Republic of Korea, Mr. Hua Jingdong, Vice President and Treasurer of World Bank, Dr. Nout Wellink, Former Governor of the Dutch Central Bank, Mr. Yaseen Anwar, Former Governor of the Central Bank of Pakistan, Dr. Herbert Poenisch, Former Senior Economist of BIS, and other prestigious scholars and experts from home and abroad. We present here some of their speech transcripts to our readers.*

## Political Economy of COVID-19:

### With Reminiscences of Past Global Crises

By HAN SEUNG-SOO\*

During the last two decades, I have encountered four global crises, the Asian Financial Crisis of 1998, the terrorist attack on 9/11, the Global Financial Crisis of 2007-08, and now the

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\* Han Seung-soo, Chair of IMI International Committee; Former Prime Minister of the Republic of Korea; President of the 56th United Nations General Assembly

COVID-19 pandemic. After the global crisis, there always followed a kind of paradigm shift and a ‘new normal.’

While in government, I was directly involved in dealing with two out of these 4 global crises, somewhat successfully. They are the 9/11 and the Global Financial Crisis of 2007-08. Just before the Asian Financial Crisis struck, I left the Korean government which I served as Deputy Prime Minister and Minister of Finance until the spring of 1997. Therefore I was not directly involved in the negotiations with the IMF and in the subsequent government economic policy to deal with the Asian Financial Crisis. However, as a Member of Korean National Assembly, I was indirectly involved in the resolution of Korea’s financial crisis at the time.

September 11th, 2001 was the day when I was to be elected as President of the 56th Session of the United Nations General Assembly at 3 pm but because of the terrorist attack in the early morning hours of that day, the election had to be postponed until the next day. Therefore, from the day one of my international role as the President of the UN General Assembly, I was thus heavily involved in dealing with the aftermath of international terrorism. Soon after the terrorist attack, I presided the plenary session of the UN General Assembly on “the Measures to Eradicate International Terrorism”, at which representatives of all the member states unanimously condemned the terrorist attack and deliberated on how to eradicate terrorism in the future. It is very rare that all the member states speak at the plenary session of the United Nations. For this achievement, I was assisted by a group of dedicated diplomats headed by my Chief of Staff, Mr. Ban Ki-moon, who later served as the 8th Secretary-General of the United Nations. At the time, the world was totally united as one in repudiating terrorism and genuine multilateral cooperation was clearly evident.

When the Global Financial Crisis of 2007-08 erupted, I was Prime Minister of the Republic of Korea and therefore had to deal with the financial crisis and eventually succeeded to overcome it. Korea had initiated a very expansive fiscal policy particularly paired with promoting a new paradigm of growth, i.e. green growth. Korea was the only country among the OECD members that registered a positive growth in the first quarter of 2009, widely acclaimed by the UNEP, HSBC and other organizations at the time.

As Prime Minister of the Republic of Korea, I was able to witness how the world leaders were able to get together to deal with the Global Financial Crisis at the time. G20 Finance Ministers’ meeting which was first convened in Berlin in December 1999 in the wake of the Asian Financial Crisis was upgraded to G20 Summit at the time of the Global Financial Crisis. It started as a premier forum for international economic cooperation.

The first G20 Summit meeting was held in Washington, D.C. in November 2008, the second Summit in London in April 2009, the third summit in Pittsburg, the 4th Summit in Toronto and the 5th Summit in Seoul. From 2011 after the Seoul Summit, G20 leaders began to meet annually. As you know, China successfully hosted the 11th G20 Summit in Hangzhou, Zhejiang Province on September 4-5, 2016 when the global leaders unanimously agreed to work together toward an innovative, invigorated, interconnected and inclusive global economy. At every summit meeting, many of the global leaders played commensurate roles for promoting multilateral cooperation.

Now we have arrived at the fourth crisis. The COVID-19 pandemic has already wrought havoc with public health and the global economy. We are deeply concerned about the current state of COVID-19 crisis.

One of the reasons for this is that we fail to see the end of this health crisis at the moment. Social distancing, self-isolation, mask wearing, lockdown of cities and regions, telework, online business transactions would help protect people from contamination but is not the solution to this crisis unless and until eventually the vaccine is discovered to cure and prevent this vicious

virus. In this respect, it is rather encouraging that a few days ago, US Food and Drug Administration authorized Gilead Sciences' remdesivir under its emergency power to be used for the most serious patients in hospital. The only problem of remdesivir is that it is not curative but only shortens the recovery period of COVID-19 patients.

Another reason is that unlike in the previous crises, I find it difficult to see any genuine international cooperation among global leaders to collectively deal with this global health crisis and its aftermath impact on economy and finance. COVID-19 pandemic is a best example of externality of universal scale and in order to deal with this external diseconomies, an intensive process of internalization is very much called for. In order to internalize externality, we need to closely cooperate within the strong framework of multilateralism. Unfortunately, at this juncture, I see much less and almost no multilateral cooperation. Each nation is taking care of itself while externality continues to affect us all without borders.

Henry Kissinger, the former US Secretary of State, wrote in the Wall Street Journal on April 3, 2020 that the coronavirus pandemic will forever alter the world order. When the COVID-19 pandemic is over, many countries and institutions will be perceived as having failed. The world will be never be the same after the coronavirus. He argues that the national leaders are dealing with the crisis on a largely national basis, but the virus's society dissolving effects do not recognize borders. While the assault on human health will be temporary, the political and economic upheaval it has unleashed could last for generations.

In his media briefing on 29 April 2020, Mr. Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization, said, "one thing that we would ask is unity at the national level and solidarity at the global level. More than ever, the human race should stand together to defeat this virus. It is more than any terrorist attack. It can bring political, economic and social upheaval."

Gordon Brown was one of the most ardent proponents of the global cooperation in dealing with the Global Financial Crisis of 2007-08. At his initiative, I joined 117 former heads of state and government (most of them are the members of the World Leadership Alliance/Club de Madrid) with 104 prominent economists and others to send a letter to Governments of the G20 Nations for an urgent coordinated action.

The letter called for an immediate internationally coordinated action to address our deepening global health and economic crisis from COVID-19. On global economic measures, it urged that the aim should be to prevent a liquidity crisis turning into a solvency crisis, and a global recession becoming a global depression. It recommended that a wider group for central banks should be given access to the arrangements for currency swaps, the IMF should enter into swap arrangements with the major central banks, the World Bank and regional development banks needed further recapitalization, and the IMF and the World Bank to further assess the debt sustainability of affected countries.

There are several distinctive features of the current global health crisis compared with other previous crises.

First, compared with the Global Financial Crisis of 2007-08 when the financial sector was the major source of the problem, the current crisis of COVID-19 is a crisis of real economy such as manufacturing, service and labor market. With the supply chain breaking down, it has started impacting the real sector first, which may spill over into the financial sector depending on how we manage the finance to cope with the difficulties in the real sector.

Second, social distancing, self-isolation, lockdowns, online learning, telework, etc. began to increase the use of internet and to impact tremendously on the rapid advancement of digital transformation. One of the long-term consequences of the COVID-19 together with 5G on the

market would be that the process of the fourth industrial revolution would be further advanced. The crucial importance of big data will become much more evident when we discover how to deal with COVID-19 with vast amount of already accumulated data.

Third, the long-held assumption that the welfare state of the advanced Western countries has shown to be not perfect and somewhat lacking. There is a strong belief that the welfare system initiated by the UK's Beveridge Report for social measures including the National Health Service soon after the World War II was the best example of the universality of the welfare system. However, the COVID-19 has exposed West's vulnerability to the welfare state.

Fourth, on the whole, Asian countries particularly China and South Korea seem to better manage the coronavirus pandemic than most of the Western countries including the US and Western European countries. In case of South Korea, it had a sharp increase in cases during February but has managed to slow the spread from March. Korea has taken such measures as rapid scaling of testing (5,500 test for every million people compared with UK's 750), readily available test and contact tracing, and targeted testing by using government application to locate people

Fifth, the race between demand and supply with an unusual economic impact of COVID-19 pandemic will reduce huge amount of Marshallian surplus. The supply will be reduced because the companies lack liquidity to fulfill commitments while facing lower demand and thus are forced to file for bankruptcies, shifting supply sharply upward. Particularly the traditional, non-digital service sector may be adversely affected. The demand will also shrink due to the fact that workers who lose jobs have no income anymore and therefore lowers consumption eventually depressing aggregate demand. Even the other income earners will take precautionary measures in case of emergency. Hence the demand curve will shift leftward, creating huge loss of economic surplus.

There is a conflict between science and economics of COVID-19 pandemic. The essence of the conflict is that for the sake of health, isolation has positive externalities while for the economy, isolation has negative externalities. Let me say a few words on the science of COVID-19 before moving on to the economics of COVID-19 pandemic.

World Health Organization declared a pandemic on 11 March 2020. Historically there were several critical and dreadful contagious diseases. In the 14th century, severe plague killed 25 million out of 100 million people in Europe. In 1918-20 towards the end of the World War I, the worldwide influenza epidemic killed 50 million or more people. From 1981 until now, more than 25 million lives were lost and 33 million people are living with HIV (Human Immunodeficiency Virus) today.

In recent years, you may remember there were some smaller outbreaks of contagious diseases. In the case of SARS (severe acute respiratory syndrome-related coronavirus) during 2002-02, there were 8,000 cases with 774 death, 151,000 to 575,000 people died of Avian flu in 2009 and between 2014 and 2016, Ebola killed 11,000 people. COVID-19 appears both more deadly and contagious than other well-known influenzas. The problem we face today is said to be not just the lack of a vaccine but also a huge errors in measurement.

The summary of the science of the COVID-19 is that it is the worst health crisis of our times; the young are far more likely to be infected and act as carriers but the old are more likely to die. As young people tend to develop mild or no symptom, they are less contagious. But there are so many of them infected that they are responsible for the majority of infections in the population.

What then would be the direct and indirect effects of COVID-19 on the economy? It started with the supply side disruption and heightened uncertainty and panic for households and



businesses. It is followed by heightened uncertainty and panic that leads to the drop in consumption and investment. The large drop in demand dries up corporate cash-flows, triggering firms' bankruptcies. The layoffs and exiting firms generate sharp rise in unemployment. Labor income fall significantly and non-performing loans spike up which weakens demand and increases uncertainty further. And so on and on.

Let me now discuss the impact of COVID-19 pandemic on the global economy and on some of the Asian countries. The impact of the COVID-19 is severe, across the board and unprecedented. According to the IMF World Economic Outlook published in April, the pandemic is having severe impacts on global growth and there is a severe risk that we may have to face a worse outcome. It may be the first time that the health issue is affecting the global economy as severely as this one. The IMF predicted that due to the COVID-19 pandemic the global economy would contract sharply by 3 percent in 2020. It is worse than compared with the Global Financial Crisis of 2007-08.

On the assumption that the pandemic fades in the second half of 2020, and the containment efforts are relaxed during the second half of 2020, the IMF's projected global growth rate is 5.8 percent in 2021. This, of course, assumes the normalization of economic activity with appropriate policy support.

However, I believe that this is an extremely optimistic projection. It will be contingent upon several assumptions; whether the pandemic will abate substantially, the containment efforts will be intensive as well as effective, supply disruption is minimal, the drastic tightening in the global financial markets will have less repercussions, and the shift in spending patterns and shopping behavioral changes are not too abnormal.

According to the IMF World Economic Outlook, April 2020, the global growth is projected to be -3.0 percent in 2020 and 5.8% in 2021. The economic growth of the advanced economies as a whole is projected to be -6.1 percent in 2020 and 4.5 percent in 2021. The US economic growth will be -5.9 percent in 2020 and 4.7 percent in 2021. The Euro area economy will contract by -5.9 percent in 2020 but will grow at 4.7 percent in 2021. UK economy will contract by -6.5 percent and grow at 4.0 percent in 2021. Japanese economy will contract by -5.2 percent grow at 3 percent in 2021. and The economies of the emerging market and developing countries will contract by -1.0 percent in 2020 but grow at 6.6 percent in 2021.

World trade will contract by -11.0 percent in 2020 but will grow at 8.4 percent. Imports and exports of the advanced economies will contract by -11.5 percent and -12.8 percent respectively in 2020 but grow at 7.5 percent and 7.4 percent in 2021. Import and export of the emerging market and developing economies will contract by -8.2 percent and -9.6 percent in 2020 but increase by 9.1 percent and 11.0 percent.

These are estimates from the IMF and somehow I think that the estimates are rather optimistic. If the current trend of the macroeconomic damage done by the COVID-19 continues, the economic consequences of this year's health crisis could be much more damaging than what is estimated by the IMF.

Let me be more specific about the impact of the COVID-19 pandemic on the Asian economy.

The IMF estimates that the Asia's growth in 2020 will come to a standstill. This will be worse than the annual average growth rates brought out at the time of the Global Financial Crisis of 2007-08 (4.7 percent) or the Asian Financial Crisis (1.3 percent) during 1998-9. Asia has not experienced zero growth during the last 60 years. However, even then, Asia's growth still fares better than that of other regions.

There are several reasons why the Asia's growth slowdown will be sharper than during the Global Financial Crisis.

First, unlike during the Global Financial Crisis, Asia's real sector, especially the service sector is being hit very hard by lockdowns and containment measures. The region is at different stages of the pandemic. China's economy is beginning to get back to work while other economies such as Japan and Singapore are imposing tighter lockdowns and closures at a huge economic cost.

Second, the slowdown of the developed economies is much more severe. The world has entered recession, contracting by 3 percent in 2020 as stated earlier, the worst recession since the Great Depression. Asia's key trading partners are expected to contract sharply, including the US by 5.9 percent and Euro Area by 7.5 percent.

Third, China has slowed down. At the time of the Global Financial Crisis, China grew at 9.4 percent in 2009 thanks to the enormous stimulus packages but this magnitude of China's stimulus package may not be expected much this time.

What then should be the policy measures that can ameliorate the current COVID-19 impact on the global economy?

The most important priority, of course, is ensuring the health-related spending to protect the health of the people, to take care of the sick and contain the spread of the pandemic. At the same time, as the situation is evolving rapidly, we need to provide a forceful and coordinated policy responses in fiscal policy, monetary policy as well as regulator policy.

First, we will need enormous fiscal stimulus to prevent long-lasting economic damage. Fiscal measures must prioritize health spending and those in need from COVID-19 pandemic. Government must continue and expand fiscal efforts to reach the most affected people and businesses. However, even in the case of fiscal stimulus, there is a strong case for coordinated and synchronized global action. During the Global Financial Crisis of 2007-08, for example, the fiscal stimulus by the G20 amounted to about 2 percent of GDP.

On the monetary policy, central banks of developed countries should continue to support demand and boost confidence by easing financial conditions and ensuring the flow of credit to the real economy. For example, further interest rate cuts, asset purchases, forward guidance and a drop in reserve requirements are required. There may also be a need for swap lines to developing countries. We have to note that international investors have already moved nearly \$42 billion from emerging markets by the first week of March since the beginning of the crisis. This is the largest outflow of capital that has ever been recorded.

In addition to the fiscal and monetary policy, financial regulators should aim to maintain balance between preserving financial stability and sound banking system in order to sustain economic activity. Banks should use flexibility in existing regulations by using their capital and liquidity buffers and undertake renegotiations of loan terms for stressed borrowers. Clear communication of supervisory expectations will be also essential for markets to function properly in this time of uncertainty.

Before closing, I would like to say a few words on how we can learn lessons from China's experience in controlling the COVID-19 pandemic and on the 'new normal' that can be expected of.

According to the IMF, the early lessons from China are that right policies make a difference in fighting the virus and mitigate its impact although some of these policies come with difficult economic trade-offs.

Chinese policy makers have targeted vulnerable households and looked for new ways to reach small firms, for example, by waiving social security fees, utility bills, and channeling credit through fintech firms. The authorities quickly arranged subsidized credit to support

scaling up the production of health equipment and other critical activities involved in the outbreak response.

Safeguarding financial stability requires strong and well-coordinated action. Chinese authorities stepped in early to backstop interbank markets and provide financial support for firms under pressure, while letting the renminbi adjust to external pressures. Among other measures included are guiding banks to work with borrowers affected by the outbreak, incentivizing banks to lend to smaller firms via special funding from the People's Bank of China and providing targeted cuts to reserve requirements for banks. Large firms, including state-owned enterprises, enjoyed relatively stable credit access throughout – in large part because China's state banks continued to lend generously to them.

I started my speech by saying that after every global crisis, 'new normal' has emerged. The post-9/11 'new normal' among others was the tight protection of national borders such as increasing immigration officials and border guards, intensive luggage check, etc. culminating in an astronomical increase of government budget worldwide and in thus making travel time-consuming and awkward at times.

What would be the 'new normal' like particularly in the financial world in the post-COVID-19 period.

In the opinion column of the Financial Times on 30 April 2020, Gary Cohn, former Director of the US National Economic Council wrote that coronavirus was speeding up the disappearance of cash. He wrote that for the past five weeks he had not touched a coin or banknote but instead relied exclusively on electronic payments and credits card that he only had touched. And he wrote he was not alone. He concluded that the slow rise of digital currency had been given a gigantic boost by the pandemic and that the shift was disruptive but was clearly a leap in the right direction.

Fintech, the amalgam of finance and technology has been revolutionizing the method of financial transactions. Within a little more than 10 years of smart phones on the market, the banks are being threatened as never before since its inception of Banca Monte dei Paschi di Siena in Northern Italy in the late 15th century. This phenomenon is nothing but a revolution in the financial sector, which I would call a "First Financial Revolution." Whilst the manufacturing has been going through four successive stages of industrial revolutions since the mid-18 century, it is the first time that the financial sector is going through a major disruption, "revolution."

According to the Pew Research Center in the US, 47% of Chinese people made use of fintech in 2017 followed by UK, Korea and Australia with 30%, the US with 25%, India with 11% and Japan with 8%. The highest user of fintech are among the age group between 25-34 with 48% followed by the 35-44 age group with 41%. The young prefer fintech than the old, indicating there is more future for fintech. The young are better equipped and versed in the utilization of digital tools.

According to the Academy of Internet Finance of Zhejiang University, 8 best global fintech cities in 2019 were Beijing, Silicon Valley, New York, Shanghai, London, Shenzhen, Hangzhou and Chicago. There are 4 Chinese cities and 3 US cities in the list of 8 best global fintech ecosystems.

In the midst of the Global Financial Crisis, Satoshi Nakamoto, mistrusting central monetary authority, released the bitcoin software through blockchain, the distributed ledger technology in January 2009. Apart from the bitcoin and altcoin, Facebook also attempted to develop Libra, a stable coin, in 2018 but because of a negative response from leading politicians and regulators, it decided against issuing it. However, I think Libra is only a start in the blockchain-created

currency market. and that regulators and the general public would eventually accept the newly emerging technological innovation in finance.

The real problem would arise when a central bank decides to issue a digital currency. There were two interesting news of blockchain in China recently. One is the remarks attributed to President Xi Jinping strongly arguing for the development of blockchain technology at the meeting of the Central Political Bureau last October. The other is the news that People's Bank of China has been studying the Central Bank Digital Currency (CBDC) since 2014 and internal tests of the digital currency are being conducted in Shenzhen, Suzhou, Chengdu and Xiong'an to improve the functionality of the digital currency.

The CBDC would be issued by the People's Bank of China with the objective of maximizing overall economic effects and welfare. The CBDC is designed to replace cash in circulation rather than M2 and support the renminbi internationalization. Consumers and businesses would download a mobile wallet and swap their yuan for digital money which they could use in order to make and receive payments. In this case, the traditional monetary policy, as we know it, may have to eventually go through change. When the central banks begin to make use of digital currency and get rid of fiat money, this phenomenon can be called nothing but the "Second Financial Revolution."

In both cases of financial disruption, i.e. fintech and CBDC, cash use will disappear more or less eventually and we will be heading for a "new normal" financial world. I am inclined to predict that the COVID-19 pandemic together with the disruptive digital technology may expedite this process of financial revolutions, speeding up the disappearance of cash in due course. Indeed the cashless society may be the 'new normal' that emerges after the COVID-19 pandemic.

## Looming Debt Problems

By NOUT WELLINK\*

I am grateful to the International Monetary Institute for inviting me to say a few words today about some aspects of the coronacrisis. I deliberately say: “some aspects”, because there are so many issues involved that I can only dwell upon a few of them.

Before coming to the main theme of my lecture - the looming debt problems - an important reminder. A serious crisis weakens a system, regardless the nature of the crisis. In 1953, the Netherlands was hit by the worst flooding since the Middle Ages. It was the second wave of water - dykes were undermined by the first - that really got us into trouble. Ditto with the second oil crisis (1979) that hit the world economy at a time it had not fully recovered from the first. The same story applies to the financial crisis. This crisis eroded the resilience of the financial sector and, in a doom loop, public finances in Europe. That’s why the European debt crisis in 2012 was so deep. It is almost always the second wave that really kills you.

The lesson is that - self-evidently also from a human perspective - we must prevent a second outbreak of the coronavirus at all costs. The bad news is that a second wave is not to be excluded, as we for example have seen with the Spanish flu in 1918, with the second wave being much more lethal than the first. The good news is that all over the world scientists are doing their utmost to develop a vaccine and that a breakthrough seems more or less around the corner. If in the meantime we behave with sufficient discipline, we can prevent a second outbreak.

### THE THREE STAGES

With respect to the economic consequences of the coronacrisis I would like to make a distinction between 3 stages: the initial stage, the transition period, and the endgame. The initial stage is the period of the lockdown, with catastrophic economic consequences and with immediate, unprecedented responses of the authorities (governments and central banks). During the transition period our economies are supposed to move gradually to a sustainable recovery and to the new (ab)normal. It is the period in which the authorities will phase out their heavy interventions (a.o. lockdowns, subsidies and loans). Then we are gradually entering the 3rd stage: how to cope with the remaining, structural problems.

During the 3rd stage governments should support the necessary, but painful and complicated restructuring of their economies as much as possible. Certain industries will fade away or operate at a much lower level than before, other sectors of the economy will offer new opportunities and need perhaps some help to accelerate their development. Human resource management should play a key role in this restructuring process.

### THE FOCUS OF MY CONTRIBUTION

In the following I’ll focus on the public debt explosion as a consequence of the coronacrisis

It is important to realize that we are not starting the coronacrisis with a clean slate. In most countries public debt ratios are high by historical standards. According to the IMF these ratios are higher than before the financial crisis in almost 90% of advanced economies. In emerging markets these ratios are back to the level of the mid-1980s and 1990s, years of financial crises

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for a number of these countries. Especially worrisome is the situation in low-income developing countries.

It is also important to realize that high debt ratio's in many countries do not appear out of thin air. They are an expression of already existing, underlying problems. From 2020 onwards, debt ratio's will rise everywhere in the world spectacularly, most in countries where serious problems already existed. It is perhaps not so much the general rise in the level of the debt that is so worryso-me, but the spread around that level that makes these weak countries even more vulnerable.

## **THE PRESENT SITUATION**

From the beginning of the crisis I belonged to the more pessimistic school. In mid-March, on the back of an envelope, I calculated that European GDP in 2020, on average, could fall about 5 to 10%. Why? Because the coronacrisis would be a lot worse than the financial crisis of 2008. Then, on average, the European economies experienced a gdp fall of around 4.5%.

At the end of March/ the beginning of April I became even much more pes-simistic, based on hard and soft incoming data from a number of countries, in-cluding China, the US and some major European countries. I then came to a cumulative fall in European gdp of 10 to 20% (over a longer period of time, relative to the trend), depending on the possible length of the lockdown period and unlocking process, the weakening of consumer confidence, and the damage done to the economy. The wide margin illustrates the uncertainties, including whether there will be, within a reasonable time period, a vaccin against Covid-19 and also whether there would be a second wave, again with the need to shut down key sectors of the economy.

In the second half of April these pessimistic indications, or better: intuitive assessments, started to become more realistic. Dramatic job losses in the US, double-digit falling quartely gdp figures in Europe, Britain that is foreseeing its deepest recession in centuries, a very disappointing first quarter gdp figure in China.

Consistent with the expected fall by me in European gdp in 2020, the ex-ceptional budgetary support programs and a slow recovery over 4 or more years (apart from a brief, possibly misleading quick recovery due to catch-up demand from a low base) is an explosive development of the debt ratio's of govern-ments. Focussing on Europe, the first 5 to 6 years after the financial crisis of 2008/2012, public debt as a percentage of gdp in the euro zone rose by an aver-age of 25%-points. The rise in the joint debt-to-gdp ratio in the euro zone could well double this time (eg amount to 50%-points). With the same spread around the euro area average as after the financial crisis, debt ratio's for the large countries would range from 90% for Germany, to almost 150% for France, and to around 200% of gdp for Italy (and to an even much higher figu-re for Greece).

Again, these figures are not based on complicated model calculations, but are intuitive indications based on past experience. Precise figures don't matter, it is the dimension of the problem I am asking attention for. A recent OECD fo-recast for 2020 is in line with the debt dynamics foreseen by me. For its mem-bership this organisation expects average government liabilities to rise from 109% of gdp to around 137%. And to my mind this is just the beginning.

## **HOW BAD IS THE EVER GROWING DEBT MOUNTAIN?**

Can the level and development of debt ratio's (debt as a percentage of gdp) tell us something about the likelihood of a financial and economic crisis? Much research has been done on how to look at high debt ratio's (of governments, non financial households, the entire economy). Several indicators have been developed, e.g. by Rogoff and Reinhart, the EU, the BIS, the IMF, etc. I am not going to dwell on these indicators, because I think that in present, extreme-ly unusual

circumstances (low inflation/potentially even deflation; extremely low interest rates/ even negative rates; shrinking economies) these indicators, in most cases, don't give much guidance. Whatever indicator one uses, in fact is decisive when financial markets begin to get worried.

For the time being financial market participants show a remarkable cold-bloodedness for developments in Europe (and elsewhere), despite the fact that the economic outlook is becoming almost daily bleaker. The reason: the co-ronacrisis has hit all eurozone countries, the system has become more resilient due to the introduction of a single supervisory umbrella, the ECB stands even more ready than during the previous crisis to come to the rescue of the moneta-ry union, and there is more risk sharing than in the past in Europe (via the Eu-ropean Stability Mechanism for example). Admittedly, there is some truth in all these arguments, but they have at the same time their own limitations. I think that markets are myoop and lagging behind in realizing what the future has in the offing.

### **DON'T KEEP YOUR EYES CLOSED**

It is striking that also many policymakers and economists tend to downplay the consequences of the (inevitably in current circumstances) explosion of gov-ernment debt. The reasoning of those who do not see the dangers is not entirely devoid of logic: extremely low interest rates, governments have the capacity to raise taxes, central banks can continue to take government bonds (and other as-sets) on their balance sheet and keep interest rates artificially low. But all these "solutions" have their own limitations.

Will interest rates indeed remain low and if so, for how long. We just don't know, but counting on that would be reckless.

To solve debt problems, governments can, admittedly, increase taxes. But we should not be too optimistic as to the use of the tax instrument. The two in-creases in consumption tax in Japan (from 5% to 10%) resulted in as many re-cessions.

The ideal solution for seemingly unsustainable debt levels is growth. But let's not overestimate the growth potential for a number of reasons. If Larry Summers is right with his "secular stagnation" theory (chronic excess of savings relative to capital; the demand problem can only be addressed by increased go-vernment spending) growth perspectives will be worse than until now foreseen. The consequences of the coronacrisis are now being added.

### **THE EUROPEAN DEBT PICTURE**

The response in Europe immediately after the outbreak (stage 1) was, on balance, to my mind adequate. Governments decided to activate the European Stability Mechanism (ESM): loans to EU countries have been made available for investments via the European Investment Bank, for income support to people whose jobs are in danger, and for medical expenditure, directly linked to the coronacrisis. The authorities were also fully aware of the need to build an eco-nomically stronger European economy and agreed in principle on creating a special recovery fund, although important "details" have yet to be negotiated.

Gradually politicians and the public at large will begin to realize, that rescu-ing economies at whatever price was necessary, but that there is no such thing as a free lunch. The lunch seemed free, but payment was just delayed. Debt problems in many countries will inevitably in the coming period appear on the radar screen.

A very popular line of reasoning in Europe is that we should not worry about government debt because Japan can easily live with a debt ratio of almost 250% of gdp. Indeed, Japan and Europe have many things in common: demo-graphic aging, falling productivity, low inflation, low interest rates. This is not the time and place to deal with the specifics of Japan. Suffice to say that Japan is a fiscal and monetary union and the euro area is only a monetary union.

Investors will, as of a certain moment, make a distinction in the event of widely diverging deficit- and debt-ratio's between members of the European Monetary Union, resulting in tensions in the (monetary) system. For these members there is no escape through the exchange rate. If tensions flare up and interest rates in highly indebted EMU countries are on the rise, the ECB will come to the rescue. By buying bonds (or other assets) of the countries that are under pressure it can iron out interest rate differentials.

The ECB (as other central banks) has responded creatively to the coronacrisis in various ways and has reassured financial markets. It did so by expanding its existing purchase programme, by the so-called pandemic emergency program (last week almost doubled), by a very extensive provision of liquidity to banks (at negative interest rates), by easing collateral requirements, and by announcing in advance that, if need be, more will be done.

Nothing but praise for the current approach, but a final judgement about the policies of the ECB depends on how the central bank will handle the next stage. If a structural solution to the European debt problems (and therefore also for the underlying economic problems) is not found in time, the ECB (but the same holds for other central banks in the same position) will be faced with a horrible dilemma: how long can it continue to intervene in financial markets and take on its balance sheet governments bonds (and other assets) without violating its mandate: the achievement and maintenance of price stability as well as financial stability. As an aside: these two objectives may conflict under certain circumstances.

In Europe there are legal bottlenecks with respect to the price stability mandate, I refer, *inter alia*, to the 5 May- ruling of the German Constitutional Court ("Das Bundesverfassungsgericht"). This Court has decided that there are limits to the extent to which the ECB, in the pursuit of price stability, can set aside national powers in the field of economic policy. A so-called proportionality test is, according to the Bundesverfassungsgericht, required. I will not bother you with the interesting legal, constitutional "details". These concern the division of powers between national and the supranational European authorities (governments-European Central Bank; national supreme courts and the European Court of Justice). I trust that the parties involved (ECB, German authorities, European authorities) will find a solution for the legal hurdles.

The main problem for the ECB (and other central banks) is to my mind of a completely different nature. Unrestrained monetary policies, inescapable as these are in present circumstances, pose major inflationary risks, if pursued for too long. Money still matters. In the words of Jacques de Larosière, former managing director of the IMF and former president of the Bank de France, "We cannot accept the principle - that has led in the past to disaster - that unlimited money creation is the only way to solve fundamental problems of future generations. Otherwise we will continue to have one crisis after the other". I whole-heartedly agree with him.

## **A LOOK AT A HAZY BUT DANGEROUS FUTURE**

The problem is: inflation seems far away at the moment. The likelihood is that we are entering a period with extremely low, even negative inflation rates (not helpful for debtor countries). For the time being demand is weak, but not forever. Meanwhile we are building up an inflationary potential. I expect constraints on the supply side, due to the damage done by the coronacrisis. Some products will become, at least until the virus is really eradicated, more expensive as a consequence of precautionary measures (keeping distance in theaters, restaurants, planes, etc.). Consider also the consequences of bankruptcies, deglobalization, mismatches on the labour market due to structural changes in the economy, etc. By the way, we tend to forget that inflation is already among us - on the stock market, on the housing market - but this inflation is not included (or only partially) in the traditional inflation figures.



If governments don't deliver and solve the problems of debt ridden countries, and central banks would continue "buying time" for them, also financial markets will realize that central bank purchases can't go on for ever. Everybody knows that you can't endlessly milk a cow on earth and feed this animal (painlessly) in heaven (the central bank). Inflationary expectations will then go up, and so will interest rates.

If we do not want to enter a low growth -high inflation era (stagflation) the ultimate solution for all these problems can't come from central banks but only from governments. And absolutely not from Modern Monetary Theory, by Kenneth Rogoff rightly coined as Modern Monetary Nonsense.

Mrs Merkel, the German "Bundeskanzler", and also the French President Macron seem to be aware of a potential existential crisis in Europe and are making steps in the right direction. They are vigorously tackling the most visible problems, but are still confronted with reluctant colleagues. However, they are pushing through are not addressing the looming debt problems. My feeling is that quite a lot of other leaders in Europe do not realize that this continent is on the brink of an existential crisis. Compared to the 2012 European debt crisis, this time is really different because possibly some of the largest European economies are involved. Only if we dare to jump over our own shadow and give up old hobby-horses - that is to say give in with respect to sovereignty and burden sharing on both sides (also on the receiving end) - Europe as a united, global power can survive.

#### **FINALLY**

The future is surrounded with enormous uncertainties, economically, technologically, politically, environmentally. Black swans will be the rule, not the exception. Addressing adequately tomorrow's complex, challenging but also promising world requires much more and deeper cooperation in all cross-border areas. The debt problem is one of those areas. I have confined myself to Euro-poe, but realize that it is a much wider problem. To solve this we need the international institutions (IMF and Worldbank) and a cooperative spirit of its membership. Thank you very much for your patience.

## COVID-19 Exposed: Markets and Finance Are Disconnected from Society

By HERBERT POENISCH\*

Thesis: The dominance of free markets and finance in a globalized world has led to disenfranchise of a large part of society. This, aggravated by the spread of COVID19 will cause a review of the present global economic order and possible rise to nationalism.

There will be five parts to my essay: (i) theory of myth of a self-regulating market: (ii) historical perspectives; (iii) emergence of free markets and finance; (iv) current backlash under COVID19 and outlook; and (v) response by China's government.

### 1. The myth of a self-regulating market (SRM)

One hundred years ago, after the end of WW1 economic thinking was divided into two camps: the supporters of free self-regulating markets, led by Liberals, such as Friedrich von Hayek on one side and the supporters of subordination of markets to society, as defined by politics, ideology and nation on the other. The latter were purported by Marxists, first and foremost, V.I. Lenin in the Soviet Union, in Germany by Rosa Luxemburg and Karl Liebknecht and other countries. A more moderate version was put forward by Karl Polanyi in 'The Great Transformation' which will be followed here.

Polanyi analysed the puzzle of why a prolonged period of relative peace and prosperity in Europe from 1815 to 1914, suddenly gave way to a world war followed by economic collapse? Market liberalism produced an inevitable response-concerted effort to protect society from the market. Underlying market functioning is the universal concept that markets automatically adjust supply and demand through the price mechanism. Polanyi shows that this concept differs from human societies throughout history. The economy is not autonomous, as in economic theory but 'embedded' in society. Social relations become 'embedded' in the system of self-regulating markets'. The SRM is a utopian project, or even 'the cult of the free market'. Instead humans retreated from SRM to save society and nature from destruction. At the extremes are either social disintegration or a more embedded economy. Universal functioning of the price mechanism which is called commodification is seriously challenged.

Real commodities are produced for sale in markets. Fictitious commodities, such as land, labour, and money were not originally produced to be sold on a market. Polanyi replies on two grounds: first, the moral argument that labour, nature and money should not be subjected to the market and secondly, the role of the state in the economy of adjusting imbalances of supply and demand. This intervention requires political decision making.

Internationally, the gold standard put a fantastic machinery of global self-regulation in place. First, each country fixed the value of its currency in term of gold. Secondly, the domestic money supply was determined by the amount of gold as reserves. Thirdly, cross border business was free, with the self-correction of the gold holdings.

Polanyi argued that contrary to the design of the system, while proponents stressed the freedom to trade under this disciplinary mechanism, the results were the opposite. A drain in

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gold reserves could only be corrected by deflation. This implied dramatic declines in wages, increase in unemployment, and sharp rise in business and bank failures. Countries response was the rise in protectionism, driving a wedge into international transactions. They surrounded themselves with national and imperial boundaries.

As the 20th century progressed, the liberal model was celebrated in the United States and to a lesser degree in other Western countries, whereas the Socialist model was implemented in the Soviet Union, Eastern Europe, China, Cuba, Viet Nam and others.

## **2. Historical perspectives**

The liberal model gave rise to a number of economic crises but was rehabilitated again and again by Hayek's doomsday: the road to serfdom. It was the defining economic model after WW2, leading to Reaganism in the USA and Thatcherism in the UK. In the 1990s final victory was declared by neo-liberals in the 'Washington consensus' after the collapse of the Soviet Union, clearing the way for free markets and finance to dominate globalization. In the 1990s the IMF proposed adding free movement of capital to the existing one of goods and services.

The leading Socialist model, the Soviet Union and other associated countries collapsed in 1991, having given a subordinate role to free markets and finance. They surrounded themselves by high external walls to shield the domestic economy from international competition. After the collapse they completely embraced the SRM. China has survived through pragmatism, by embracing free markets and finance up to a point. It has been able to enter the global economy (WTO) and claim leadership for globalization under President Xi. However, it is also balancing the Socialist maxim with the free markets and finance. It has been successful in harnessing the free markets and keeping free finance at bay. Even in trade relations politics play an important role.

Now the SRM and free finance model is being seriously challenged, after the global financial crises (GFC) and the economic crisis caused by the COVID19 pandemic. The lesson from Polanyi is that workers, farmers and small business people, such as the gig economy will not tolerate for any length of time a pattern of economic organization in which they are subject to dramatic fluctuations in their daily economic circumstances. To him it is inevitable that people will mobilise to protect themselves. We have seen this in the rise of political nationalism. Political leaders, most strikingly in the USA are seeking to divert discontent by scapegoating internal or external enemies.

## **3. Emergence of free markets and finance**

Allowing free markets the leading role has led to commodification of society, with all aspects of life, having a price and exchange value. This is contrary to human values and harmony in society. It starts with human life itself, various labour theories, nature, such as land and environment, to the basic material needs without which dignified life cannot be assured. Already in the 1970s the UN formulated the 5 basic human needs which should not be a fictitious good, determined by the SRM but by politics and society. During the current crisis these contradictions have become more striking.

The 5 basic human needs are air and water, food, health, education and housing, including clothing. The right for a job could be added, but this is more controversial. These basic goals have been expanded into the 17 Sustainable Development Goals (SDG). The COVID19 crisis has exposed how these 5 needs have become commodified.

Air and water have been given a price tag by issuing pollution rights which can be sold in the market. Food supply has risen in leaps and bounds, with wealthy people enjoying healthy food, while the poorer segments struggle with the calorie intake as well as the quality of food. The

latter has given rise to health problems such as diabetes and obesity. This has become obvious during the COVID19 crises that people suffering from such preconditions have become particularly vulnerable. Agriculture has been industrialised and land use is increasingly determined by market forces with cash crops taking priority over food crops,

Health is another area which has seen the biggest penetration by the SRM. This starts with preventive care, treatment of sick patients and to medicines. Best health care can be afforded only by the wealthier segment of society whereas the rest has no safety net at all, such as the vast number of uninsured in the USA and the developing world. Education is the next need which has been taken over by the free market. If you can choose the education of your children in a country or even send them to best institutions abroad, the free market allows you to do this. If not, you are relegated to the impoverished government sector.

Finally, the right to a roof over one's head has been misused by the market. While the space and quality of housing for the wealthy has fulfilled dreams, the poor and an increasing part of the middle class will never be able to afford adequate housing. Buying such dwelling could cost a lifetime's income and renting from those who own more than one property absorbs a big part of the average person's income.

The same mechanism has led to the proliferation of finance. Whereas before, savings were collected by banks to finance investment, the financial markets have developed in leaps and bounds. As the majority of the people do not have adequate income and savings, they need to resort to credit for their daily needs and those needs which are dangled in front of them, such as the latest model of a car, a new smartphone etc. Investment has been managed by the free markets and the banks have expanded household credit. In addition, financial markets have seen a lot of innovation. As a result, their basic function of passing savings to investors has developed into a science of techniques. It should make up only a small share of GDP but has reached 20% in financial centres.

It has also been amazing that in the recent COVID19 crisis all financial markets, including the stock market have performed reasonably well while the real economy suffered massive losses. There seems to be a disconnect between finance and the real economy. As President XI put it at the Finance Work conference in July 2017, finance has to serve the economy and thus society! Because of the increasing concentration of income and wealth, finance only serves to maximize the return on accumulated savings. The guiding philosophy is that a rising tide lifts all boats. This led to the gyrations of the stock market while the real economy was sliding into recession.

Finally, looking at globalization, free markets have allowed people and investment to move, leading to a global allocation of production. Both goods and services became available globally, sharpening the exploitation of workers and life style of the affluent. Now this globalization is at risk because of health concerns which will massively reduce the movement of people. Those affected will reduce their consumption of non-essential goods which will affect world trade.

The global mechanism to correct imbalances, such as exchange rates and domestic adjustment has not been working well. Capital flows have not played the equilibrating function assigned to them. Very often they have sharpened the adjustment process. In case a country suffered external imbalances, not only the exchange rate depreciated but capital outflows aggravated the rebalancing.

Finance has survived so far as the losses have not hit the financial institutions, and central banks have been shoring up demand as well as pumping in liquidity. However, the losses are real and will have to be absorbed by shareholders as well as lenders. They cheat themselves by saying that everything will go back to normal soon.

#### **4. Current backlash and outlook**

Once a large segment of society will lose their jobs, and the rest will have their income reduced, apart from the affluent, they will start to question the usefulness of the free market and finance. They will increasingly turn to politics and nations to protect them. As we have seen how governments dealt with the COVID19 virus, it was every one for himself to save himself, by imposing national measures and closing borders. International coordination even within political areas such as the EU was minimal.

A major clash looms as free markets and finance can only flourish if there is free movement of goods and services, people and investment. The first serious test will be food security. We have seen countries forbidding food export to ensure adequate supply at home. While national security is commendable, a pure domestic distribution does not ensure a fair share for all. Global trade in food commodities has been subject to speculation and hedging, facilitated by financial markets. Domestic distribution is equally subject to speculation and it is yet to be seen how digital platforms such as pinduoduo can provide a fairer bargain for the farmers.

The second backlash will be in the production. Globalisation was driven by value added supply chains. Free markets moved production to where costs were lowest. National security concerns, such as need to produce certain basics such as medicines at home has started a move of production not to where the costs are lowest but where national authorities can command supplies. The global trade frictions have already moved some productions to areas under national policy rather than allowing the market to decide.

Third will be the reduction in freedom of movement of people. This will not only affect production as experts will stay at base rather than serve far flung production sights, but the whole tourism sector. As countries shut their borders to foreigners on health grounds, providers of these services cannot recover. These are airlines, hotels, restaurants, tourist sights but mainly the gig economy of millions of people and of small businesses which depend on visitors.

As demand drops off and excess capacities persist, ranging from the small economy such as hotel beds to big corporations, such as oil production, new investment will not be needed, apart from bottleneck sectors, such as medical supplies, In uncertain times like this, values of stocks and bonds will be highly speculative. As savings by the wealthy will search for safety and returns, those institutions which have provided support for the ailing real economy will have to bear losses at some stage. These will include banks which rolled over loans, to insurances which had to pay out for damages, and the governments which have paid out to the needy and taken on various guarantees.

While actions to delay losses will delay the reactions of the creditors, the day of reckoning will arrive, unless the economy will recover by riding the wave of unmet demands. Assuming that this will not happen any time soon, investors will pursue flight to safety. They will sell stocks and bonds of those institutions which will face payouts. They will sell government bonds of highly indebted governments causing capital flight to safe havens. But which are these safe havens, as no country was spared the pandemic?

Many will go long in cash, again in which currency? The resilience of the USD has proven to be beyond disaster in the real economy, health pandemonium in the USA, topped by total political disorientation. Will the wealthy of the world trust the RMB enough to put their savings into this currency? To a certain extent the Chinese Government Bonds on the domestic RMB market have benefited from this flight to safety. Are the Chinese financial markets willing and able to absorb the massive amounts seeking safe investments? Might it only spread global volatility to Chinese financial markets?

What will be the outcome of the sharp divide between wealthy creditors and the growing debtors, individuals, SME, corporations and governments? Hopefully the resolution of this conflict will be peaceful, such as negotiated debt restructuring. Will there be a surge in

nationalism as impoverished people ask governments to guarantee the provision of basic needs, reducing the role of markets and finance?

We do not see a market solution to reduce the massive debt overhang. If this problem is confined, such a SRM solution would be feasible to discipline individual countries. In this case as every country, and a large part of the population is affected. The only ones on the other side of the market are the creditors. Will they be willing to renegotiate the debt instruments?

As global finance has become very complex it is not clear who the creditors are. In case of a bank they are the shareholders and depositors. While shareholders can be asked to waive the dividends, depositors are unlikely to accept a haircut. In case of the institutional investors, any haircuts would be at the expense of those who benefit, such as recipients of future pensions and insured individuals and companies. In case of private investors they are the wealthy individuals from countries worldwide who have taken on risk through a myriad of financial instruments. Would they be able to calculate their VAR under such extreme circumstances?

This was the outcome of Polanyi's historical study. The reign of free markets and relative prosperity was followed by crisis, rising nationalism and even wars. It is up to political leaders to avoid a repeat of this chain of events.

## **5. Response by China's NPC and CPCC**

The recent Two Meetings, the NPC and CPCC have addressed the fallout from the COVID19 in China and its relations with the rest of the world.

Premier Li Keqiang acknowledges that the COVID19 pandemic has sent the world economy into severe recession, disrupted industrial and supply chains, and caused a contraction in international trade and investment. Domestically, consumption, investment and exports have declined. Pressure on employment has risen significantly. Businesses face growing difficulties. There are increasing risks in the financial sector.

While the Report on the Work of the Government highlights the challenges, it offers suggestions to harness the markets and finance to overcome the negative impact.

The priority is to ensure employment and to meet basic living standards. While markets need to be energized, the leading role is left to the CPC under President Xi.

Regarding basic needs it endeavors to make greater efforts to meet peoples' basic living needs. It will ensure more effective protection of ecosystems and the environment. It will intensify efforts to control air pollution in key areas. Protecting and restoring key ecosystems will be pursued. It aims at ensuring food supply for China's population by bolstering agricultural production. Provincial governors will be responsible for the 'rice bag' and city mayors for the 'vegetable basket'. Regarding the health system it plans to improve basic medical services in urban and rural communities. It plans basic medical insurance for everybody. Another target is to develop more equitable and higher quality education. There is no explicit mention of improving housing for the poorer segments of society.

Priority is given to preventing risks in the financial sector by avoiding systemic risks. It aims to prevent funds from simply circulating in the financial sector.

Although it plans to expand domestic demand there is also a commitment to promoting further opening up and liberalization and facilitation of foreign trade and investment. It endeavors to firmly safeguard the multilateral trading regime.

## **6. Conclusion**

While the world at large is facing the dire consequences of extreme neoliberalism, with malfunctioning of markets rather than self-regulating, and finance supporting itself rather than the real economy, Polanyi's predictions loom on the horizon.

After decades of globalization, determined by free markets and finance controlling the well-being of society, the response to COVID19 was only national with lockdowns and closing of borders. This came on top of increasing nationalism in the leading economy.

At present it remains to be seen how well the COVID19 threat can be contained and how quickly and efficiently the economy can bounce back. While the brunt of this catastrophe is borne by millions of unemployed, cushioned somewhat by monetary and fiscal policy support, the major part of society is adjusting to new conditions. The financial sector, supported by the wealthy elite has continued to function. However, it is only a matter of time until losses have to be absorbed by financial agents.

The Chinese response to the challenges posed by COVID19 and a retrenchment of the global production and trade environment is steering away from the cataclysm of rising protectionism and nationalism. It aims to balance the leading role of the CPC with more energetic markets, as well as securing domestic well-being with continued opening up. A discretionary strategy like this can avoid the dire deterministic predictions of Polanyi of nationalism and war.

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## Global Economy

### China's Economic Outlook under Covid-19 Crisis and Its Impacts on World Economy<sup>\*</sup>

By WEI BENHUA<sup>\*</sup>

Let me first thank you very much for the excellent introduction of the latest issue of WEO. I do broadly share with the views as you presented us. The Covid-19 has had a much longer impact on the world economy than the Great Depression in 1929 and the previous Global Financial Crisis in 2008 in terms of GDP loss, unemployment and in many other economic indicators. The most of worrisome feature of the Covid-19 is the uncertainty it creates. We are not sure the duration and intensity of the shock caused by this Covid-19. Therefore, it would be difficult for the policy makers to make the policies accordingly to cope with the shock.

The other point I'd like to echo with is that most industrial countries and emerging and developing countries as well have adopted fiscal and monetary measures with enormous strength. I do not need to elaborate on these measures. In general, these measures are bigger than those measures in the GFC. While these measures are necessary to rescue the sharp decline of their economies, I am concerned with the impact of consequences of these policies taken by industrial countries on monetary side.

The immediate question is the impact caused by the negative interest rate policy which they adopted even before the outbreak of the Covid-19 in Japan and some European countries. U.S. Federal Reserve reduced its fund rate down to zero when the Covid-19 out-broke in U.S.. What would happen in the future is the emerging and developing countries will confront the situation of the capital outflows, the pressure on their currencies and the turbulence in their financial markets when the central banks of the industrial countries withdraw from the quantitative easing policy. Many emerging and developing countries did suffer when the Fed withdrew from QE afterwards.

This being said, let me turn to the Chinese economy, I'd like to emphasize the point in your chart China and India are probably the only two major economies with positive growth rates in 2020. China's GDP growth will be 1.2% for the year 2020.

The IMF staff says in WEO on page 5 that the Group of Emerging market and developing countries is projected to contract by -1.0 percent in 2020 with China included; excluding China the growth rate of this group is projected to be -2.2%.

In fact, Emerging Asia is projected to be the only region with a positive growth rate in 2020

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<sup>\*</sup>This is a speech draft by Mr. Wei Benhua at the online launch meeting of IMF World Economic Outlook on April 29, 2020.

<sup>\*</sup>Wei Benhua, Member of IMI Academic Committee, Former Deputy Administrator of the State Administration of Foreign Exchange (SAFE), and Former IMF Executive Director for China



mainly because of the fast recovery of the Chinese economy. The WEO is forecasting China will achieve 1.2% growth rate for 2020. We appreciate this point as China is the rare exception with positive growth rate among IMF's more than 180 member countries.

However, I am more optimistic about this projection with the following factors:

First, it is projected in the report that the contraction in economic activity in the first quarter could be about 8% year over year. By the recent statistics of the SSB the contract was 6.8%, smaller than the IMF figure.

Due to the effective control and prevention measures of the Covid-19, most sectors of the economy have generally returned to normal.

The PMI (Purchasing Manager Index) of manufacturing sector of March was 52%, a very strong rebound.

My point is that China is a large country which has 1.4 billion population and the Chinese economy is the second largest in the world. China itself is a huge market with strong demand. We could encourage and stimulate the domestic consumption to offset the temporary loss in the export sector.

It is well known that the Chinese government made a right decision to transform the development model from dependent on the export to the domestic consumption lead development model a few years ago. And we have made substantial progress on this transformation. Now consumption is making more than 56% contribution to China's GDP. For developed countries this figure is well above 60% and could be as high as 80%. We do have large room to catch up of course. Therefore, the Chinese economy is becoming more and more dynamic and resilient to the external shocks.

Second, on fiscal and monetary policy, China is in a better position to use them to counter the Covid-19 shocks. The annual and cumulative fiscal deficits for China measured by any international standard is much lower than that of the developed countries. So if needed we could utilize fiscal instruments to stimulate the economy.

On monetary policy, we also have good potentials to mobilize resources to support the economy. For example, we could continue lower the deposit Reserve Requirement Ratio, lower the interest rate to inject more liquidity into the economy. On the external sector, we are confident we will be able to achieve a reasonable balance so the exchange rate of RMB will continue to be stable.

In addition, China will continue to pursue reform and open up policy that will enable the country to attract more foreign investment.

Third, we will continue to invest in the countries under the Belt and Road Initiative. We believe the BRI countries and China will be benefited from the implementation of the Initiative.

With the above factors plus that the other countries will be able to contain the spread of Covid-19 in the second half of 2020, the Chinese economy could achieve a growth rate of around 3%.

Mr. Barnett, you know Mr. Zhang and I served as Executive Directors on the Board of Executive Directors of the Fund for several years. China, as the largest developing country always extends its strong support to the Fund. We support IMF as the center of the international monetary system as well to play an important role in meeting the financial needs of its member countries. We support the Fund to be equipped with adequate quota resources. In this context, we support a substantial quota increase under the 15th general quota review and we hold the representation of developing countries including China in the Fund should be fully reflected in their quotas in line with their weight in the world economy.

The last point but not least, I would like to say is that the international community should work together and countries should cooperate with each other in fighting the battle against the

# IMI International Monetary Review

Covid-19. Steve rightly pointed out in the policy advice that the importance of multilateral co-operation cannot be overemphasized. China as a responsible country always extends its support to IMF and other international institutions as well as helping the other countries as much as it can. We believe we should make our best effects in promoting the construction of a community with a shared future for mankind.

# The Role of IMF in Fighting Against COVID-19 Pandemic and Recovering Global Economy\*

By ZHANG ZHIXIANG\*

First I would like to emphasize that unity and solidarity are the only correct answer to the question of how to fight against coronavirus. Today virus has spread in over 200 countries without any regard to national boundaries, developed and developing economies, different races and ages. Before vaccine and effective therapies are made available, mankind must rely on unified efforts to contain the virus from further spreading and to rally medical forces to fight against the virus. In China we have gained the experience. When Wuhan was first hit by the virus in January this year, the city of more than 10 million population was closed. But people in Wuhan did not fight by themselves, rather all kinds of support from other parts of the country rushing to Wuhan, including more than 40 thousand medical personnel and huge amount of medical equipment as well as daily necessities. In a little more than 2 months, containment measures proved to be effective and normal daily life order resumed. We believe that unity and solidarity are also essential and effective in the fight against the virus globally.. As the IMF Managing Director said on April 9, It is this common threat that brings us all together to harness the greatest strengths of our humanity---Solidarity, courage, creativity and compassion. We do know that we will come out of this crisis more resilient. This certainly also applies to the concerted efforts of all member countries to facilitate speedy return to strong ,sustainable, balanced and inclusive growth.

Second, the IMF should be commended for its timely and productive efforts in helping its members' respond to the COVID-19 pandemic by making US\$ one trillion available in lending capacity. The IMF has also decided to increase the access limits of Rapid Financing Instrument and the Rapid Credit Facility , as well as introduced the Short-term Liquidity Line with the aim of providing emergency funding to EMDCs hit by the pandemic.

I have read that China has rapidly made her commitment to contribute to the Catastrophe Containment and Relief Trust , in responding to the IMF's call.

It is widely supported that the IMF should continue to play a central role in the global financial safety net, which is essential for the world to work together to fight the pandemic and promote economic growth. But how the IMF could well play the central role, which leads me to the third point.

Third, it is of great importance for the IMF to acquire adequate financial resources so as to assist its member countries especially at the time in dealing with both challenges caused by coronavirus and the urgent need to restore normal economic growth order. The IMF financial resources mainly come from two sources, the IMF quotas and the New Arrangement to Borrow. Currently the total amount of IMF quotas is SDR 477 billion, which is about US\$677 billion. NAB is the arrangement made between a number of members and the Fund to stand ready to lend additional resources to the Fund as a 2nd line of defense. In January 2020, the IMF's Executive Board approved a doubling of the NAB from SDR 182 billion to SDR 365 billion which is about US\$475 billion as a new NAB period from 2021 to 2025. This doubling is subject

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\*This is a speech draft by Mr. Zhang Zhixiang at the online launch meeting of IMF World Economic Outlook on April 29, 2020.

\*Zhang Zhixiang, Member of IMI Academic Committee, Former Director General of International Department, PBoC, and Former IMF Executive Director for China

to creditors consents and if targeted to become effective on January 1, 2021. We can see that the total amount of financial resources available to the Fund is barely a little more than US\$ 1 trillion. What is more, the IMF should be well prepared for more uncertainties as Mr. Barnett said in his presentation. Therefore, it is absolutely essential and indispensable for the IMF to get adequate amount of resources for it to play the central role in accordance with its mandate. Since NAB can only be regarded as a temporary funding arrangement, the adequate size of quotas is the only alternative to meet this requirement. So we have every reason to look forward to the timely and positive result of the 16th General Review of quotas.

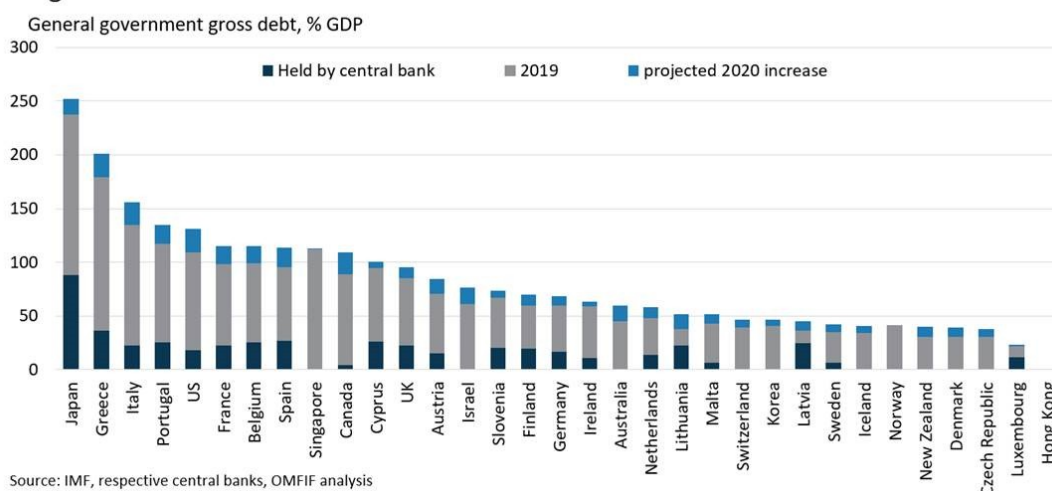
Finally, I wish to briefly touch on the SDR issue. SDR is the international reserve assets issued by the Fund for supplementing the official reserves of the member countries. Now the total amount of SDR allocated is SDR 204 billion, about US\$283 billion. According to experience in timely and effectively response to crisis in the past, it is believed that new and timely allocation of SDRs will be helpful and important.

## Demystifying Debt Dynamics<sup>\*</sup>

By DANAË KYRIAKOPOULOU AND CHRIS PAPADOPOULLOS<sup>\*</sup>

We will undoubtedly exit the crisis with damaged economies and higher debts. But assessing how sustainable these debts are is a more nuanced exercise than stimulus critics imply. The most common measure to assess debt sustainability is the debt-to-GDP ratio: how much a country owes relative to how much it produces annually. On this metric, Japan, Greece and Italy look particularly vulnerable.

Figure 1: Government debt size makes headlines...



Though a critical metric, debt-to-GDP does not give the full picture. A good place to start is to look at the total economy debt or leverage which adds household and non-financial corporates' debt to government debt. On this metric, Italy and the US look better than others. After the 2007-08 financial crisis, debt was transferred from the private to the public sector in an effort to support demand. This can happen directly through rescuing large companies, subsidising businesses and assistance to financial systems, or indirectly as the government borrows and spends to support the economy as the private sector saves more.

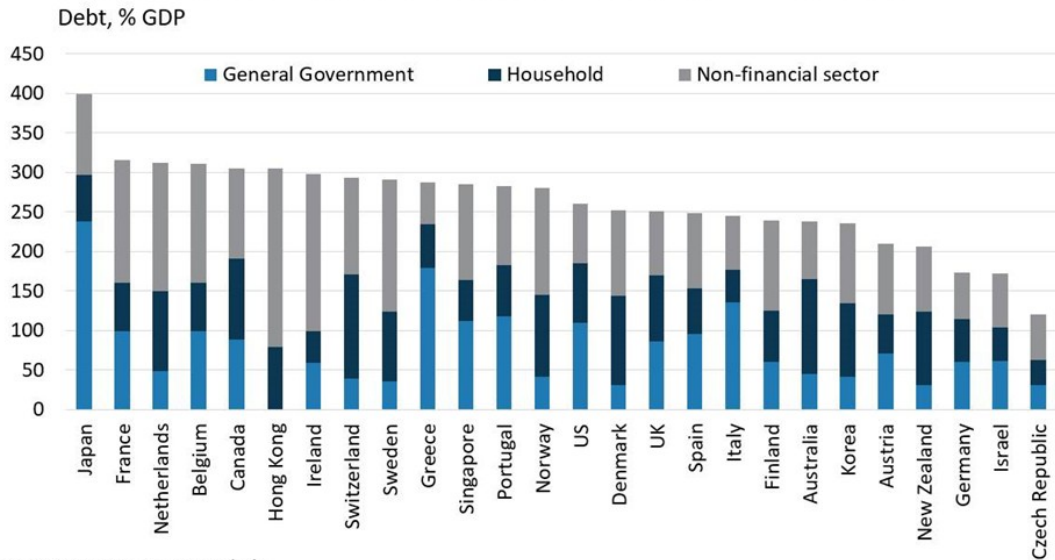
The public sector is again acting to bridge the economic shortfall from the lockdowns. Getting the sequencing right will be key to avoid the mistakes of the past crisis. Still, with some transferring to be expected, whole economy debt can act as an indicator for the risk of increase in government debt. France, Netherlands, Belgium and Canada look more vulnerable on this metric.

<sup>\*</sup>This article first appeared in OMFIF Commentary on April 30, 2020.

<sup>\*</sup>Danaë Kyriakopoulou is Chief Economist and Director of Research at OMFIF.

Chris Papadopoulos is Economist at OMFIF.

Figure 2: ...but overall debt may prove to be more important



Source: IMF, BIS, OMFIF analysis

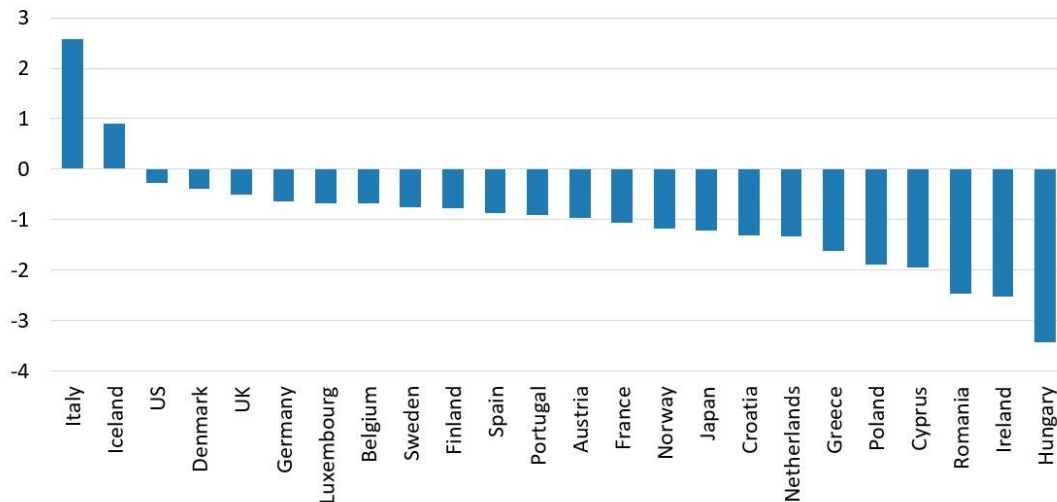
But the debt stock can be misleading in and of itself. Another key factor is an economy's ability to service debt. To gauge this ability, it is useful to consider the excess of the interest rate on government debt over the nominal GDP growth rate. If the interest rate exceeds the growth rate, debt as a share of GDP will grow. The more this persists, the faster debt will grow, as interest is paid on previously accrued interest. To maintain the size of the debt-to-GDP ratio in this scenario, governments need to run primary surpluses. If the interest rate is lower than the growth rate, governments can continue to borrow and shrink their debt-to-GDP ratios without repaying any principal.

The European Commission's 'snowball effect' indicator in figure 3 shows how much is added to the debt-to-GDP ratio by interest minus the amount removed by growth. If it is negative, governments can reduce debt-to-GDP ratios without running a primary surplus. If it is positive, the government must run a primary surplus to keep debt-to-GDP level. The higher it is, the greater the primary surplus needed to maintain the current ratio of debt-to-GDP.

Japan and Italy, which topped the first chart, are at different ends of the scale here. Italy's debt-to-GDP has been rising mostly due to a lack of movement in the denominator given years of near-zero economic growth. Japan is quite a long way from needing to run a primary surplus, which has enabled it to maintain fiscal sustainability despite its 237% debt-to-GDP ratio. If the snowball effect indicator moves into positive territory, it can still be brought down without running a primary surplus by ensuring the interest rate is below the growth rate, but it does mean that interest payments will be adding to the debt stock in the meantime.

Figure 3: Affordability is key

Interest (% of GDP) minus nominal GDP growth rate, 2019

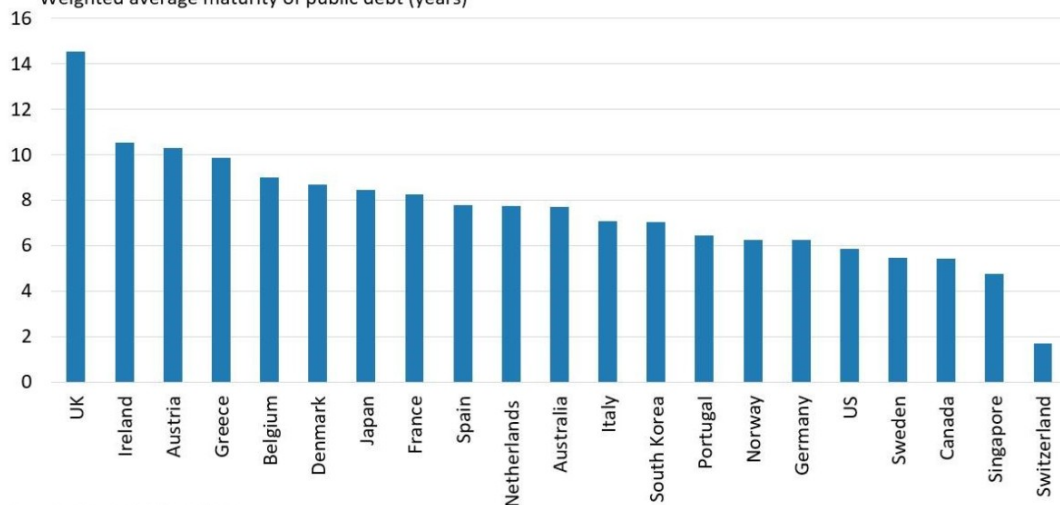


Source: European Commission, OMFIF analysis

Sustainability also depends on a country's saving rate, home bias of investors, and governments' ability to act. If interest rates rise above growth rates, some governments will have longer to decide policy responses than others. Canada and the US have the shortest debt maturities among advanced economies. The UK is the standout performer in average debt maturity. If UK borrowing costs shot up this year, it would make only a slow impact on UK interest repayments.

Figure 4: UK has the longest debt maturity

Weighted average maturity of public debt (years)



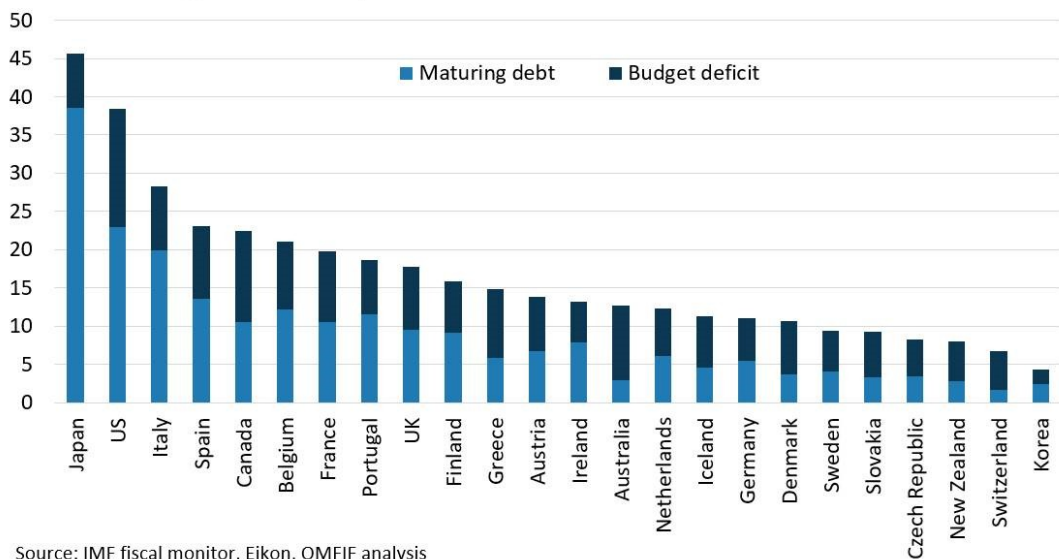
Source: Eikon, OMFIF analysis

The International Monetary Fund combines the maturity profile, which determines debt repayment obligations in a given year, with the budget surplus or deficit projections to estimate

countries’ annual gross financing needs. On the Fund’s latest iteration, published on 6 April and including any Covid-19 policy responses announced up to that date, the US and Italy are near the top of the ranking with GFN of over 25%. To put these in context, under its framework for market access countries, the IMF defines the appropriate threshold for GFN at 10-15% for emerging markets and at 15-20% for developed markets over the medium and long terms respectively. Greece, with one of the highest debt-to-GDP ratios, has a relatively modest GFN-to-GDP ratio projected for 2020.

Figure 5: Biggest borrowers in 2020

Gross financing needs for 2020, % of GDP



Source: IMF fiscal monitor, Eikon, OMFIF analysis

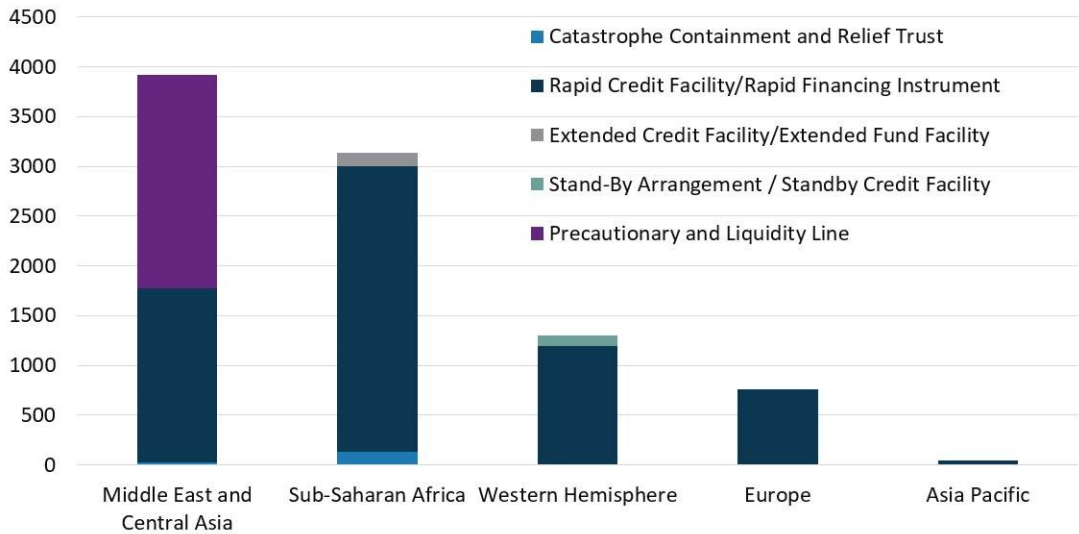
In theory, who the debt is owed to does not matter. In practice, it matters a great deal. Debt held by domestic banks risks creating sovereign doom loops. In the euro area crisis of the past decade, bail-outs were created to transfer debt from private to public creditors that could, in turn, afford to ease the terms of repayment, extend maturities and grant debt restructuring in all but name. Greece owes the majority of its debt to public institutions. As figure 1 shows, central banks hold a significant proportion of government debt in many countries. This debt has low or zero interest costs and would not be dumped under market pressure.

There are fewer options for emerging markets. Many owe debt in foreign currencies, mostly in dollars, and have experienced sharp portfolio outflows since the start of the crisis. Local currency bonds held by foreigners have also been subject to sell-offs. With the global financial safety net incomplete, many have turned to the IMF for funding. The Fund has a lending capacity of \$1tn. It has lent over \$14bn in its response to the Covid-19 crisis, mostly to emerging markets in Africa, Latin America and the Middle East. It has also approved debt relief for 25 low income countries for around \$200m under its catastrophe containment and relief trust.



Figure 6: Emerging markets borrow heavily from IMF

IMF loans and debt relief in March-April 2020, by region and type of facility, SDR millions

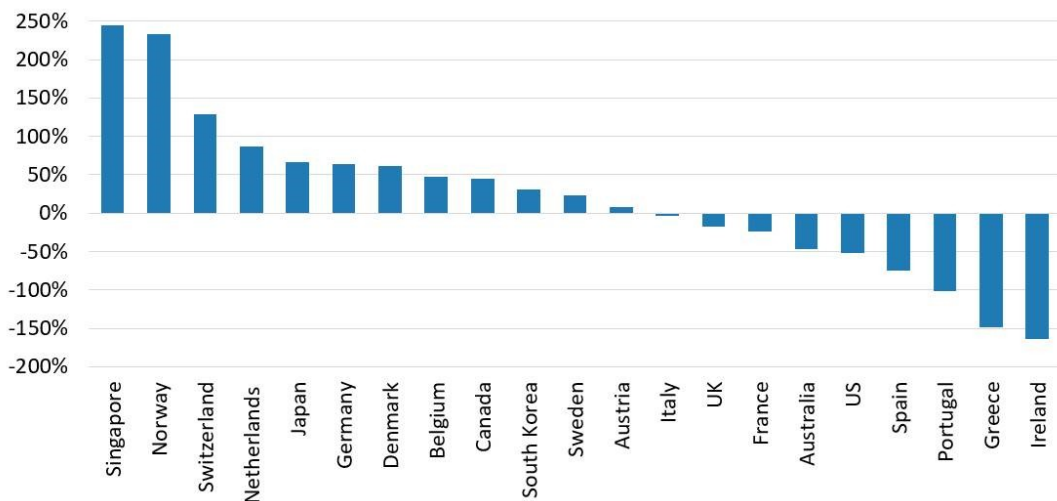


Source: IMF, OMFIF analysis

We started this piece talking about stock versus flow measures. Yes, sustainability is dynamic, and looking at the terms of payment is important. But to complete the analysis we need to look at a country's net foreign assets position. Singapore and Norway are favoured by ratings agencies because they have huge sovereign wealth funds, reflected in their foreign asset positions. Italy has a balanced position, while the rest of the euro area periphery and France are down the scale.

Figure 7: Global borrowers and lenders

Net international investment position, % GDP



Source: IMF, OMFIF analysis

When government debt is unsustainable, or is perceived by markets to be so, there are generally three solutions. They can run a primary surplus, try to reduce the interest rate-growth rate differential, or default on the principal. Those countries where central banks can operate with more flexibility are better placed to manage debt because policies such as asset purchases simultaneously reduce interest rates and boost growth. Governments can also reduce interest rates, if it comes to it, by negotiating with creditors to reduce interest or delay payments. When advanced economies have historically run into debt trouble, the route taken is normally to reduce interest through a refinancing package, such as an IMF loan or multilateral facility. The principal is usually left alone.

Nominal growth in advanced economies has tended to be well above the interest on debt in recent years. As long as economies can rebound quickly, this gap is unlikely to close significantly. A one-off surge in debt-to-GDP ratios does not necessarily presage sovereign debt crises.

Several countries stand out in this analysis. Japan has the highest debt-to-GDP ratio, but has a positive net international investment position, long debt maturity, and historically beneficial interest-growth differential. A significant proportion of its debt is owed to its own central bank. The US has a low average maturity, high borrowing needs, but low overall debt. And it benefits from the dollar's position as the world's reserve currency. Italy is the euro member most commonly cited as at risk of default, with its debt-to-GDP ratio projected to rise to 156% this year. It also has a bad interest-growth differential. But it has low overall debt and has mostly suffered from low growth rather than expensive debt. It paid only 3.5% of GDP in interest payments in 2019, whereas nominal growth was 1%, and around one-fifth of its interest payments would have gone to Banca d'Italia. It also has a relatively strong net foreign asset position. Canada has high financing needs this year, has high overall debt, low debt maturity and is a net oil exporter; its debt dynamics are likely to throw up some policy challenges.

## Worse to Come for Oil\*

By ELLIOT HENTOV\*

The pandemic has caused an unprecedented oil price shock with virtually no beneficiaries. Movements in the oil price typically generate a wealth transfer from producers to consumers or vice versa. From a global perspective, they are relatively balanced. However, in this instance, the collapse in producer revenue is not matched by consumer gains as public health measures restrict an increase in (or simply maintenance of) consumption. There is likely to be record-breaking oversupply in the coming months, even assuming, optimistically, lockdowns are lifted gradually by early May. The rapid dissolution of this oversupply by spring 2021 assumes that as demand recovery sets in, supply cuts accelerate.

Supply cuts will require intergovernmental agreement between oil producing governments, as well as a substantial decline in US shale production. During the 2015 oil downturn, it took 18 months for US production to fall by just 1m barrels a day, but oil prices averaged \$45-\$50 during that period. The current price drop is greater and while US shale has improved its cost curve, the median producer's break-even price is still near \$50. US shale production is a function of US financial conditions, which remain tight despite massive policy support. A second crisis within five years will make it harder for credit spreads to normalise and for marginal producers to maintain production. Experts expect a wave of consolidation across US shale. All in all, US production should come down gradually but meaningfully.

This will add an additional constraint on US growth as oil capex is closely tied to US manufacturing. The latter is likely to undergo less of a V-shaped recovery compared with China and Europe's manufacturing sectors. Politically, this will be problematic for US President Donald Trump's re-election campaign, given that the swing states are disproportionately reliant on manufacturing and represent his electoral base. Wisconsin and Michigan rank second and fourth, respectively, for highest proportion of manufacturing jobs as a share of total employment, and Pennsylvania ranks fifth in terms of nominal manufacturing jobs.

Considering a competitive US presidential election and a fragile economy, Trump could be tempted to divert attention from domestic policy failures. At the same time, Iran has been undergoing severe economic and social distress, with real GDP shrinking close to 10% in 2019 and oil exports at an all-time low of roughly 500,000 barrels a day (around 25% of pre-Trump sanctions levels). This dynamic had already been leading to increased confrontation, including the US assassination of Qassem Soleimani, the most senior Iranian military leader.

Together with the botched response of shooting down a civilian airliner, Covid-19 has dramatically escalated public animosity toward the regime. Following mass protests in late 2019, turnout in February's parliamentary elections was at an all-time low. Worse, Iran's first instances of Covid-19 were in Qom, the capital of the regime's ruling clerics. The virus transmitted widely among government officials, thus exposing the regime's core base to allegations of public health mismanagement. All of this creates an enormous incentive to seek another round of confrontation with the US given that the status quo is untenable for Tehran.

One certainty in the era of even lower oil prices is higher funding needs for all oil producers, including those with higher break-even fiscal profiles, as well as large sovereign funds. More importantly, there will remain a major funding gap for most oil sovereigns, including Gulf

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\*This article first appeared in OMFIF Commentary on April 8, 2020.

†Elliot Hentov, Head of Policy and Research at State Street Global Advisors.

Co-operation Council members. These states will need to rely on global bond markets to fund their fiscal budgets, so a simultaneous rush of higher borrowing could continue to push up borrowing costs. In particular, given the large borrowing plans in the US, Europe and China, emerging market sovereigns will need to compete even harder than in 2015-2016 when high-grade sovereign paper was in short supply.

The Covid-19 crisis has disrupted the supply-demand equilibrium in oil markets, which will not be restored until there is clarity on demand recovery. In the meantime, oil prices are likely to gyrate with disproportionate downside risks in the near term. That said, oil should experience a sharp rebound in the second half of 2020 with prices settling at around 25% lower than their pre-crisis levels by year-end.

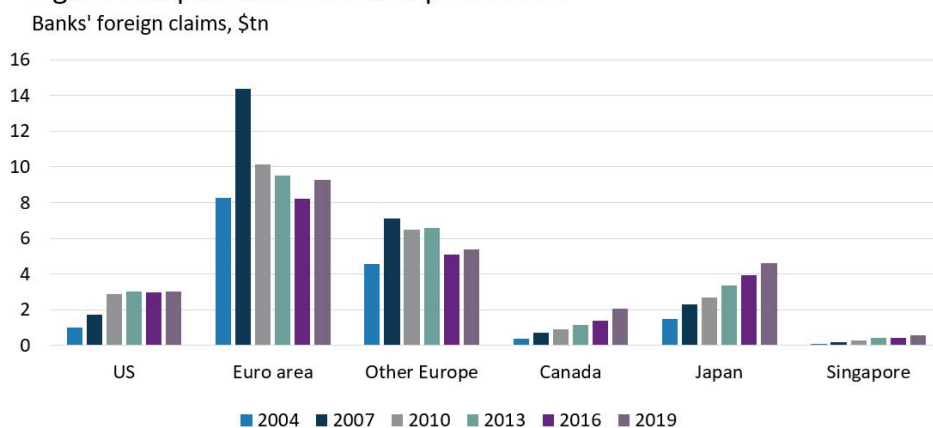
Sovereign fund asset disposal is not market-relevant, but high borrowing needs should help keep yields up across oil producing emerging market borrowers. This could be exacerbated by a probable return of conventional geopolitical risks in the aftermath of the pandemic, with repeated bouts of flight to safety and sustained dollar strength. However, the US election later this year holds the potential to be the catalyst to upend that trend.

## A Long View of Global Banking\*

By CHRIS PAPADOPOULLOS\*

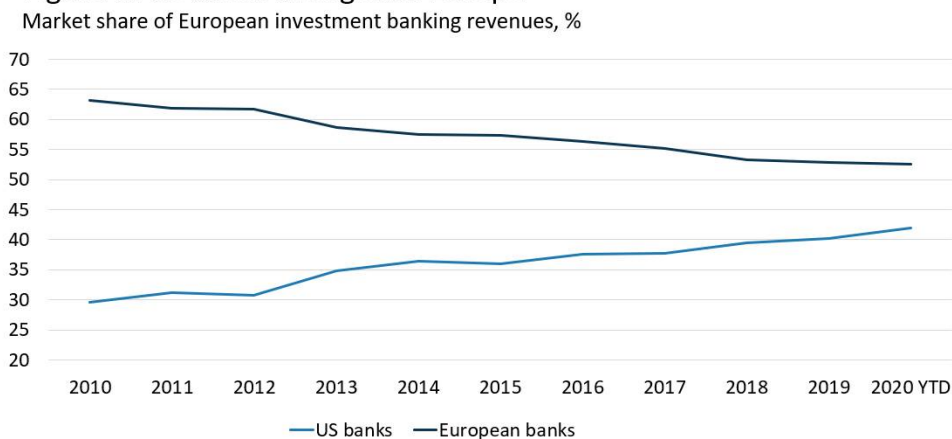
The 2008 financial crisis caused banks across Europe to reel in their cross-border business. This business has not improved much since, only rising a small amount between 2016-19, as Figure 1 shows. US banks have fared better. Figure 1 shows end-year data, which masks a stronger 2019 average.

Figure 1: Japan booms as Europe recedes



US banks have moved in where European banks have moved out, gaining market share across Europe. US banking groups have secured 42% of investment banking revenues earned in Europe so far this year, according to data from Dealogic. Their market share has risen over the last decade at the expense of European rivals, as Figure 2 shows.

Figure 2: US banks taking over Europe

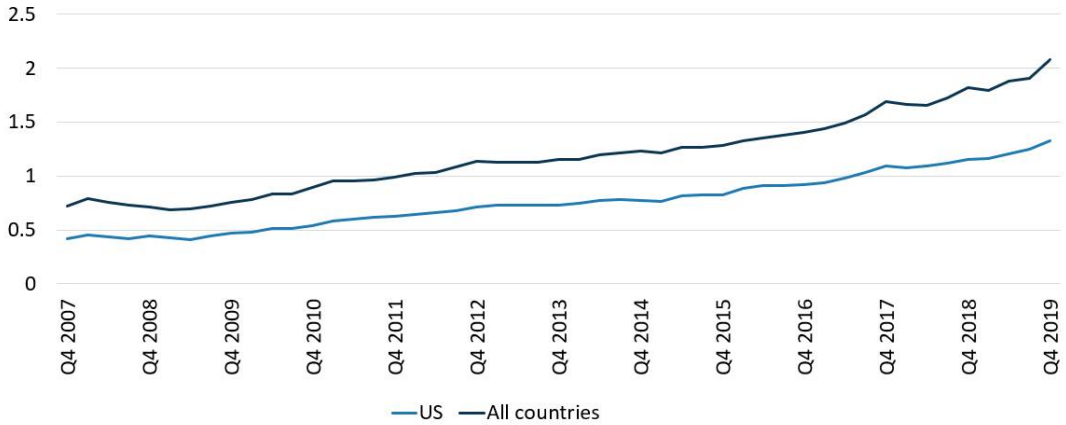


\*This article first appeared in OMFIF Commentary on May 20, 2020.  
Chris Papadopoulos is Economist at OMFIF.

While US banks expanded into Europe, Canadian and Japanese banks expanded into the US as they rapidly bolstered their cross-border activities. Since 2004, Canadian banks' foreign claims have increased more than five-fold, and Japanese banks' more than three-fold. Most of this investment has gone into US assets, as seen in Figures 3 and 4, with banks tempted by higher net interest margins than in their home markets.

**Figure 3: Canadian banks lending mostly to US**

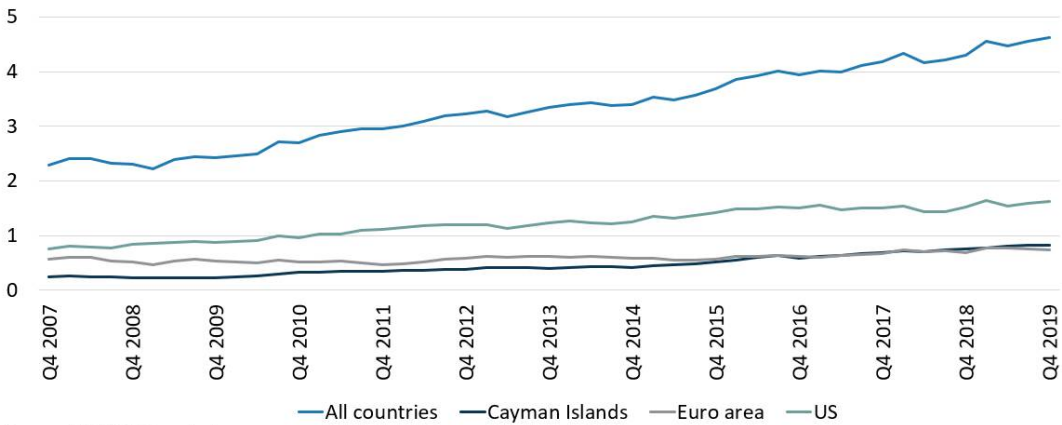
Canadian banks' cross-border claims, \$tn



Source: BIS, OMFIF analysis

**Figure 4: Japanese banks lend heavily to US, euro area and non-banks**

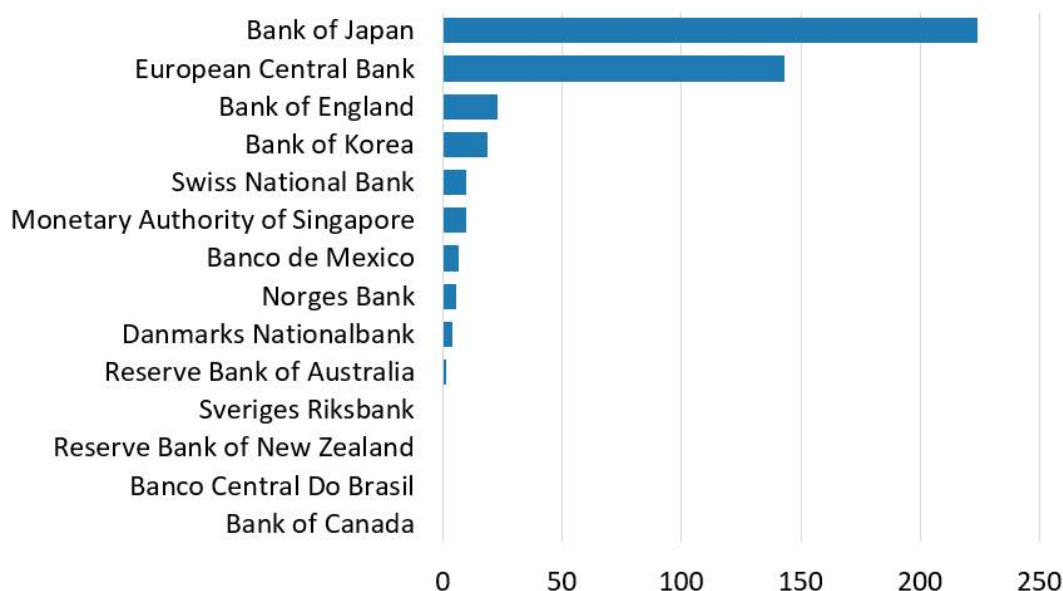
Japanese banks' cross-border claims, \$tn



Source: BIS, OMFIF analysis

Most of this cross-border lending will be in dollars, and it may be expected that Japan and Canada would make greater use of the Federal Reserve's dollar swap lines. But as Figure 5 shows, Japan has used it heavily while Canada has yet to use it at all.

**Figure 5: Japan and euro area largest swap line users**  
Swap lines, amounts outstanding on 14 May, \$bn



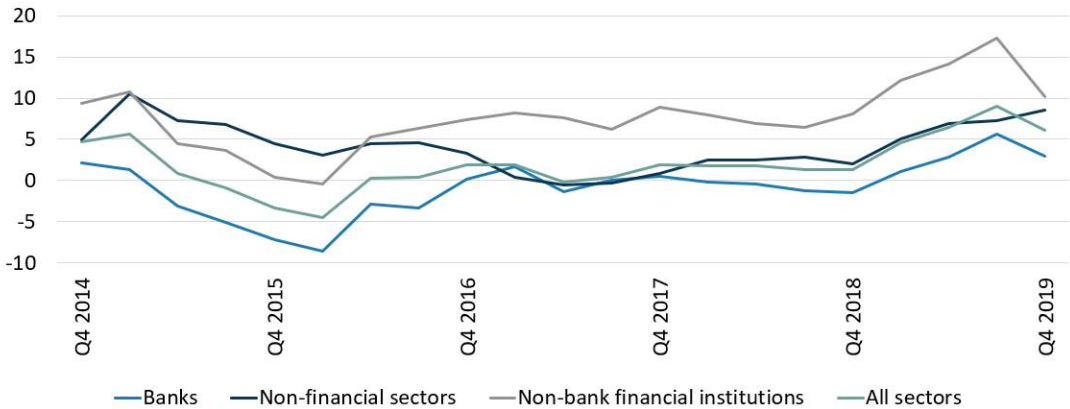
Source: Federal Reserve, OMFIF analysis

Aside from lending to the US, Japanese banks have been lending heavily to institutions in the Cayman Islands. As a tax haven, the Cayman Islands is an attractive location for non-bank financial intermediaries that channel money globally. This lending reflects the broader trend of non-banks conducting banking business and playing a more significant role in wholesale funding markets. Figure 6 shows that lending to non-bank financial institutions has been the fastest-growing component of cross-border lending since 2015.

This is a policy choice. Policy-makers are keen for more financial intermediation to go through funds rather than banks. Sometimes this makes sense. For example, a pension fund has much more stable funding – there has never been a run on a pension fund in the way there has been a run on banks. But not all funds are pension funds; some will no doubt also have short-term liabilities and long-term assets. We cannot know for sure, as unlike with banks, there is no comprehensive data on non-bank financial intermediation. Funds operating in wholesale markets tend to be smaller and more numerous than banks and based in offshore financial centres; they are a blind spot of the global financial system.

Figure 6: Strong lending to non-bank financial institutions

Annual growth in banks' cross border claims by counterparty, %



Source: BIS, OMFIF analysis

China is also worth a mention. Its cross-border banking activities are small compared to other major financial centres, but as the Economist discussed in a recent special report, China’s foreign lending activities, including those related to the Belt and Road initiative, are driving an increase in the country’s cross-border claims, especially in emerging markets and Africa.

These financial linkages could spill over into the world of geopolitics, affecting the relationship between the US and Europe, Canada and Japan. They also highlight where risks lie should the Covid-19 crisis extend more significantly into the financial realm, with Japanese banks and some sections of non-bank finance looking precarious.



## Covid-19 Lessons for Sustainable Finance\*

By AZIZ DURRANI AND ULRICH VOLZ\*

We are in the midst of an unprecedented crisis. Apart from the tragic loss of life, the economic implications will be felt for years. This will not only be in terms of the businesses that have closed, many of which will never re-open, but also through effects on employment and career development, and the massive levels of debt that governments are incurring to support their economies.

For years, scientists have warned about the probability of a pandemic. Yet governments around the world cut health budgets, including those aimed at dealing with situations like Covid-19. In the UK, a cross-government pandemic influenza outbreak drill took place in October 2016. Exercise Cygnus, as it was called, concluded that the National Health Service would need thousands more intensive care beds, that doctors would have to start triaging patients and only help those with a better chance of survival, and that there would be a shortage of protective gear available to frontline staff. The required investments in equipment and facilities were never made and tragically those predictions have become a reality in the UK, which has the highest Covid-19 death rate across Europe. Similarly, over the last three years the US has cut the funding and workforce of the Centre for Disease Control, and now has the world's highest death rate, with more than 85,000 at the time of writing.

A parallel can be drawn to scientists' warnings of a climate catastrophe. The world faces a growing threat of abrupt and irreversible climate change. A large part of the Arctic Ocean has already warmed by more than 4°C above preindustrial levels. There has been an increase in climate-related incidents such as hurricanes, earthquakes and bushfires, leading to a loss of life, jobs and habitation. The harrowing scenes of the recent Californian or Australian fires may be a harbinger of a 'new normal'. Are we going to be equally slow to heed calls for change, until a global climate emergency forces us to act?

The financial sector has a key role to play. Financial institutions fund the activities of the companies contributing to global warming and environmental damage. When making decisions on loans and investments, the financial system must fully consider the cost of economic activities that cause environmental destruction, pollution and biodiversity loss. The sector must be better prepared to deal with systemic risks, including climate and other environmental hazards.

Central banks are showing greater awareness of sustainability risks and acknowledging the need for them to help align the financial system with sustainable development. Last month, a survey by the Basel Committee on Banking Supervision revealed that the majority of its membership considers it 'appropriate to address climate-related financial risks within their existing regulatory and supervisory frameworks.'

Many countries are considering introducing disclosure requirements for climate-related financial risks, as suggested by the Task Force on Climate-Related Financial Disclosures, as well as micro and macroprudential instruments to mitigate these risks. A number of central banks – including the Bank of England, De Nederlandsche Bank and the Banque de France – are developing climate stress tests for their financial systems.

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But calls have emerged from the financial industry to delay prudential measures aimed at addressing climate risks. Without doubt, this is a period of great stress for our economies and the financial sector, and pragmatism and flexibility are needed to manage this situation where so much is at stake. But the crisis must not be used as an excuse to undermine efforts by central bankers and financial supervisors to climate-proof financial systems. If anything, the pandemic should strengthen their resolve to speed up efforts to integrate environmental and climate risks in financial decision-making to prevent the next crisis.

The central policy challenge in managing the pandemic and climate crisis is the same – we must make rapid progress in mitigating risks in the face of deep uncertainty and make our societies and economies more resilient. The financial sector will have to play a key role in this.

# China

## China To Focus Yuan Drive On Asia<sup>\*</sup>

*By* TU YONGHONG<sup>\*</sup>

China will expand trade and investment in Asia in order to promote the use of the yuan in payments at a time when the coronavirus pandemic is prompting calls for a reduction in the Chinese share of supply chains, policy advisors told MNI, although they cautioned that full internationalisation of the currency would require exchange rate liberalisation and looser capital controls.

Boosting trade with ASEAN+3, which includes Japan and South Korea together with China itself, to over 50% of China's total commerce would potentially be a tipping point, with the countries shifting towards using the region's own currencies for intra-bloc transactions, said Tu Yonghong, vice-director of the International Monetary Institute at Renmin University of China.

ASEAN became China's largest trade partner in the first quarter, displacing the EU and representing 15.1% of the country's total foreign commerce, General Administration of Customs data shows. Japan and South Korea between them accounted for another 13.7%.

Countries included in the Belt and Road programme will also be a focus of the yuan drive, advisors said.

### COMMODITY PRICING

China has already started to price commodities in yuan, including iron ore, gold and crude oil. It is set to enhance payment systems, credit support and settlement services, Tu said. As China's economy recovers from the pandemic more quickly than elsewhere, relatively high- returning yuan-denominated assets will become more attractive, she noted, although she added her voice to those calling for more transparency in exchange rate formation to win the market's trust.

Increasing the yuan proportion of partner countries' foreign exchange baskets could prompt a higher weighting in the International Monetary Fund's Special Drawing Rights, said Zhang Yongjun, deputy chief economist at the China Center for International Economic Exchanges.

The SDR is an international reserve asset which in the past China has promoted as a potential alternative to the dollar, amid continuing concerns in Beijing that the value of the country's vast holdings of U.S. Treasury bonds might be eroded by ultra-easy monetary policy.

Before any concerted drive towards promoting yuan use abroad, China will have to decide on how much it is prepared to loosen capital controls and liberalise its exchange rate, said Yu Yongding, a former member of the People's Bank of China's monetary policy committee, noting that an internationalised currency should be used for invoicing, and not just for settlement.

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<sup>\*</sup>This article was published by MNI.

<sup>\*</sup>Tu Yonghong, Deputy Director of IMI; Professor, School of Finance, Renmin University of China.

### **DOLLAR ASSETS**

For Yu, an urgent task for the country should be reducing its dollar assets, given the pressure the greenback will face from Fed quantitative easing, and also the danger that China's holdings abroad could be seized.

China should use its more-than-sufficient reserves of foreign currency to buy U.S. goods, reducing the politically sensitive trade surplus, Yu said. For the meantime, capital management remains necessary, while the exchange rate should be liberalised as much as possible.

China has freed most items in capital account management, but exchange rate management remains opaque and it retains controls over short-term capital flows and high-leverage derivative trading.

Another challenge is that a swift increase in the yuan's international presence could prompt the currency to strengthen, hitting exporters already suffering from coronavirus disruption and sliding international demand, said Chen Daofu, deputy director at the Financial Research Institute of the Development Research Center of the State Council.

Any appreciation beyond 6.6 to the dollar would hurt exporters, said Zhang Ming, a senior fellow at the Institute of World Economic and Politics under the Chinese Academy of Social Sciences. The currency, which traded at 7.08 in onshore markets on Friday, should remain within a range of 6.6-7.1 during 2020, he said.

China first announced its intention to promote yuan internationalization in 2009, launching an international payment function. Payments peaked in 2015, when the country shocked markets with a sudden devaluation. The yuan's share of global payments by value was only 1.85% in March, compared with 44.1% for the U.S. dollar and 30.8% for the euro, according to bank messaging network SWIFT.

But Asian trading companies have increased the use of the yuan for payment during recent months' dollar liquidity crunch, according to Deutsche Bank in a recent note. China is the largest trading partner for most Asian countries and the PBOC has established bilateral currency swaps with most of them. The U.S. Federal Reserve in March established temporary swap lines with the Bank of Korea and the Monetary Authority of Singapore for a maximum of up to USD60 billion each.

The country's drives into the cyber economy and mobile payment, soon to be reinforced by a digital currency backed by the PBOC, should also enhance the yuan's attractions, while the high-tech infrastructure drive included in this year's anti-coronavirus stimulus should provide a boost to digital trade facilities, according to Tu.

# Rationale Behind the Development of Hong Kong as an International Financial Center and Practical Foundations to Withstand External Shocks

By E ZHIHUAN\*

Since 2020, the sudden outbreak of the COVID-19 pandemic has hampered international trade and investment activities. The global economy faces large-scale bankruptcy of enterprises, rising unemployment, exacerbating social unrest, and potentially another Great Depression. To cover up their ineffectiveness in responding to the pandemic, some American and European politicians took up the banner of populism and protectionism to defame China, deteriorating the international political environment sharply. US President Trump took Hong Kong as a pawn in the China-US trade war and announced actions to revoke Hong Kong's preferential treatment as a separate customs and travel territory outside of China on the grounds of the "Hong Kong National Security Law." The related policies and treaties include the US-Hong Kong Policy Act, extradition treaties, control of military/civilian dual-use goods, etc. With the dual pressures of the China-US trade war and continuing civil unrest, Hong Kong's role as an international financial center is also facing external shocks from looming US financial sanctions.

A preeminent business environment and efficient markets under "one country, two systems" are the practical foundations for the continuous improvement of Hong Kong as an international financial center. The unique advantages of Hong Kong in meeting the rising financing needs of various enterprises in the mainland are a powerful driving force for the long-term prosperity and stability of its economy and the rapid development of its financial markets. The above two pillars together are critical to the long-term development of Hong Kong as an international financial center. This unique characteristic cannot be taken away by social unrest or any US financial sanctions.

## 1. Rationale behind the development of Hong Kong as an international financial center

As the saying goes, building a high-rise begins with mounds of soil. Hong Kong's international success is based on two pillars. One is related to good business environment, low taxation system, free port of funds, judicial system in line with the West, efficient financial supervision, and the most economically-free market. Another is based on the ever-growing economic relationship between Mainland and Hong Kong. We believe these core values are critical to maintaining Hong Kong's competitiveness as an international financial center and responding to external challenges.

In terms of experiences from current global financial centers, there are three important factors to build a global financial center: talents, financial regulation, and market liquidity.

First, the depth and breadth of financial markets are important indicators for a leading global financial center. The process of growing market liquidity in financial markets is complex and takes a long time to build. Hong Kong has ranked as the world's freest economy for 25 consecutive years until the end of 2018. There are no foreign exchange controls in Hong Kong

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so that capital can flow in and out of Hong Kong without restriction. In the 1970s, Hong Kong conducted market-oriented reform in foreign exchange markets, gold markets, and banking system controls, which enabled Hong Kong to provide more free and convenient connections between Europe and US markets. As one of the top financial centers worldwide, Hong Kong has one of the highest concentrations of financial institutions in the world and ample market liquidity for capital investment.

The rise of China's economy in the past 30 years has been a positive driving force behind Hong Kong's role as a leading financial center in global markets. Hong Kong has attracted over 1000 mainland enterprises to list and raise capital in Hong Kong. In the past 10 years, Hong Kong also played a key role in RMB internationalization and actively expanded offshore RMB businesses. This made Hong Kong the largest offshore renminbi (RMB) hub. In addition, in recent years, Asia became the fastest growing region in the world. To seize the opportunity in the Asia-Pacific region, the Hong Kong SAR government developed a comprehensive regulatory framework with a predictable tax system that attracts many different types of fund companies to Hong Kong. This enhanced Hong Kong's status as an international asset management center.

Hong Kong has implemented open and efficient talent policy and labor laws that do not hinder business activities. It has attracted outstanding financial talents and professional service talents from all over the world. According to the World Economic Forum (WEF) and the Lausanne Institute of International Management (IMD), Hong Kong's outstanding talent pool is in a leading position among the major economies in the Asia-Pacific region. There are more than 200,000 financial professionals and tens of thousands of accountants, lawyers and technology talents, many of whom are high-level international professionals with rich international experiences. According to the relevant data from the Hong Kong government, the number of employees in finance has increased by over 30% in recent years. At the same time, the number went up about 50% in legal, accounting, auditing and information technology. Attracting talents is a main competitive edge for Hong Kong's role as an international financial center.

Hong Kong has a strict regulatory environment that complies with international standards. International financial regulation is a systematic project involving many aspects such as the legal system, regulatory framework, economic policies, and regulatory costs. Hong Kong's common law-based legal framework is flexible and transparent, which can maintain market fairness and high efficiency to a greater extent, and is conducive to financial innovation and development. The existing financial regulatory framework and its strict regulatory approach will not weaken, but will help enhance competitiveness. The SAR government's economic policies are flexible, and can be adjusted in a timely manner according to the environment. The administrative management system is conducive to commercial activities, and has relatively low financial supervision costs. Such a leading regulatory environment among the major economies in the Asia-Pacific region is a very important competitive advantage for Hong Kong's status as an international financial center.

Hong Kong's business infrastructure is highly mature. Its business environment is highly open and fair, and its corporate and personal tax systems are simple, transparent, and efficient. It encourages business development and investment, and cultivates a large number of professionals with strong international backgrounds. These factors interact with each other to contribute to Hong Kong being a leading global financial center.

Overall, there was a large number of mainland companies that became listed at the Hong Kong Stock Exchange (HKEX) as the mainland economy grew. This in turn pushed the improvement in the development of Hong Kong's financial market infrastructure. In addition, the structure of Hong Kong's international financial center shifted from banking-driven to capital markets-driven, strengthening the competitiveness of Hong Kong as a leading global financial center.

However, operating and living costs have substantially increased in Hong Kong, which would erode its competitiveness in the long run. Therefore, it is necessary for Hong Kong to seek more effective solutions to deal with these challenges.

## **2. Hong Kong is challenged by the slowdown of the real economy**

The trade war between China and the United States, the civil unrest, and the pandemic have introduced three external shocks to the Hong Kong economy. The pandemic has halted economic activity in major global economies. Tourism, hotels, aviation, catering, and retail industries have been greatly affected. The IMF's forecasts for global, U.S., and euro zone economies are -3%, -5.9%, and -7.5% respectively, and will be lowered again according to IMF MD Kristalina Georgieva. The highly outward-oriented Hong Kong economy is once again under threat from an economic recession with a range of -4% to -7% according to the government. The economic contraction may exceed the -5.9% recorded during the 1998 Asian financial crisis.

The struggling real economy has affected the performance of financial markets to a certain extent. The China-US trade war and US extreme pressure may undermine the confidence of international investors in Hong Kong and bring new challenges to Hong Kong's international financial center status.

Since 2018, the deglobalization has led to the continuous deepening of China-US trade frictions, which has a huge impact on Hong Kong's exports and re-exports. As the US and Mainland China are Hong Kong's two largest economic and trading partners, trade disputes between the two will inevitably affect business of related merchants. At the same time, the huge uncertainty caused by the trade friction has rattled global financial markets, eroded Hong Kong's business and investment confidence, and brought more headwinds to the Hong Kong real economy.

From the perspective of economic development since its return and as a representative of a highly open small economy, Hong Kong is driven by external demand and highly susceptible to global economic fluctuations. Also, structural problems such as rigidity of the industrial structure, externalization of the service industry, and the lack of independence in monetary policy exaggerate risks to the economy.

In recent years, Hong Kong experienced difficulties of economic transformation, civil unrest, and exacerbated external shocks, leading to weak economic momentum. The economic downturn and changes in the domestic and external environment pose new challenges to the development of Hong Kong.

## **3. Financial markets in Hong Kong still show strong systemic stability**

The struggling real economy has dampened the market confidence in Hong Kong. However, as an international financial center, Hong Kong is still able to function normally in 2019, a testimony to its economic resilience. The main reasons are:

First, Hong Kong is an offshore market for mainland companies. Currently, mainland companies account for about 70% of the market value and trading volume of the Hong Kong stock market. As long as the mainland China maintains stable economic growth, the Hong Kong stock market will remain attractive to global investors. In 2019, thanks to the large-scale fund-raising projects of mainland enterprises such as Alibaba, Shenwan Hongyuan, Hong Kong topped the global IPO market. Hong Kong is still the main platform for mainland enterprises to explore the international market and for overseas enterprises to enter the mainland China. What's more, the total assets of the Hong Kong banking system exceeded HKD 21 trillion. More than half of bank loans are for use outside of Hong Kong. Therefore, the impact of the local economic performance on the banking industry is limited.

Secondly, the Aggregate Balance of the banking sector all remained generally stable. We haven't observed large-scale outflow of funds. Recently, HKD interest rates exceeded USD interest rates, leading the HKD exchange rate to the strong end of its currency band.

Third, the P/E ratio of Hang Seng Index is only about 10 times, meaning stocks are still cheap for international investors.

Fourth, compared with financial crises in 1997, 1998 and 2008, the current Hong Kong financial market is more resilient, and the financial system operates with higher transparency and stricter supervision. Foreign exchange reserves and government fiscal reserves are more abundant. The monetary base exceeds one trillion yuan, and the Hong Kong stock market capitalization is over 30 trillion yuan. The above factors are all helpful in protecting against short-term shocks.

Fifth, the interconnection between Hong Kong and Mainland's financial markets has provided Hong Kong with a buffer to cope with external shocks. In recent years, with the internationalization of RMB, the Mainland has successively launched Shanghai-Hong Kong Stock Connect, Shenzhen-Hong Kong Stock Connect, Bond Connect, and Mainland-Hong Kong Mutual Recognition of Funds and other schemes. These schemes provide Hong Kong's financial and professional services companies with greater room for development. They also help Hong Kong to withstand external shocks and maintain market stability.

#### **4. The SAR government still has policy space to hedge against economic downturn and the adverse effects of external pressure**

The economic downturn and the development of the pandemic has affected the performance of Hong Kong's labor market, leading to an increase in the unemployment rate. Between Feb and April, the average unemployment rate rose to 5.2%, up one percentage point from the previous three months. The unemployment rate for April alone may have risen to 6.5%. The construction industry, retail, accommodation, and food services industry, and manufacturing industry recorded the largest increases in unemployment, reaching 10.0%, 9.0% and 6.2% from Feb to April respectively.

First, faced with the severe economic and employment situation, the SAR Government has launched two rounds (HKD 30 billion and HKD 137.5 billion) of "Epidemic Prevention and Anti-epidemic Fund" in addition to the HKD 120 billion relief measures announced in the fiscal budget. The total amount is HKD 287.5 billion, including HKD 80 billion under the "employment protection" plan, and payment of HKD 10,000 in cash to Hong Kong permanent residents aged 18 or above etc. It also supports industries most affected by the pandemic, such as passenger transport, tourism, construction, aviation, and catering etc., to comprehensively keep enterprises in operation, to maintain employment of employees, to reduce the financial burden of enterprises and citizens, and to allow the economy to recover as soon as possible.

Second, Hong Kong has ample fiscal reserves and large policy space to expand fiscal policies to support economic growth, to increase the role of domestic demand in stimulating the economy, and to hedge the adverse impact of possible financial sanctions from the United States.

Third, in response to the adverse impact of global protectionism, the SAR Government has focused on promoting the development of a diversified economy and has launched some long-term measures: signing more bilateral and multilateral agreements to maintain Hong Kong's trade impact in the region and closely monitoring the impact of US trade frictions and possible US financial sanctions on Hong Kong. The SAR Government will promptly implement measures to support the industry. The measures of the SAR Government to provide export insurance and financing guarantees to support the development of small and medium-sized enterprises are also seeing success.



Fourth, the SAR Government has increased investment in infrastructure and increased public expenditure. Accelerated government consumption will provide stable support for economic growth. The government vigorously promotes innovation and technological development, and invests in resources in areas such as university research, re-industrialization, and applied technology to enhance Hong Kong's global competitiveness. The SAR Government takes a long-term view by actively taking measures to increase the supply of land and houses, and to control the rise in property prices. It reduces overall business costs, and fundamentally promotes the development of the real economy. The coordination of short-term relief measures and long-term structural policies has enhanced Hong Kong's economic resilience to a certain extent.

### **5. China's financial opening will provide a long-term opportunity for the development of Hong Kong as an international financial center**

Since the beginning of this year, mainland China has successively launched 12 new measures to open up to the outside world and canceled the policies on investment quotas for qualified foreign institutional investors (QFII) and RMB qualified foreign institutional investors (RQFII), as well as RQFII pilot country and regional restrictions, to attract foreign capital to enter mainland capital markets. These measures promote the continuous increase in the proportion of foreign capital in the mainland stock and bond markets, and further promote the opening of the mainland capital market. Obviously, China's financial services industry will enter a new era of opening up, and will provide space for the long-term development of Hong Kong as an international financial center.

First, Hong Kong, as the main channel for China's capital market to connect to the outside world, provides diverse options for the interconnection between the mainland and international financial markets, while also enhancing its own international influence. Shanghai-Hong Kong Stock Connect, Shenzhen-Hong Kong Stock Connect and Bond Connect were the first to connect domestic stock and bond markets with Hong Kong capital markets. As a free port of global capital, Hong Kong has innate conditions to connect with other major financial markets. Over the past 20 years, the Hong Kong financial industry has vigorously strengthened its links with major global financial markets through various types of cross-regional financial cooperation. The Chinese financial industry has also made full use of the overall advantages of the Hong Kong financial market, built a regional operation and management platform, comprehensively accelerated the accumulation of overseas assets, and enhanced capabilities in global investment, financial services, and international management and operations.

Second, the Hong Kong financial market has a sound financial supervision system to ensure the steady development of the banking system. During the period between the Asian financial crisis in 1997 and the global financial crisis in 2008, the HKMA had launched extraordinary liquidity facilitation measures and deposit protection plans to effectively control the systemic risks of the banking system. Since 2010, the Hong Kong Monetary Authority has continuously launched multiple rounds of prudential supervision measures for mortgage loans to prevent the risk of deterioration in credit quality due to the reversal of the property market. The international banking industry generally regards Hong Kong as the preferred platform to enter the Chinese market. Chinese banks also use Hong Kong as a base to build global comprehensive risk management capabilities and enhance the awareness and level of compliance operations.

Third, Hong Kong provides the banking industry with a completely competitive market environment, regulates the development of financial institutions and the construction of risk management mechanisms, and effectively prevents and resolves operational risks faced by individual banks. Hong Kong has a friendly business environment, a simple and low tax system, a judicial system that is in line with international standards, and the most liberal economy. It is

one of the most concentrated locations for banks around the world. The total assets of the Hong Kong banking system exceed HKD 21 trillion, about 8.5 times the GDP of Hong Kong. In recent years, Chinese banks have continued to focus on the development of basic businesses such as deposit loans, while taking advantage of the parent bank's strong funds and personnel, mid/back-office operational support capabilities, and low cost-income ratio. They have increased investment resources to build private banking, custody, asset management and other diversified business development platforms. Hong Kong has become the flagship of the international development of the Chinese banking industry.

Fourth, Hong Kong has further improved the financial technology level and service capabilities of the banking industry. Hong Kong has completed the marketization of interest rates earlier, which urged the banking industry to vigorously expand its income from intermediary business to make up for the reduction in interest income caused by the narrowing of net interest margins. Over the years, mainstream banks in Hong Kong have kept a close eye on market development needs, strengthened its financial product innovation capabilities, and actively explored diversified sources of income. Virtual banks will further increase the investment of information technology in the banking industry, providing customers with more diverse options and use more convenient and low-cost service channels to enhance customer experience.

Fifth, Hong Kong has outstanding first-mover advantages and scale advantages in the offshore RMB business. It has the world's first offshore RMB clearing system, the world's largest RMB capital pool, an active RMB trading market, and a more diversified RMB product system. With the advancement of RMB internationalization, the offshore market gradually expanded from Hong Kong to Southeast Asia, forming a network of offshore centers across Asia, Americas, and Europe. Under the new trend of accelerating China's opening to the outside world, the internationalization of the RMB will be market-driven, serving more of the real economy and companies going abroad. Southeast Asia, as an important region of the Belt and Road Initiative, will provide new experiments for RMB internationalization.

## **6. Enhance the position of Hong Kong's role in the Greater Bay Area's financial sector**

In May 2020, People's Bank of China, China Banking Regulatory Commission, China Securities Regulatory Commission, and SAFE jointly issued the "Opinions on Supporting the Construction of the Guangdong-Hong Kong-Macao Greater Bay Area through Finance", which implements the main ideas for the financial sector found in "Greater Bay Area Development Planning Guidelines". These ideas, specifically implemented in the fields of banking, securities, insurance, etc. through 26 major measures, helps to build a vibrant and internationally competitive first-class bay area.

The continuous improvement of financial service and real economy capabilities of the Guangdong-Hong Kong-Macao Greater Bay Area will inject new momentum into regional economic growth, promote the coordinated development of the regional economy, and effectively expand the strategic buffer for national development. Against the backdrop of downward pressure on the global economy and international governance facing unprecedented changes in a century, the Guangdong-Hong Kong-Macao Greater Bay Area has kept pace with world-class bay areas such as Tokyo and San Francisco in terms of population, area, GDP, trade, etc. In addition to the effect of greater scales, the Greater Bay Area actively explores innovative, open, green, and shared development paths, which not only provides an important growth engine for China but the whole world. The financial industry in the Greater Bay Area will present a new development pattern, providing Hong Kong with a new historical opportunity to fully enhance the positioning of its role in the financial sector of the Greater Bay Area.

First of all, the Greater Bay Area will promote the interconnection of financial markets and

infrastructure, gradually open up Hong Kong and Macau RMB clearing banks to participate in the interbank lending market in the Mainland, and optimize and improve arrangements such as Shanghai-Hong Kong Stock Connect, Shenzhen-Hong Kong Stock Connect and Bond Connect. Research on Southbound Connect will be conducted in due course. The above measures will bring enormous room for business growth to the Hong Kong banking industry.

Secondly, the Greater Bay Area will expand the scale and scope of cross-border usage of RMB within the region. Under the premise of compliance with laws and regulations, the Greater Bay Area will jointly set up relevant funds to attract capital from Mainland, Hong Kong, Macau, and overseas to provide funding for the construction of the Greater Bay Area. Promoting convenient cross-border circulation and exchange of RMB in the Greater Bay Area will help Hong Kong stand out from the competition with other offshore RMB centers and strengthen its position as a global offshore RMB business hub.

Third, the Greater Bay Area will accelerate the promotion of green financial cooperation, support Hong Kong in building a green financial center, build an internationally recognized green bond certification agency, encourage more Greater Bay Area companies to use Hong Kong for financing and certification of green projects, and support relevant financial institutions with issuing green financial bonds and other green financial products in Hong Kong. Hong Kong and Macao's distinctive financial sector is promising. It will continue to strengthen its functions as an international asset management center and risk management center, and build and service the investment and financing platform for the construction of "One Belt One Road".

Fourth, the Greater Bay Area will build a diversified, international, and cross-regional technology innovation investment and financing framework, a technology innovation financial support platform, and promote the transformation of scientific and technological achievements. "Opinions on Supporting the Construction of the Guangdong-Hong Kong-Macao Greater Bay Area through Finance" also launched measures such as cross-border currency exchange for venture capital funds, block chain applications in the field of trade finance, big data and artificial intelligence application etc., for the construction of a habitat for large financial institutions in the Greater Bay Area, the creation of favorable conditions for precise marketing and intelligent risk control, and the promotion of digital transformation of financial institutions. Hong Kong's financial industry should seize the new opportunity to strengthen its financial technology capabilities as soon as possible.

In short, the status of Hong Kong as an international financial center has been continuously built through the long-term hard work of several generations. Hong Kong's financial industry is confident to face challenges, to plan ahead, to pioneer and innovate, to continuously improve the efficiency and capabilities of financial markets, and to effectively control hidden risks while better serving the opening up process of China's financial markets. It plays an irreplaceable role in the deepening development of "One Belt One Road" and the comprehensive development of the Greater Bay Area. The two core pillars mentioned above are the practical foundations on which Hong Kong, as an international financial center, could respond to external shocks.

## Rivalry with China a No-win Strategy for US\*

By ANDREW SHENG AND XIAO GENG\*

As governments worldwide confront the terrible choice between saving lives from COVID-19 and protecting people's livelihoods, economic indicators highlight the intensity of the dilemma. Unemployment has skyrocketed, trade has plunged, and the global economy is facing its worst downturn since the Great Depression. There is only one way to limit the novel coronavirus pandemic's economic fallout: Sino-US cooperation.

But China and the United States have been at odds lately. Since 2017, the US administration has pursued an aggressive containment strategy, wielding trade barriers as its favorite weapon.

### **US has become more antagonistic**

Far from spurring a change of heart, the COVID-19 crisis seems to have deepened the US administration's commitment to antagonism to the point that blaming China for the outbreak appears to have taken precedence over protecting American lives. In its latest document "Strategic Approach to the People's Republic of China", the US administration has reiterated its reasoning: a supposedly "clear-eyed" assessment has confirmed China as a strategic competitor in economic, ideological and national-security terms.

The US does not, the document claims, "seek to contain China's development", and "welcomes cooperation by China to expand and work toward shared objectives". But US engagement with China will be "selective and results-oriented", always advancing US national interests.

As the COVID-19 death toll in the US has crossed the 110,000 mark, Washington has no greater interest than containing the coronavirus. And with more than 38 million unemployment claims having been filed in just nine weeks, limiting the pandemic's economic costs must also be worthy of cooperation.

Make no mistake, neither confronting a threat that doesn't respect borders nor safeguarding an economy that is deeply integrated with the rest of the world can be done alone. Yet it is far from clear that the US will subordinate geopolitical rivalry to these vital objectives.

On the contrary, just in the last month, the US Commerce Department introduced new technology restrictions targeting Chinese telecommunications giant Huawei, and the Senate passed a bill that could de-list some Chinese enterprises from trading on US stock exchanges. And, while acknowledging the "wide scientific consensus that the virus was not manmade or genetically modified", US Secretary of State Mike Pompeo recently declared that there is "enormous evidence" to show that it originated in a laboratory in China.

Amid acute emotional and economic trauma, the desire to identify and punish a culprit can certainly be tempting. For the US president, it has emerged as a central feature of his re-election campaign—and a useful way to avoid blame for his administration's failures in containing the pandemic. But history shows the folly of such an approach: policies intended to punish the losers of World War I set the stage for the Great Depression and eventually led to another world war.

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\*This article first appeared in China Daily on June 15, 2020.

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### **Pandemic has given rise to dangerous political trends**

The stakes are just as high today. The pandemic has turbocharged dangerous political and economic trends, from nationalism to a digital divide among workers and businesses. Rising unemployment, together with climate change-related natural disasters and disease outbreaks, will only exacerbate discontent.

Many governments hope that large-scale monetary and fiscal stimulus will be enough to save their economies. The International Monetary Fund estimates that developed countries have already committed to providing US\$9 trillion worth of fiscal support, with the US and Europe in the lead. In the US, the Congressional Budget Office projects a fiscal deficit of US\$3.7 trillion—17.9 percent of GDP—in 2020.

China, too, is relying on fiscal stimulus, though to a much lesser extent. Its efforts—centered on over 2.5 trillion yuan (US\$350 billion) in cuts to taxes and fees faced by businesses and households—would raise its fiscal deficit only slightly, to 3.6 percent of GDP.

But while the US Federal Reserve has unleashed unprecedented monetary loosening—expanding its balance sheet by nearly US\$3 trillion as of mid-May—the People's Bank of China has not followed suit, preferring to press commercial banks to issue credit to businesses and local governments. In the first four months of this year, total yuan-denominated loans rose by 10.7 percent year-on-year. The sale of coronavirus bonds worth 1 trillion yuan should help to sustain local governments' budgets.

Despite these massive stimulus measures, the US' real GDP is expected to decline by 39.6 percent in the second quarter of 2020, and 5.6 percent for the whole year. This reflects an inconvenient truth: most monetary and fiscal policies address only temporary cash-flow issues. What the world needs is to re-tool the business and employment models for the post-pandemic era—and that will require massive investments at local, national and global levels.

Unlike the US, China seems to recognize this. At the opening of the recently concluded third session of the 13th National People's Congress, Premier Li Keqiang set no GDP target for the year, indicating the government will uphold its people-first approach. Li also vowed to work with the US to implement the "phase one" trade deal that was signed in January.

The US needs to recognize that its escalating geopolitical rivalry with China makes little strategic sense. The last several decades have shown that global cooperation—especially on trade—is a viable win-win strategy, while trade wars and zero-sum geopolitical competition undermine prosperity for all.

Beyond the bilateral strategic game, the US—as a longtime global leader—has a moral obligation to help the rest of the world avoid a pandemic-induced depression trap, which would be more dangerous than the so-called Thucydides' trap. Judging by recent signals, we should not hold our breath.

## Main Takeaways from Government Work Report at

### “Two Sessions”\*

By DONG JINYUE AND XIA LE\*

The long-awaited “two-sessions” of China, namely the annual sessions of the National People’s Congress (NPC) and the Chinese People’s Political Consultative Conference (CPPCC), commenced in Beijing on May 21st after a two-month delay due to the COVID-19 outbreak. The “two sessions” are always a pivotal event in China’s political calendar. At this challenging moment, the convention of the “two sessions” signals that the COVID-19 outbreak has been brought under control in China.

In the week-long sessions, delegates from around the country will discuss the most important issues concerning all dimensions of national affairs, ranging from economic-social development to geopolitical security. This year’s “two sessions” are held in the aftermath of the COVID-19 outbreak, which has transformed to a pandemic with catastrophic impact on the global economy. The COVID-19 containment and economic stimulus are key topics this time. Other topics include every perspective of Chinese society including poverty alleviation, property market, industry policy, deterioration of the China-US relationship and climate change etc.

On May 22th, in the third session of the 13th National People’s Congress (NPC), Premier Li Keqiang delivered the Government Work Report. The report not only summarized the achievements of China in 2019 but also made a blueprint of every perspective of economic and social development for 2020. Here are the main takeaways:

**No GDP growth target was set for 2020.** Traditionally, the authorities announce several official targets for the year at the NPC, including the annual GDP growth target. However, the routine could be broken this year. No GDP target was announced in this year’s Government Work Report for 2020. As its major important trade partners are still suffering the pandemic, China’s external demand is now facing enormous uncertainties. Setting an officially binding growth target at such a juncture could cost the authorities the necessary flexibility of balancing growth boost and long-term debt control in the implementation of economic stimulus.

**Employment protection is the first priority among the “Six Stabilities” and “Six Protections”:** As we expected, the Government Work Report again emphasized the importance of the new slogan of “Six stabilities” and “Six Protections”, including stabilizing employment, financial sector, foreign trade, foreign investment, domestic investment and expectations. Chief among them is the employment stability amid the economic recession and COVID-19. It is noticed that although the Report does not set the GDP growth target, but it indeed set the unemployment rate target at 5.5% for registered unemployment rate and 6% for survey unemployment rate for 2020. (Table 1)

**Proactive fiscal policy will support a stimulus package of 5% of GDP.** The Government Work Report also clearly listed the fiscal stimulus measures amid COVID-19 and global economic recession, including: (i) To expand fiscal deficit rate from 2.8% in the previous year to

\*This article first appeared in BBVA Research on May 22, 2020.

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3.6%, around RMB 1 trillion increasing; (ii) To issue special government bond with the scale of RMB 1 trillion; (iii) To increase tax cut and fee reduction scale to RMB 2.5 trillion, RMB 0.5 trillion increasing from the previous year ; (iv) To expand local government bond issuance to RMB 3.75 trillion to support infrastructure investment at local government level, increasing by RMB 1.6 trillion from the previous year; and (v) To use part of proceeds from local government bond issuance as seed funds to leverage bank lending, estimated at RMB 1.4 trillion. Altogether, the fiscal stimulus package reaches RMB 3.6 trillion, around 3.6% of total GDP. Last but not least, in order to finance the fiscal easing measures, the Report set the central government expenditure growth to negative this year. (Table 1)

**Prudent monetary policy will be more flexible to support growth.** The report announced that the central bank will implement multiple conventional monetary measures such as interest rate cut, RRR cut, re-lending to lead M2 and total social financing growth significantly higher than the previous year in a bid to stimulate growth. In addition, the report also mentioned to promote monetary policy tool innovation to make the monetary transmission mechanism smoother and more targeted to SMEs (such as to extent SMEs debt repayment date etc.).

**The focus of industry policy will shift to developing “new infrastructure” this year.** In terms of the industry policy, this year’s Report emphasized the support for the new infrastructure investment, new urbanization and heavy industry infrastructure investment such as water conservancy and communication infrastructure. To support “New infrastructure” to stimulate growth has been a recent hot topic, including information-based infrastructure such as 5G and the Internet of Things; converged infrastructure supported by the application of the internet, big data and artificial intelligence, such as smart transportation and smart energy infrastructure; and innovative infrastructure that supports scientific research, technology development and product development.

Table 1. COMPARISON OF 2019 AND 2020 TARGETS SET BY GOVERNMENT WORK REPORT

	2019 target	2019 actual	2020 target
GDP	6-6.5%	6.1%	No target
CPI	3%	2.9%	3.5%
M2	Same growth as 2018	8.4%	Significantly higher than 2019
Total social financing	Same as GDP growth	10.7%	Significantly higher than 2019
Fiscal Deficit	2.8%	2.8%	3.6%
Special Government Bond	N.A.	N.A.	RMB 1 trillion
Local Government Bond	RMB 2.15 trillion	RMB 2.59 trillion	RMB 3.6 trillion
Registered unemployment rate	4.5%	3.62%	5.5%
Survey unemployment rate	5	5.3%	6%

Source: BBVA Research and 2020 Government Work Report

Altogether, this year’s “two sessions” is special compared with the previous ones at this challenging COVID-19 stage. The top priority of this year’s “two sessions” centering around COVID-19 pandemic containment and economic stimulus measures. We believe that the pro-growth measures announced in the Government Work Report will help to put China’s growth engine back to the right track in Q2 and afterwards, and ultimately Chinese economic bounce will lead global economic recovery in the next year. Altogether, we predict the GDP growth rate will steadily climb up to 2% y/y in Q2, 5% y/y in Q3 and 7% y/y in Q4, concluding 2020 with a full-year growth outturn of 2.2%.

## **Resilient China Can Help Lead Global Recovery\***

*By* GAO HAIHONG\*

The outbreak of Covid-19 has disrupted Chinese economic activity. In January and February, China's fixed investment, retail consumption and exports – the three major demand drivers – dropped respectively 24.5%, 20.5% and 17% year-on-year. The service sector and industrial production also experienced rapid contractions. They declined 13% and 13.5%. This sharp economic downturn is a reasonable reaction to drastic exogenous shocks. China was the first country to face the outbreak, and there are still unknowns about the impact of the health crisis. In testing times, China can show its economic resilience by playing a leading role in global recovery.

China has confronted multiple economic challenges since the Trump administration sparked a trade war in early 2018. The negative impact of escalating tariffs was expected. Domestic rebalancing has been on the right track. But some key reforms faced a bumpy road. The financial system has recovered from deleveraging. Domestic debt, though, has reached an unsustainable level. The outbreak of the health crisis interrupted the growth path but also forced the Chinese government to prioritise a different task – containing the virus.

China has succeeded in halting the spread of coronavirus, as far as the domestic front is concerned. However, the effort has been costly. Policy-makers have to promote an economic recovery in a balanced way. The People's Bank of China must balance rising inflation pressure and the need for financing the real economy. The central bank conducted less aggressive, but clearly targeted, monetary easing by releasing Rmb550bn (\$77.6bn), 73% of which targeted vulnerable small companies and private enterprises, the power houses for job creation. The anti-virus stimulus came at the time that China's fiscal policy geared towards foster consumption. With additional stimulus, equivalent to more than Rmb3.6tn (\$510bn), China expects an increase in infrastructure investment that can quickly fill the gap from lower consumption. However, some experts question the efficiency of the fiscal boost and say it may worsen debt problems locally and nationally.

One challenge for China's domestic recovery lies in external repercussions as a result of highly interlinked global supply chains. China shows some early signs of a production recovery, but this will be sustained only if external markets provide demand. Some global supply chains may be relocated, reflecting an emerging trend towards deglobalisation. China needs to combine openness, domestic reform, and a better investment environment.

The most difficult test concerns international co-operation. The pandemic knows no borders, yet containing the virus requires isolation. Stages of contagion vary from country to county, which makes coordinated action unlikely. In fighting the economic impact, central banks and treasuries worldwide have intervened without explicit coordination.

Yet there is plenty of room to work together. Central banks can enlarge currency swap lines to meet liquidity shortages. The Federal Reserve is making a good start by extending swap lines to more central banks. The International Monetary Fund has underlined how it will deploy its arsenal of financial instruments to support countries in need. G20 and G7 ministers and central

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\*This article first appeared in OMFIF Commentary on March 25, 2020.

Gao Haihong, Director of the Research Centre for International Finance, Chinese Academy of Social Sciences.



bank governors have issued statements to support pandemic countermeasures. More collective effort is needed to rebuild confidence on the financial markets and elsewhere. China has been part of this effort – and that will continue.

# Central Banking

## Pandemic Central Banking: The Monetary Stance, Market Stabilisation and Liquidity\*

By PHILIP R. LANE\*

In my recent blog post, I described the range of scenarios that have been developed by ECB staff to support the analysis of the near-term and medium-term macroeconomic dynamics in the context of the coronavirus (COVID-19) crisis.<sup>1,2</sup> I also explained the current monetary policy of the ECB and outlined our approach to setting the future course of monetary policy. My remarks today aim to reinforce these points by presenting some additional empirical evidence.

### Macroeconomic outlook

Chart 1 shows the three scenarios developed by ECB staff that were published on 1 May. Since then, the Eurosystem staff have continued to track the incoming information (both the economic data and the public health data): the forthcoming June Eurosystem staff macroeconomic projections will provide an updated assessment of the economic outlook. Still, the 1 May scenarios provide an excellent framework for understanding the environment facing policymakers.

In all scenarios, the current quarter represents the trough of the crisis, with a cumulative decline in the range of 10 to 20 percent of GDP since the start of the year. In terms of quarterly performance, a significant rebound is expected over the summer in line with the removal of the most severe lockdown measures. However, the scenarios differ in terms of the duration and severity of virus-related restrictions on economic activity and the behaviour of households and firms in the rest of 2020 and throughout 2021. In all scenarios, a deep recession is envisaged: in the severe scenario, real GDP would fall by 12 percent in 2020.

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\*Remarks by Philip R. Lane at the Institute for Monetary and Financial Stability Policy Webinar, 19 May 2020

<sup>1</sup>Philip R. Lane, Member of the Executive Board of the ECB

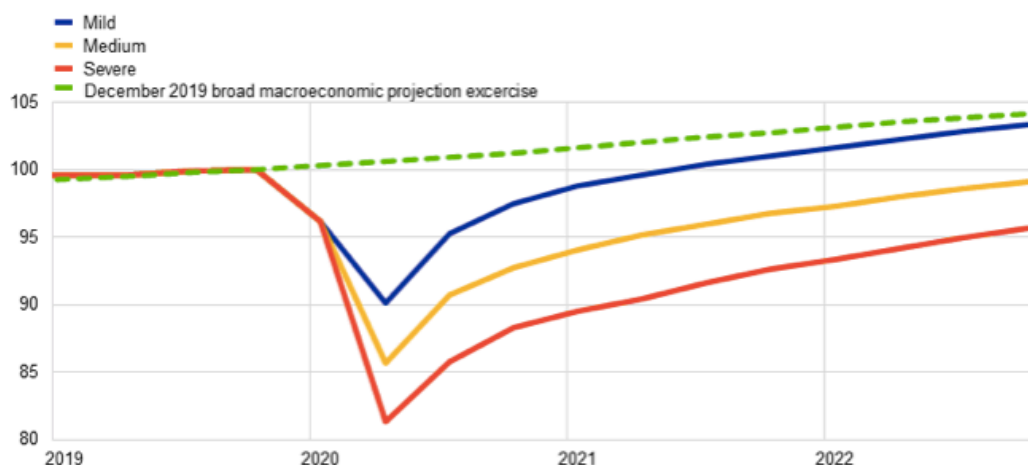
<sup>2</sup>I am grateful to Danielle Kedan and Julian Schumacher for their contributions to these remarks.

<sup>3</sup>See my blog post entitled “The monetary policy response to the pandemic emergency”, 1 May 2020.

## Chart 1

### Euro area real GDP under the mild, medium and severe scenarios

(index, 2019 Q4 = 100)



Source: ECB calculations.

Note: For details on the scenarios, see Battistini, N. and Stoevsky, G (2020), "Alternative scenarios for the impact of the COVID-19 pandemic on economic activity in the euro area", *Economic Bulletin*, Issue 3, European Central Bank.

Chart 2 shows the household savings rate, as projected in the European Commission Spring Forecast that was published a couple of weeks ago. The household savings rate is forecast to jump by a remarkable 6 percentage points to around 19 percent for 2020, and is expected to remain elevated even in 2021. Although "forced saving" during the lockdown is surely contributing to the increase in household saving, it is plausible that the precautionary motive will remain significant so long as virus-related uncertainty persists.

Elevated uncertainty may also hamper investment prospects for an extended period of time. The private investment rate is forecast to drop this year after trending upwards since 2013, and next year it is expected to remain below the level recorded in 2019 (Chart 3).

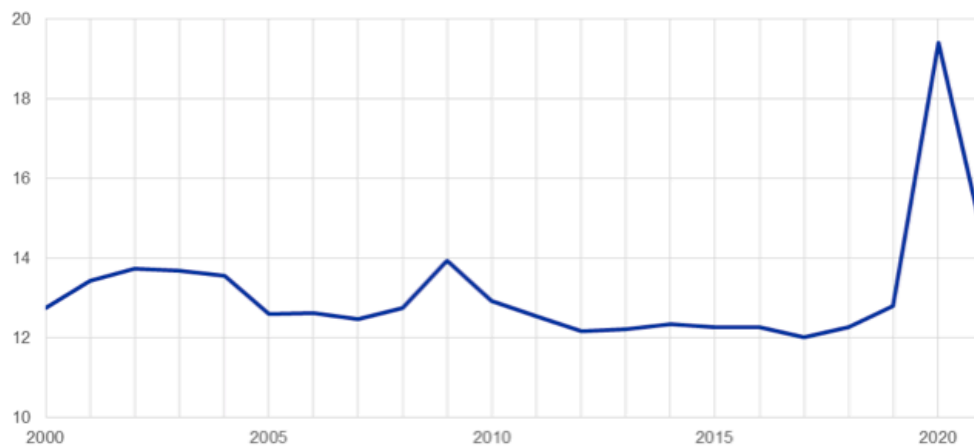
The fiscal response to the COVID-19 crisis (including short-time work schemes, public credit guarantees in many countries and other direct and indirect support for firms and households) is helping to cushion the impact of the shock: the euro area general government balance is projected to reach a deficit of 8.5 percent of GDP this year (Chart 4).

## Chart 2

### Euro area household saving ratio

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(percentage of gross disposable income)



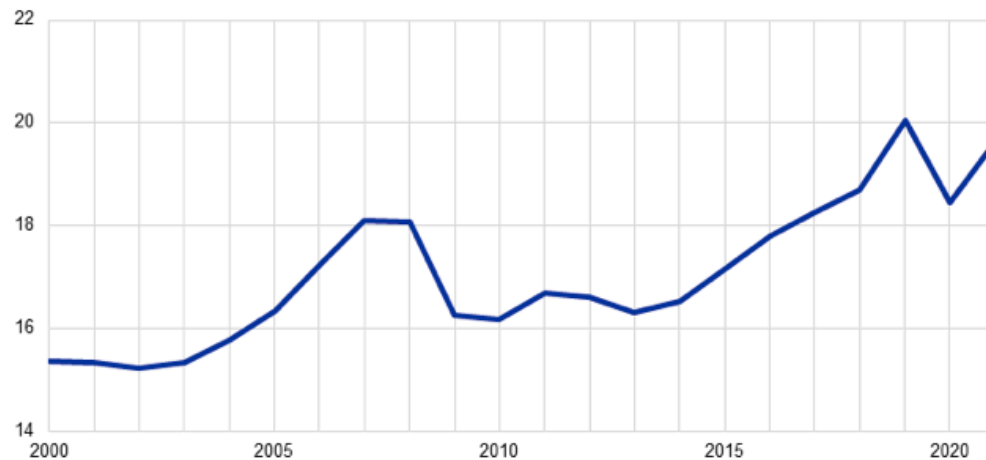
Source: European Commission Spring Forecast (2020).

## Chart 3

### Euro area private investment rate

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(percentage of gross domestic product)

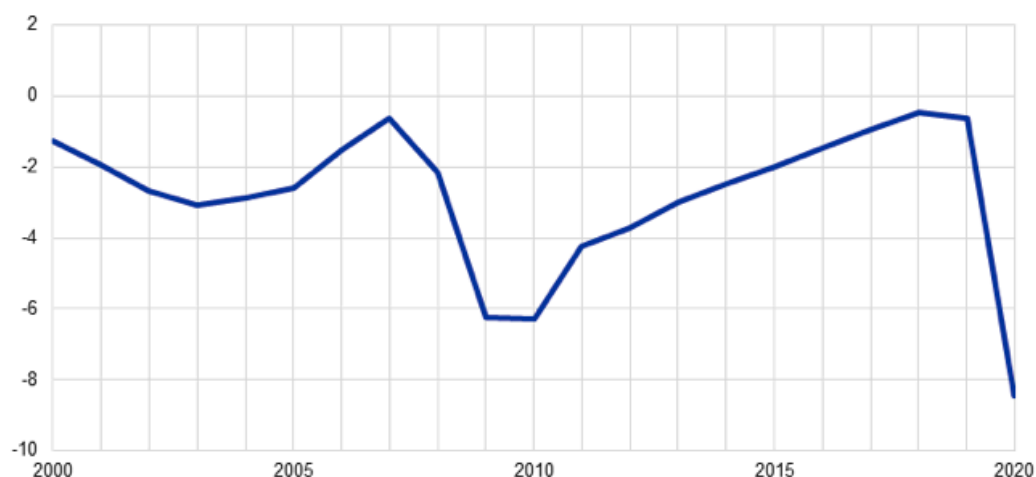


Source: European Commission Spring Forecast (2020).

## Chart 4

### Euro area general government balance

(percentage of gross domestic product)



Source: European Commission Spring Forecast (2020).

In the context of the current unprecedented macroeconomic shock, monetary policy has three key roles: first, it must ensure that the overall stance is sufficiently accommodative; second, it has a market stabilisation function to ensure the smooth transmission of monetary policy to the economy; third, ample central bank liquidity is required, especially in order to maintain credit provision.

#### **Ensuring a sufficiently accommodative stance**

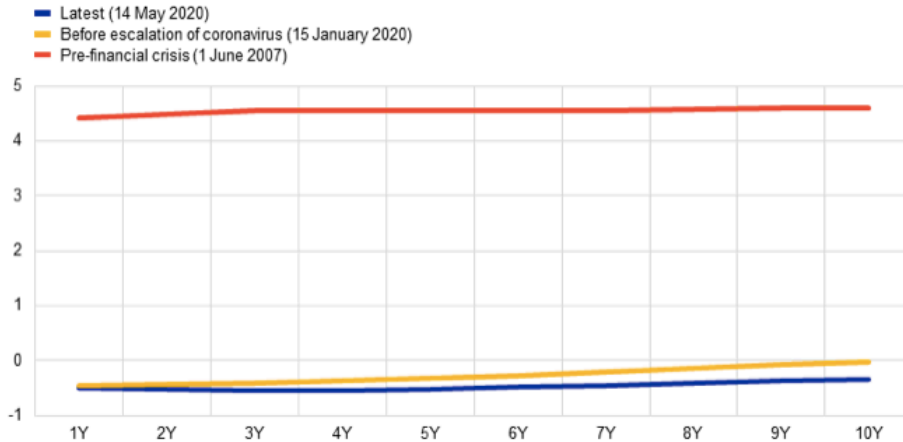
Risk-free interest rates are the cornerstone of financial conditions across the euro area and are the foundations of our monetary policy stance. Our negative policy rates and our forward guidance on the expected path of policy rates anchor short to medium-term risk-free rates, while our asset purchases and forward guidance on reinvestment steer long-term rates by extracting duration risk from the financial system. The set of monetary policy measures currently in place underpins a risk-free yield curve (as captured by overnight index swap (OIS) rates) that is at record low levels (Chart 5).<sup>3</sup>

<sup>3</sup>The evolution of nominal interest rates is covered in my speech entitled “The yield curve and monetary policy” at the Centre for Finance and the Department of Economics at University College London, 25 November 2019.

**Chart 5**

Euro area nominal OIS curve

(percentages per annum)



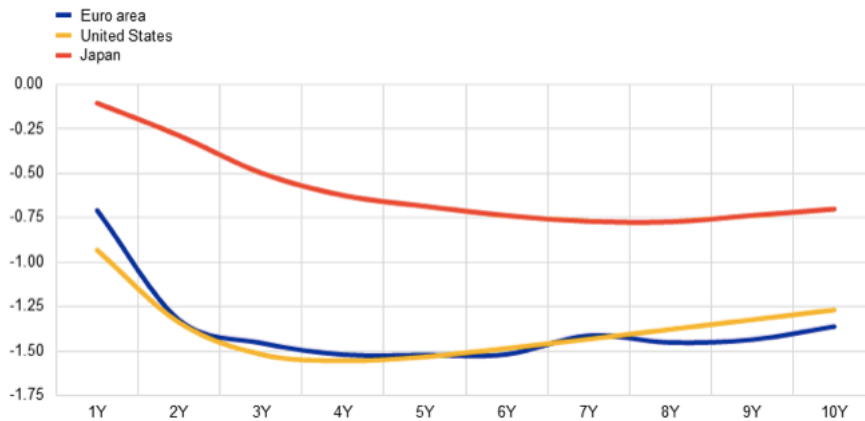
Source: Refinitiv.

Real interest rates – which are at the core of many financial valuation models and act as a fundamental macroeconomic adjustment mechanism by reconciling desired saving and investment patterns – are also at their lowest levels in decades. In comparative terms, a striking feature is that real yields in the euro area are below those in Japan across the curve (Chart 6).

**Chart 6**

Real yield curves

(percentages per annum)



Sources: Refinitiv, Consensus Economics and ECB calculations.

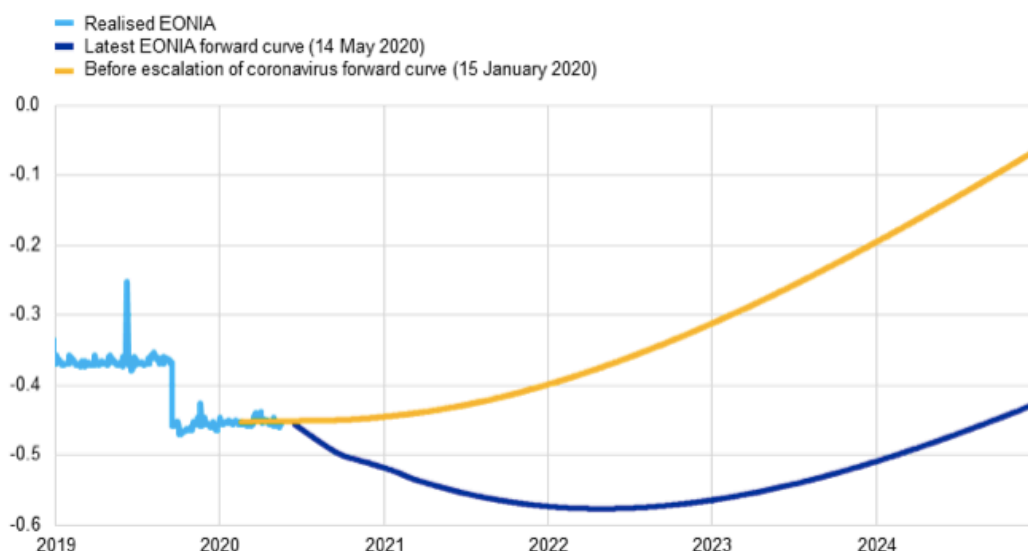
Notes: Real sovereign bond yields are the difference between the nominal yield and the average Consensus Economics inflation expectation from April 2020 over the corresponding maturity. The latest observations are for 14 May for the euro area, 8 May for the United States and 5 May for Japan.

Looking at the short to medium end of the risk-free curve in more detail, our measures (including the pandemic emergency purchase programme, or PEPP) have contributed to a lowering of the medium and long segments of the yield curve compared to the pre-crisis path (Chart 7).

## Chart 7

### EONIA forward curve estimated from overnight index swaps

(percentages per annum)



Sources: Bloomberg, Refinitiv and ECB calculations.

Note: The latest observations are for 14 May 2020 (for realised EONIA).

At the long end of the curve, the combined effect of our asset purchase programmes – comprising the asset purchase programme (APP) and the PEPP – is estimated to compress the term premium significantly by around 80 basis points at the ten-year tenor. Looking just at the decisions we have taken since March, the additional €120 billion APP purchase envelope for 2020 and the PEPP contribute to a further easing of ten-year rates by lowering the term premium by more than 10 basis points.

The total effect of these decisions on longer-term interest rates is likely to be even more substantial, given that the PEPP not only works through the well-known channels of duration extraction and portfolio rebalancing, but also addresses risks to transmission in the euro area. To the extent that this lowers risk premia, interest rates in the euro area have declined even more strongly as a result of our decisions compared with plausible counterfactual scenarios.

### Market stabilisation

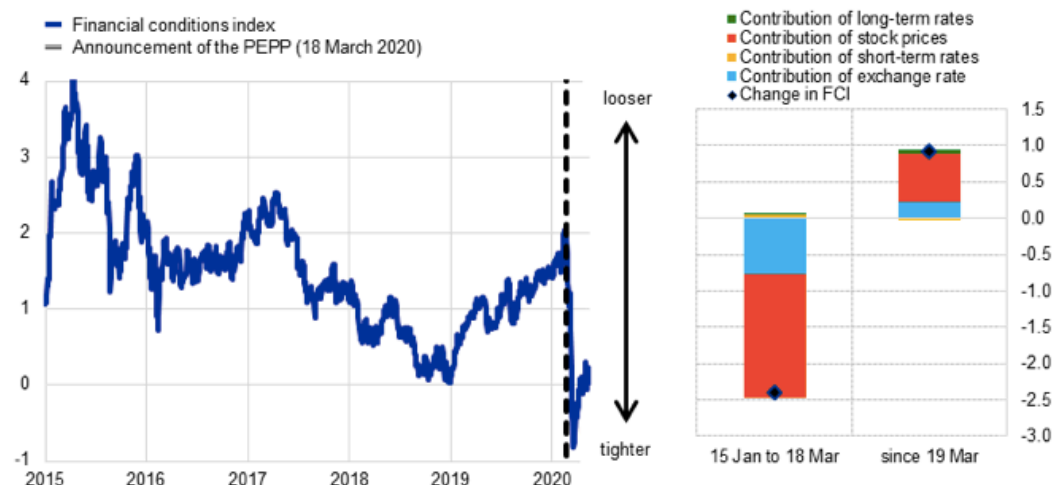
Once investors absorbed the full implications of the pandemic crisis and sought to rebalance portfolios, market liquidity in securities markets dried up and investors looked for safe havens in the context of revisions to future prospects and intrinsically high uncertainty. A marked tightening of overall financial conditions in the euro area (and globally) took hold with the deepening of the coronavirus crisis (Chart 8, left panel).

The fall in stock prices, the increase in market-based financing costs for firms and (to some extent) the appreciation of the euro contributed to the tightening that took place between mid-February and mid-March (Chart 8, right panel and Chart 9). This was also evident in the equity and corporate bond markets (Chart 10 and Chart 11). It was also reflected in an increase in the average spread of sovereign yields relative to the OIS curve (Chart 12).

## Chart 8

### Financial conditions in the euro area

(index)



Source: ECB.

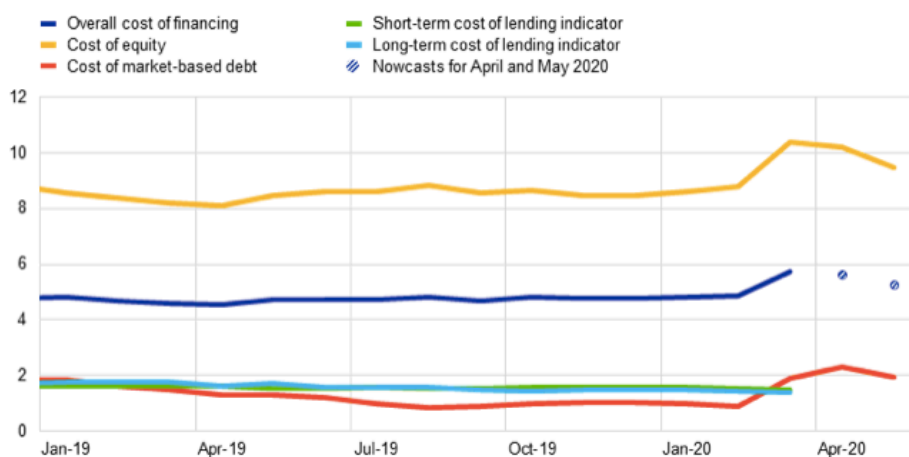
Notes: Daily data. The financial conditions index (FCI) is constructed as a weighted average of the one-year OIS, the ten-year OIS, the euro area nominal effective exchange rate vis-à-vis 38 trading partners and the Euro Stoxx Broad Stock Exchange Index. All variables are in deviation from their long-term average. The FCI is an average of two alternative FCIs, one in which the weights are derived from the impulse response of HICP inflation to a shock in each of the four financial variables from an estimated value at risk (VAR) model, and the other where the weights are derived from the elasticities drawn from a set of projection models used in the (broad) macroeconomic projection exercise. The latest observations are for 14 May 2020.



## Chart 9

### External financing conditions of euro area NFCs

(percentages per annum)



Sources: Refinitiv, Merrill Lynch and ECB calculations.

Notes: Monthly data. The blue dots refer to the nowcasts for April 2020 (left dot) and May 2020 (right dot) for the overall cost of financing, assuming that bank lending rates remain unchanged at their March 2020 levels. The latest observations are for May 2020 for the costs of equity and debt, and March 2020 for the costs of lending.

## Chart 10

### Financial and non-financial equity prices

(1 January 2019 = 100)



Sources: Bloomberg, Datastream, Refinitiv and ECB calculations.

Notes: Daily data. The indices used are the Datastream indices for non-financial and financial corporations. The latest observations are for 14 May 2020.

**Chart 11**

**Euro area corporate bond spreads**

(basis points)



Sources: iBoxx, Bank of America Merrill Lynch and ECB calculations.

Notes: Daily data. The latest observations are for 14 May 2020.

**Chart 12**

**10-year euro area GDP-weighted sovereign bond spread versus euro OIS rate**

(percentages per annum)



Sources: Refinitiv and ECB calculations.

Notes: Daily data. The latest observations are for 14 May 2020.

This tightening of financial conditions represented a further headwind for the effectiveness of monetary policy. There was an evident risk of adverse liquidity spirals and an overshooting of asset price corrections in many markets, impeding the transmission of monetary policy and endangering financial stability. In the context of a monetary union, the absence of currency risk means that flight-to-safety dynamics have an intrinsic cross-border element, which primarily takes the form of reallocations across sovereign bond markets. In view of the central role of sovereign yields as benchmarks in pricing assets and setting lending rates, non-fundamental volatility in sovereign spreads impairs the transmission of monetary policy.

In this context, the PEPP announcement acted as a stabilising force. The announcement of the PEPP has successfully halted the tightening in financial conditions and contributed to a partial reversal in the trend. The embedded flexibility of the PEPP, which allows for fluctuations in the distribution of purchase flows over time, across asset classes and among jurisdictions, has been a crucial element in fostering its effective market stabilisation function.

Market stabilisation has also enabled the resumption of issuance in the debt securities markets: corporate bond issuance by investment grade-rated firms picked up noticeably after the PEPP announcement, as did commercial paper issuance by non-financial corporations (NFCs).<sup>4</sup> This reflects an important aspect of the PEPP compared to the APP: under the PEPP, we have expanded the maturity range of our private sector purchases to capture the market for non-financial commercial paper, which was at risk of freezing up at the beginning of March. These developments highlight that purchases under the PEPP have provided crucial support to market-based funding conditions for companies in the euro area.

### **Central bank liquidity and credit provision**

Especially in an uncertain macro-financial environment, access to central bank liquidity on generous terms and over long tenors supports the maintenance of credit provision by the banking system.

Our longer-term refinancing operations include both unconditional and targeted programmes. The former provides a liquidity backstop to banks and ensures the smooth functioning of money markets, while the latter support the provision of medium-term credit to the real economy.

For many companies, the lockdown measures have meant a rapid decline in revenues, while their expenses (such as rents, wages or bills to suppliers) still fall due. In order to avoid viable firms going out of business for lack of liquidity, it is important that banks provide sufficient credit. Early evidence from monetary aggregates shows a very large increase in money growth in March: the annual growth rate of the broad monetary aggregate M3 stood at 7.5 percent, 2 percentage points higher than in February (Chart 13). This is by far the largest monthly increase since the creation of the euro. In absolute terms, the monthly flow was €323 billion. For comparison, the largest monthly flows until now were recorded in March 2007 and October 2008 at around €120 billion.

Similar developments were observed in the narrow monetary aggregate M1. This aggregate continues to drive money developments, reflecting the persistently low remuneration environment and the current high level of economic uncertainty. The annual growth rate of M1 increased to 10.3 percent, up from 8.1 percent in February (Chart 13).

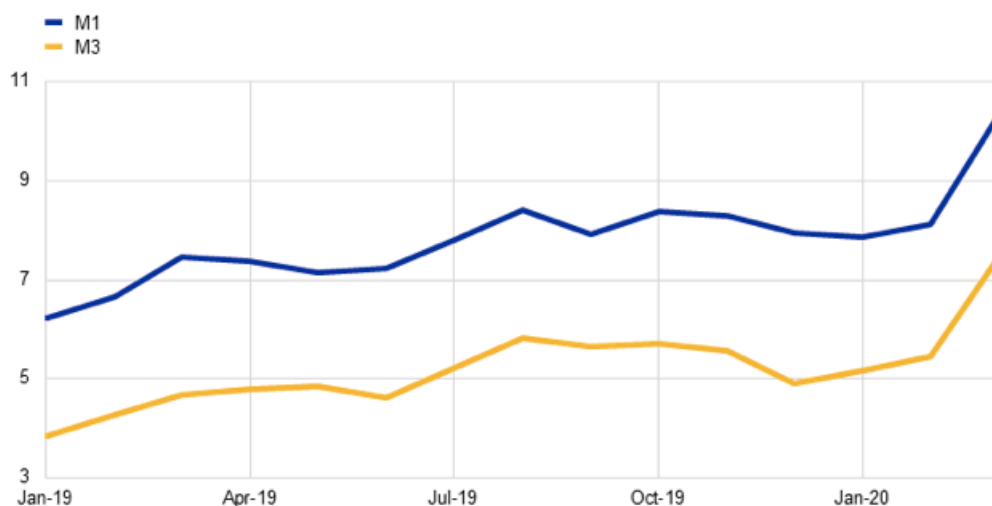
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<sup>4</sup>See the speech by Isabel Schnabel on “The ECB’s response to the COVID-19 pandemic” (16 April 2020), the blog post by Luis de Guindos and Isabel Schnabel on “The ECB’s commercial paper purchases: A targeted response to the economic disturbances caused by COVID-19” (3 April 2020) as well as my own blog post on “The monetary policy response to the pandemic emergency” (1 May 2020).

### Chart 13

#### Developments in M1 and M3

(annual percentage changes)



Source: ECB.

Notes: Monthly data. The latest observations are for March 2020.

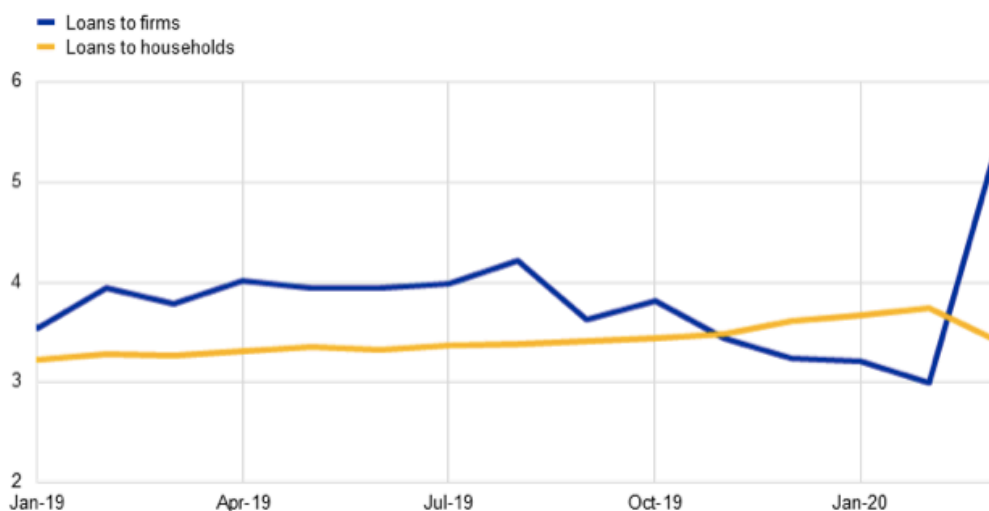
Lending to the private sector was the single largest source of money creation in March, driven by loans to firms. The annual growth rate of loans to firms increased to 5.4 percent in March, up from 3.0 percent in February (Chart 14). By contrast, the annual growth rate of loans to households moderated somewhat: it declined to 3.4 percent, down from 3.7 percent in February.

The very different lending flows between firms and households in March reflect the nature of the policy approaches to supporting these two sectors. In the case of firms, policy support has been mainly channelled via the banking sector, largely in the form of government-guaranteed credit and central bank measures to support credit. By contrast, direct fiscal support in the form of automatic stabilisers such as unemployment benefits or short-time working schemes, rather than bank credit, has constituted the backbone of the policy actions aimed at supporting the household sector.

## Chart 14

### Bank loans

(annual percentage changes)



Source: ECB.

Notes: Monthly data. Adjusted loans (i.e. adjusted for sales, securitisation and cash pooling activities). The latest observations are for March 2020.

While credit volumes are holding up in the aggregate, there are also some strains. According to the survey on access to finance of enterprises (conducted between 2 March and 8 April), small and medium-sized enterprises (SMEs) reported – in net terms – a decline in the expected availability of bank loans across countries and sectors (Chart 15).

**Chart 15**

**Change in the actual and expected availability of bank loans for SMEs across countries**

(net percentages of respondents, over the past and next six months)



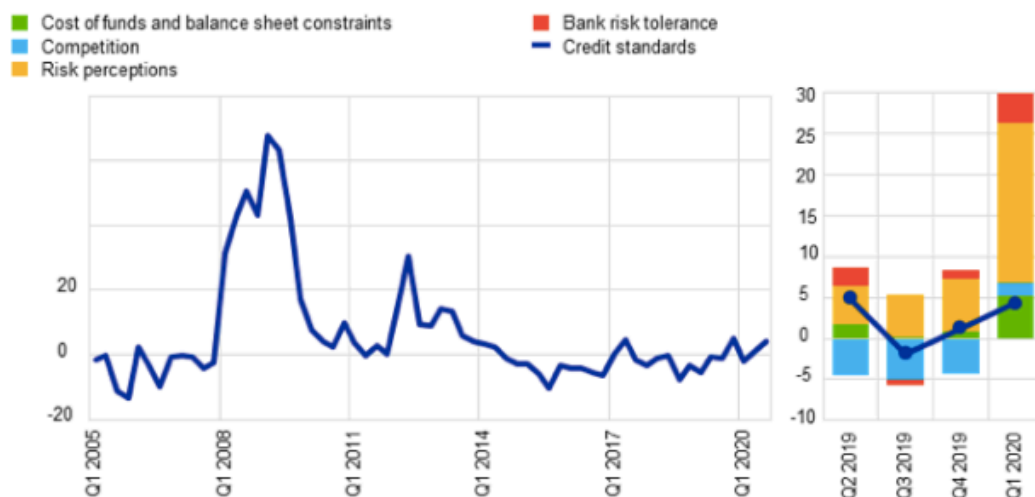
Source: ECB and European Commission survey on the access to finance of enterprises (SAFE).  
 Notes: The chart shows the difference between the percentage of enterprises reporting an increase for a given factor and the percentage reporting a decrease in response to the following questions: (i) for each of the following types of financing, would you say that their availability has improved, remained unchanged or deteriorated for your enterprise over the past six months?; (ii) looking ahead, for each of the following types of financing available to your enterprise, please indicate whether you think their availability will improve, deteriorate or remain unchanged over the next six months. The base is the SMEs for which the respective instrument is relevant. The figure refers to rounds 1 (April-September 2009) to 22 (October-March 2020) of the survey.

These survey results underscore the importance of our recent monetary policy measures, including the recalibrations of the TLTROs. Nevertheless, it appears that the financing conditions for firms have held up relatively well compared to the depth of the crisis. Although credit standards for loans to enterprises tightened in the first quarter of 2020 (net percentage of reporting banks at 4 percent), the degree of tightening was very mild compared to the credit squeeze that amplified the financial and sovereign debt crises between 2008 and 2012 (Chart 16).

## Chart 16

### Credit standards for loans to NFCs and contributing factors

(net percentage of banks reporting a tightening)



Source: ECB (April 2020 bank lending survey).

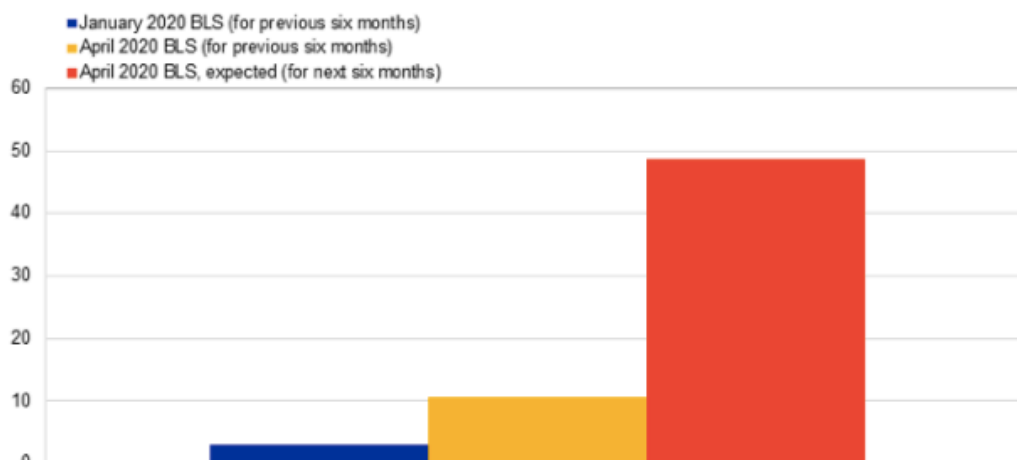
Notes: Net percentages are defined as the difference between the sum of the percentage of banks responding “tightened considerably” and “tightened somewhat” and the sum of the percentage of banks responding “eased somewhat” and “eased considerably”. The net percentages for responses to questions related to contributing factors are defined as the difference between the percentage of banks reporting that the given factor contributed to a tightening and the percentage reporting that it contributed to an easing. “Cost of funds and balance sheet constraints” is the unweighted average of “costs related to capital position”, “access to market financing” and “liquidity position”; “risk perceptions” is the unweighted average of “general economic situation and outlook”, “industry or firm-specific situation and outlook/borrower’s creditworthiness” and “risk related to the collateral demanded”; “competition” is the unweighted average of “competition from other banks”, “competition from non-banks” and “competition from market financing”. The latest observations are for Q1 2020.

Our monetary policy measures, together with the contribution from the announcement of public credit guarantees in many countries and other direct and indirect support for firms and households, are contributing to the protection of bank-based credit flows. Banks have indicated that TLTRO III is having a net easing impact on the terms and conditions offered to borrowers and a positive net impact on their lending volumes, particularly on their expected lending volumes over the next six months (Chart 17).

## Chart 17

### Impact of TLTRO III on bank lending volumes to enterprises

(net percentage of banks, over the past and next six months)



Source: ECB bank lending survey (BLS).

Note: Net percentages are defined as the difference between the sum of the percentages for “contributed considerably to an increase” and “contributed somewhat to an increase” and the sum of the percentages for “contributed somewhat to a decrease” and “contributed considerably to a decrease”.

### Conclusions

We continue to monitor market developments closely. In the context of the current extraordinary and severe macro-financial environment, we must ensure our monetary stance provides sufficient accommodation and guards against the escalation of tail risks associated with procyclical financial amplification mechanisms.

We continuously examine each of our measures (individually and as a package) to assess whether these are still adequately calibrated and appropriately sized to provide the necessary degree of accommodation in this uncertain economic environment. Accordingly, we are fully prepared to further adjust our instruments if warranted. This includes increasing the size of the PEPP and adjusting its composition, by as much as necessary and for as long as needed.



# Six Centuries of Central Bank Independence\*

By ULRICH BINDSEIL\*

The economic and financial crises of the last 12 years have led to large-scale unconventional central bank measures and renewed discussions on central bank independence, culminating in the 2018 publication of Paul Tucker's *Unelected Power*. The same year, the *Economist* noted that, 'Operational independence for central banks is relatively new. The principle grew out of work in the late 1970s and early 1980s by prominent economists working in the "rational expectations" school of economic thought, among them Finn Kydland and Edward Prescott, who were eventually awarded the Nobel prize.'

The true story of central bank independence is much older and less academic than what the *Economist* and others assume.

## 1. Forms of central bank exploitation by governments

Inappropriate access to the central bank has taken different forms across history. First, precious metal reserves could be confiscated by an invading army, such as the silver reserves of the Hamburger Bank by the Napoleonic occupation forces in 1813.

Second, a domestic sovereign could confiscate precious metal reserves, as in the case of the recourse of Charles I in 1640 to the London Goldsmiths reserves deposited in the Tower of London. Another example is the King of Naples' flight to Sicily in 1798, taking with him the Naples public banking system's precious metal reserves.

Third, a government of weak credit quality could force a central bank to provide loans and suspend convertibility. In the best-case scenario, the government would repay the loan, and the only damage would be to the bank's reputation (examples include the Nürnberg Banco of 1619 and the Caisse d'escompte of 1776). Fourth, the government may later repudiate its debt to the central bank, at least in terms of the initial precious metal equivalence. This materialised for the Banque Royale in 1720, and during the Napoleonic age for the Russian, Danish and Austrian/Habsburg central banks.

## 2. Why central bank independence?

Central banking from the 15th century until the end of the Bretton Woods era in 1973 meant in essence issuing fully convertible monetary liabilities, i.e. liabilities with overnight maturity that would be redeemable into precious metal. Monetary stability therefore required unconditional trust in central banks' ability to remain liquid and solvent. Any substantial recourse of a financially stressed government to central bank resources could undermine this, jeopardising the central bank's ability to deliver on its convertibility promise. The rational anticipation of this problem – when unsolved – prevented the establishment of successful central banks in various countries until the late 19th century, despite many attempts. Frederic the Great of Prussia, who took a personal interest in the establishment of a Prussian central bank, failed no less than four times to establish one. All attempts in the Kingdoms of Spain and France failed for centuries because none of the imagined schemes could establish *ex ante* credibility. Credibility required a sufficient combination of central bank independence and the rule of law.

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†Ulrich Bindseil is Director General of Infrastructure and Payments at the European Central Bank. This article is based on his book, *Central Banking before 1800: A Rehabilitation*, which he wrote as Director General of Market Operations.

### 3. Tools to achieve central bank independence

Three tools have been applied to achieve central bank independence since the 15th century.

First, explicit limitations, or prohibitions of central bank credit to the public sector. Limitations to the Taula de Canvi's lending to the city of Barcelona were introduced as early as 1412, and again in 1438, when it was decided to limit the size of such loans. By 1468, any lending of the Taula to the city was forbidden. Similarly, the Senate of Venice committed to never borrow from the Banco di Rialto when it was established in 1587. The Bank of Amsterdam was in principle, according to its statutes, not supposed to lend to the city of Amsterdam, although in reality it did. The Riksbank's charter of 1668 precluded the government from accessing the bank's financial resources. The ban was respected for just a few years. Some loans to the government were provided as early as 1675. Large-scale lending threatening convertibility started in 1703. The issue was discussed in various bank plans which did not materialise, such as in Peter van Oudegherste's 1576 national bank project for Spain, which foresaw strong lending prohibitions: 'To allay the widespread fear that banks could not survive in a monarchy, the king would swear never to lay hands upon their assets; and upon coronation each successive monarch would repeat the oath. Since the banks would extirpate the deadly sin of usury, the pope would be asked to excommunicate anyone who despoiled them. For directors who authorized irregular advances to the king, the penalty would be death.'

The 1791 Bank of the United States bill prevented direct financing of the government, and required a law to be enacted for each loan surpassing \$100,000, raising high hurdles and preventing covert state financing. Those who infringed this rule faced hefty financial penalties.

Second, relative independence within the public sector. Public central banks typically enjoyed institutional separation. Their administrators were assigned clear objectives defined by law. They had clear mandates to pursue the bank's interests through careful management, with regular reporting to the municipal council regarding the bank's books. For example, the 1619 charter of the Hamburger Bank specified the bank's objectives (to develop commerce and trade by providing a means of payment, and lend to stressed debtors to prevent abuse by usurers) and the composition of its board, including a rotation mechanism, presumably to prevent its administration being monopolised by a few citizens who over the years could collude with the government.

The effectiveness of the governance of the Bank of Amsterdam has often been praised, emphasising the bank's successful 170 years of operation. However, in 1801 Büsch provided a more critical analysis, arguing that a major weakness of the bank, compared with the Hamburger Bank, was that it had few members and little turnover in its governing bodies. This made it easy to provide covert loans to the city and state-sponsored firms like the Dutch East India company.

Riksbank reported to the Swedish parliament, giving it distance and independence from the crown. The success and stability of the charity-based public giro banking system in the Kingdom of Naples was also based on a strong separation from the crown, achieved by putting the system into the hands of charitable institutions. These banks' religious and charitable origins, and deep roots in the catholic hierarchy and the population's religious beliefs, gave them the power to withstand even the pressures of an absolutist king.

Third, private ownership. This was pioneered by the Casa di San Giorgio and Bank of England. Machiavelli, in his 1521-1524 *Historie Fiorentine*, noted that the foundation of the Casa di San Giorgio allowed it to be a 'state within the state'. He wrote that the Casa represented 'liberty, civil life and justice' in Genoa, while the state stood for 'tyranny' and a 'corrupt life'. He implied that the Casa's independence through its separate private governance would have been used in all citizens' interests. John Law took up the 'state in the state' image of Machiavelli in his own words: 'The bank is independent from the state, and is a sort of separated republic'.

When it was founded in 1694, the Bank of England was privately owned by its stockholders. Over the next 200 years, many central banks copied the BoE model, including the Bank of Scotland (1695), Banque Générale (1716), Caisse d'escompte (1776), Banco Nacional del San Carlos (1782) and Bank of the United States (1791).

However, the 20th century saw an almost complete reversal to public ownership (elements of private ownership still prevail in Belgium, Italy and Switzerland, but shareholders lack material decision-making power). Irish philosopher George Berkeley in 1735 questioned whether a private company could be entrusted with policy decisions as important as those of a central bank. He advocated a public sector solution, painting a positive picture of Amsterdam, Hamburg and Venice, and a negative one of the Bank of England and the Bank of Genoa, which would both suffer from the incentives of private shareholders to act against the common interest. Nevertheless, he conceded that a public national bank was not a universal solution, as it gave too much power to the government, and therefore some independence within the public sector, such as in Hamburg, was preferable.

The Compté de Mirabeau (1785) believed worries about undue state influence on the Caisse d'escompte were overblown. He argued that the bank's equity owners and administrators would pursue their private aims to maximise profitability rather than acting in the public interest. Mirabeau said there were more reasons to worry about private owners' conflicts of interest than a government closely supervising a central bank.

In his 1791 draft veto against the Bank of the United States bill, James Madison explained that the institution's private capital set up was incompatible with the pursuit of public interest. In 1803, Thomas Jefferson, described the bank as a Machiavellian 'state within the state'. Like Berkeley, and in contrast to Machiavelli, he was horrified by excessive independence: 'This institution is one of the most deadly hostility existing against the principles and forms of our constitution... an institution like this, penetrating by its branches every part of the Union, acting by command and phalanx, may, in a critical moment, upset the government... Now, while we are strong, it is the greatest duty we owe to the safety of our constitution, to bring this powerful enemy to a perfect subordination under its authorities.'

Finally, in his 1824 Plan for the establishment of a National Bank, David Ricardo called for the Bank of England to be nationalised. This would, he wrote, help lower the cost of national debt interest, by socialising the transformation of public debt into money. In other words, no longer letting a private central bank's shareholders appropriate the seigniorage. On central bank independence, Ricardo questioned whether the Bank of England model was necessary to ensure independence and thereby stability.

#### **4. The rule of law**

Regardless of institutional independence, a key factor for successful central banking is whether the rule of the law applies to the government. For a long time, authors debated whether central banks could function in absolutist regimes (previously absolutist monarchies, now dictatorships).

As early as 1576, van Oudegherste's envisaged governance framework for the Spanish national bank reflected the 'widespread fear that banks could not survive in a monarchy'. John Law, in 1715, acknowledged this concern, but argued that even monarchs would not be so short-sighted as to harm their national bank, and thereby their economy and their own finances. Montesquieu disagreed, writing, 'In states that carry on an economical commerce, they have luckily established banks, which by their credit have formed a new species of wealth... The erecting of banks in countries governed by an absolute monarch supposes money on the one side, and on the other power... In a government of this kind, none but the prince ever had, or can have,

a treasure; and wherever there is one, it no sooner becomes great than it becomes the treasure of the prince.’

Overall, there is overwhelming evidence that absolutist monarchies were incompatible with banks, with Naples the only exception. Privately owned central banks could function in constitutional monarchies, like Great Britain in 1694 and Sweden in the late 18th century (the Riksbank was unable to maintain convertibility for many decades).

Two privately owned central banks, the Copenhagen Bank and the Banque Royale, were nationalised through the purchase of equity by the crown, with dire consequences in both cases.

## **5. A fast-forward review of the 19th and 20th century**

In the century before 1914, the Bank of England template prevailed and proved a great success, with the gold standard (1875-1914) the ultimate global triumph of this form of central bank governance. The State Bank of Russia, founded in 1860, was the exception. It remained in public hands throughout its existence, abiding by the gold standard as much its private peers. Central bank independence was practically suspended with the beginning of the first world war, with governments largely using monetary financing to pay for military expenditure. Independence and the gold standard were restored gradually after the war.

Central banks’ failure to manage the great depression harmed their credibility and support for their independence. What had worked before 1914 no longer worked in the interwar period. In the subsequent decades, most central banks returned to public ownership. Some (including the Bank Deutscher Länder/Deutsche Bundesbank) obtained a high degree of independence and regained credibility in their stability orientation. Others collaborated closely with governments and cumulated significant inflation after the second world war, relieving governments of heavy debt burdens. The fall of the Bretton Woods system in 1973 accelerated global inflation dynamics, reversed only by Federal Reserve Chair Paul Volker in 1983, a masterpiece in communication and handling political pressure.

## Negative Interest Rate Debate Needs Clarity\*

By MARK SOBEL\*

Raging debates have sprung up in past weeks about negative interest rates.

Some say they will do more harm than good. They won't work in the US. They're confiscatory. They'll ruin banks. Others say they are no different than conventional monetary policy and haven't really been tried.

Watching the debate can be confusing. Cause and effect are seemingly mixed up. Counterfactuals are not examined. A common framing appears to be missing.

A first confusion arises from contextualisation.

Low or negative interest rates are unpopular, decried and seen as ineffective. But that can be akin to misplacing the blame. Advanced economies have experienced a decade of poor growth, aging, low productivity, low inflation and a saving glut, all reflected in declining natural rates of interest. The problem is the poor underlying performance of our economies.

If negative rates won't work, relative to what? Monetary policy should be geared to supporting aggregate demand, full employment and price stability. Around the zero lower bound, major advanced economies have resorted to unconventional monetary policies – quantitative easing, forward guidance and yield curve control in some cases. Those have not been highly successful, as evidenced by central banks' inability to achieve their price stability targets and objectives.

Given that monetary policy is ineffective in a liquidity trap, there is widespread agreement that fiscal policy or greater fiscal-monetary coordination would be a far more useful tool than added accommodation – conventionally or unconventionally. But this point is often lost as debates focus on central banks as if they are the only game in town.

Many lament the current situation in which the European Central Bank has a negative deposit rate of 50 basis point, or the Swiss National Bank a policy rate of minus 0.75%. They also point to Sweden's abandonment of negative rates. But some analysts argue those are only slightly negative rates. They say that modest negative rates need to be distinguished from significantly large negative rates that might have greater impact, but have yet to be tried. If cutting policy rates to zero from 3% is impactful, why wouldn't cutting rates to minus 3% from zero?

Beyond these contextual confusions, operational issues are raised, but not fully explored.

Cash hoarding is one such issue. Analysts estimate there is a certain negative rate—minus .75% is sometimes cited – beyond which depositors will just hold cash. But there are physical and security limitations to holding mattress cash. Moreover, society is increasingly digitalised. Some believe digitalisation could allow negative rates to work. Others postulate that regulation could curb cash hoarding.

Banks' net interest margins are another operational issue. A common argument is that NIMs will be squeezed with banks reluctant to pass negative rates onto depositors. Prima facie, it isn't clear why banks couldn't pass on that cost to borrowers. While European banks may be not be doing well, US banks have performed robustly, even with low rates. Low borrowing may reflect low growth, not low NIMs. Lower borrowing costs, if they spurred activity, could boost loan demand and bank profitability.

A US variant relates to money market funds. Such funds are seen as more runnable, given their lack of deposit insurance, and negative rates are viewed as raising concerns about 'breaking the

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Mark Sobel, US Chairman of OMFIF.

buck' (when the net asset value of a money market fund falls below \$1). But money market reforms allow for floating NAVs.

There are fears that negative rates will cause greater reach for yield and financial instability. But that reach is already huge. Further, most economists would not want to see monetary policy made subservient to financial stability concerns. They believe macroprudential policies should be deployed as a first line of defence against financial stability risks.

Savers and pensioners understandably argue that low and negative rates are burdensome for those living on fixed incomes. Germans speak of penalty interest rates – 'Strafzinsen'. But the relevant question for policy is whether low(er) rates are beneficial for the economy as a whole or have reached a 'reversal rate' in which they cause greater harm than good. Yet no one knows what the reversal rate is. Individuals often suffer from nominal illusion, and savers historically have often experienced real negative interest rates.

Policy-makers view significant steps toward negative interest rates as a bridge too far. They are used to working with unconventional monetary policy. Perhaps negative rates may inherently be a bad idea. Still, the coronavirus crisis has elevated consideration of negative rates on policy-makers' possible toolkit. The debate over negative interest rates is a good one to have. Even if their time never comes, the discussion could benefit enormously from greater clarity and transparency in contrasting the assumptions, context, trade-offs and challenges between negative rates and unconventional monetary policies and economic developments more generally.

## Central Banks' Diversity Problem\*

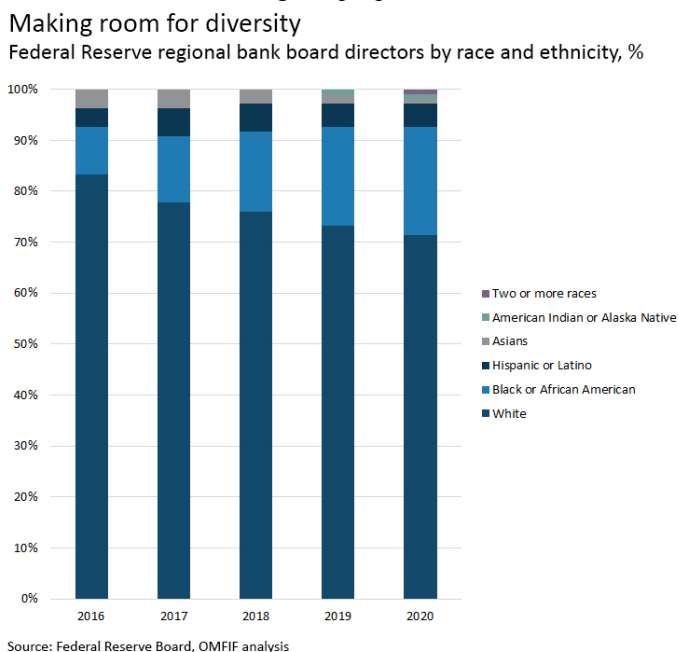
By KAT USITA\*

In times of crisis, central banks play a critical role in maintaining financial stability and supporting the economy. Effective financial policy-making requires an understanding of how shocks impact the general public, made stronger when informed by a diverse set of views. Unfortunately, central banks do not always reflect the heterogeneity of the citizens they serve.

Out of 12 regional presidents of the US Federal Reserve System, Atlanta's Raphael Bostic is the only African American. In the wake of recent protests against police brutality across the US, he published a statement calling for an end to systemic racism. Bostic is only the third non-white regional president in the Fed's century-long existence. The first was Narayana Kocherlakota, appointed president of the Minneapolis reserve bank in 2009, followed by current president Neel Kashkari. The 10 other regional banks have never had a non-white president.

The Federal Reserve is aware of the lack of diversity and holds itself to account by regularly publishing figures on minority representation on the boards of each regional bank. Board directors give local perspective on economic conditions that inform policy. Since policies – and crises – can impact communities of colour differently, representation on these boards matters. Transparency in their composition creates pressure to consider race and ethnicity in the selection of directors.

Both the board of governors and the regional banks monitor workforce diversity, and each one has a dedicated diversity officer. They implement programmes aimed at recruiting staff from minority backgrounds, as well as increasing the proportion of women in leadership roles.



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Similarly, the Bank of England lacks minority representation in top positions, but publicly acknowledges the problem and sets targets for improvement. Only 5% of senior management are from black, Asian and minority ethnic backgrounds, less than half of its target 13%. Its governor, deputy governors and chief operating officer are all white, and COO Joanna Plaice is the lone woman in this executive team. No person of colour has ever served as governor. The monetary policy committee is all-white, and only one out of its nine members is a woman.

To help correct this, the BoE has a number of networks meant to support its staff and encourage inclusion. There is a BAME network, as well as religion-based groups to help connect colleagues with similar backgrounds. The BoE also implements sponsorship programmes to support the upwards progression of BAME staff.

The European Central Bank has yet to publish figures on the racial and ethnic breakdown of its senior management, although the absence of diversity in the top governing bodies is clear. In 22 years, no person of colour has served on its executive board. The governing council, which includes the executive board and the 19 governors of national central banks in the euro area, is entirely white. There is also a striking lack of gender diversity, as President Christine Lagarde and board member Isabel Schnabel are the only women in these groups.

Like the Fed and BoE, the ECB recognises the need for improving diversity, and has networks and programmes that promote a more balanced and representative workforce. There could be more diversity in the lower rungs of the Eurosystem, but without data available, the homogeneity in top positions is glaring.

The effectiveness of monetary policy should ultimately be judged by how well it serves ordinary workers and consumers, especially the most vulnerable, in times of widespread economic uncertainty. Decision-makers in central banks must bear in mind the specific difficulties that different racial and ethnic groups face, and represent those realities in policy formulation. They need to veer away from groupthink, or the tendency to gravitate towards the dominant perspective. Without diverse views on the table, central banks will end up serving only a segment of the economy they are meant to protect.



## Economic Effects of the Corona Crisis and Measures by the Central Banks<sup>\*</sup>

*By* OLLI REHN<sup>\*</sup>

Welcome to the publication of the Bank of Finland's Annual Report and our stakeholder event. In these exceptional circumstances, I highly appreciate the opportunity to present our current economic review to such a large audience of key stakeholders of the Bank of Finland. I would, of course, rather have welcomed you here on the Bank's premises in person, but we must now make do with this virtual dialogue. In this situation, it is of paramount importance to contain the spread of the virus to keep risk groups safe.

At the Bank of Finland, we are always working to ensure as stable an economic foundation as possible for households and businesses. Ensuring this now will require exceptional measures in response to the coronavirus and the sharp deterioration in global economic developments it will bring in its wake. I will get back to this in a short while.

But to begin with, I will say a few words about the Bank of Finland's own economy in 2019 and our sustainability programme.

The Bank of Finland's financial statements and profit distribution proposal were published today. We participate in the implementation of the euro area single monetary policy, which has in recent years been reflected in an expansion of our balance sheet. This requires accumulation of sufficient risk buffers. Even so, part of the Bank's profits can still be transferred to the State. For 2019, the amount transferred was EUR 188 million, as was decided today by the Parliamentary Supervisory Council. Since adoption of the euro in 1999, a total EUR 3 billion of the Bank of Finland's profits has been transferred to the State.

In December, the Bank of Finland launched a sustainability programme. The foundations of the central bank's sustainability lie in our core functions. We promote the well-being of the Finnish people primarily by ensuring that the level of prices remains stable, the financial system is reliable and payment systems are secure.

Sustainability also means listening closely to our stakeholders. Dialogue gives us the tools to consider our own role in major social concerns, such as combatting climate change and the containment of over-indebtedness. During the next few years, the Bank of Finland will make a strong contribution not only to the management of climate risks but also to the promotion of financial literacy among the general public. Both projects are part of our work on behalf of a stable economy and sustainable growth.

The rapid decline in production that the coronavirus has caused in China and elsewhere in recent weeks has rapidly and drastically reshaped the global economic outlook for the current year.

Protecting the health of the public must take precedence during a pandemic. However, the

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<sup>\*</sup>Speech by Mr Olli Rehn at the stakeholder event in connection with the publication of the Bank of Finland's Annual Report, Bank of Finland, Helsinki, 20 March 2020.

<sup>\*</sup>Olli Rehn, Governor of the Bank of Finland

contingency measures put in place to contain the virus also come with economic ramifications. Public authorities will inevitably play a key role in mitigating the economic damage, and that also applies to the central bank.

Countries have responded to the economic crisis with crisis packages that aim to support their respective economies in the coming months and limit the length of the crisis. The highest urgency lies in securing the funding to businesses and the liquidity of the banking and financial system. However, economic output and confidence are likely to make strides only when the general public can see and trust that the pandemic is getting under control or, at least, that it can be controlled.

At this time, the economic outlook can only be examined by looking at different alternative scenarios, as there is no historical precedent for current events. For the calculations in the first scenario, one can make use of statistical data on developments in China between January and February. Output contracted sharply during this period. It is likely that we will see significant declines in aggregate output in other countries as well when the statistical data for March becomes available.

Global financial markets have seen exceptional volatility in recent weeks, especially as the valuations of risky investment assets have fallen. The uncertainty about what comes next is profound.

The depth and duration of the recession will largely be determined by how the virus spreads, but also by the economic policy measures taken in response to the crisis. What gives hope is the fact that China, Taiwan, Hong Kong and Singapore have made significant progress in controlling the epidemic. This has been achieved through comprehensive and extensive measures.

Businesses will feel the economic impact of the coronavirus across a broad front, both in terms of production difficulties and in terms of reduced demand for their products. The issue of working capital finance may prove existential for many businesses. Many households, in turn, will be stressed as the risk of unemployment increases and incomes fall. The difficulties of banks' clients will also have consequences for the banks' own operations, which may be reflected in banks' own access to funding, including the terms of funding.

The Finnish economy, too, is falling into recession. The Bank of Finland published two alternative scenarios on Wednesday [18 March] on the near-term economic outlook. In these scenarios, Finnish GDP is seen to contract by 1.5–4% in 2020. Exports in particular will decline. The economy may end up in a deep recession if household consumption also falls substantially and domestic supply chains become disrupted.

The immediate economic impact of the restrictions placed on personal mobility and other activities will, however, prove temporary. Nevertheless, longer-term effects may follow if a sufficient number of businesses, banks or other financial sector participants find themselves in difficulties. The threat is bankruptcy, unemployment and welfare loss. This is why the economic policies to be decided in the coming weeks are so important.

At its meeting last week, the Governing Council of the ECB decided to conduct, temporarily, additional longer-term refinancing operations (LTROs) to provide immediate liquidity support to the euro area financial system. The Governing Council decided to apply considerably more favourable terms during the period June 2020 to June 2021 to all targeted longer-term refinancing (TLTRO III) operations outstanding during that time. The Governing Council decided to add a temporary envelope of additional net asset purchases of EUR 120 billion until the end of the year, ensuring a strong contribution from the private sector purchase programmes.

Other central banks have also taken similar action. Another important decision for the euro area was the joint agreement by central banks on 15 March to lower the pricing on US dollar funding granted via the standing US dollar liquidity swap arrangements and to extend the

maturity of US dollar liquidity operations. Euro area banks can apply for this US dollar funding via the Eurosystem's standing facilities, and they have already done so.

The ECB is responsible for banking supervision in the euro area. Last week, the ECB's Banking Supervision authority also responded to the rapidly changing situation, announcing measures that will provide its directly supervised banks flexibility in the fulfilment of certain additional capital and liquidity requirements. This also applies to those Finnish banks that are directly supervised by the ECB. In Finland, the Board of the Financial Supervisory Authority (FIN-FSA) decided on 17 March to lower by one percentage point the capital requirements that are subject to national decision-making. These measures will increase banks' ability to provide credit to the real economy during the pandemic.

The purpose of both the monetary policy decisions and those involving banking supervision is to maintain favourable funding conditions for businesses and households. During the pandemic, many businesses are faced with a situation in which a rapid decline in income may lead to problems even though their operating conditions would be good once the economic situation has returned to normal. In such cases access to funding is vital.

On Wednesday 18 March, the Governing Council of the ECB decided on additional measures to mitigate the economic impacts of the corona virus crisis.

We decided to launch a new Pandemic Emergency Purchase Programme (PEPP), which will have an overall envelope of EUR 750 billion. Purchases will be conducted in a flexible manner and until the end of 2020 and will include all the asset categories eligible under the existing asset purchase programme (APP). Securities issued by the Greek government will also be eligible for purchases under the PEPP.

The Governing Council is also fully prepared to increase the size of its asset purchase programmes and adjust their composition.

In addition to this new asset purchase programme, the Governing Council decided on 18 March to expand the range of eligible assets under the corporate sector purchase programme (CSPP). It also announced its decision to ease the collateral standards of its credit operations.

The ECB Governing Council on Wednesday underlined that it will do everything necessary within its mandate to support all citizens of the euro area through this extremely challenging time. "There are no limits to our commitment to the euro," ECB President Christine Lagarde summed up rather aptly.

On March 15, the Bank of Finland decided to recommence purchases of Finnish commercial paper. In this way, we increase the supply of funding to Finnish businesses. Even though commercial paper is used for funding purposes mainly by larger companies, the purchases will also indirectly ease the funding conditions for smaller companies. This is because they will free up banks' credit lines for smaller businesses.

The Bank of Finland decided yesterday, due to strong demand, to double the volume of the programme, in other words to extend the maximum volume of the commercial paper purchases to EUR 1 billion.

Overall, as regards the economic policy action taken during the acute phase of the corona virus crisis, it is important that the economic policy measures are implemented swiftly and that they are targeted precisely at those affected by the crisis.

Central to this are not only the decisions of the central bank but also, naturally, those taken by governments. Fiscal policy will benefit greatly from European coordination. Exports or the availability of foreign input cannot be stimulated via domestic measures, but they CAN be stimulated by introducing joint European measures. A European fiscal policy stimulus programme would certainly benefit a small open economy like Finland.

In Finland and elsewhere, the most burning issue is to alleviate the cash crisis of SMEs,

particularly micro enterprises, and to prevent bankruptcies. For this purpose, the Government took a decision to extend the powers of the Export Credit Agency Finnvera and to increase the State Pension Fund of Finland's investments on commercial paper markets. It is essential that even the smallest businesses are provided with information and services on government loans and other instruments available to them to help them weather the economic recession.

Originally, the topic of this stakeholder meeting was intended to be the ECB's strategy review. Reflection on the strategy is likely to be overshadowed in the coming months by the management of the current acute crisis, but in the longer term it will play a key role in the success of the Monetary Union. We will revert to this important topic at a later date.

We are living through a very exceptional spring. The economy and society as a whole are largely at a standstill. The most important thing now is to protect those whose health is threatened by the pandemic.

At the same time, it is important to protect people from the economic effects of the pandemic. Now output is contracting sharply in many countries, including Finland.

Although economic contraction is inevitable in the short term, a sharp increase in bankruptcies and unemployment can be avoided. In this respect, the main responsibility lies with the Government, but to alleviate the damage we need broad cooperation and swift measures, in the spirit of a comprehensive national effort. Labour market organisations can contribute to making accommodation fast and fair and help businesses survive and save jobs. Banks and pension companies can contribute by securing access to funding for businesses and helping households survive the worst times.

In this comprehensive national effort, banks operating in Finland can also be expected to participate fully, particularly as their capital requirements have just been eased and the terms of credit obtained via Eurosystem refinancing operations are now very favourable.

But, of course, the central banks also have their own responsibilities and mandates.

The key issue is to secure the financing of companies and households. This is the aim of the ECB's extensive measures, the Bank of Finland's purchases on the corporate commercial paper market and the Financial Supervisory Authority's decision to lower capital requirements. In Europe, the pandemic is a problem for everyone. The difficulties are not the result of reckless economic management in any country. What is needed now is European solidarity. This pertains to both the ECB's activities and the management of the public finances. A common fiscal stimulus is also in Finland's interest.

The current crisis is global and also concerns a wide range of Finnish businesses, employees and households. In responding to the crisis, cooperation is of paramount importance: cooperation between central banks, cooperation between European countries, and cooperation between domestic policymakers.

Finland has in the past come through even more difficult situations. I am confident that, despite the need to keep a physical distance from each other, we in Finland are ready and able for such national cooperation as is necessary to overcome this crisis and alleviate the damage following in its wake, in a just and fair way.

# Digital Economy

## An ECB Digital Currency – A Flight of Fancy?\*

*By* YVES MERSCH\*

A recent survey among 66 central banks by the Bank for International Settlements shows that more than 80% are working on central bank digital currencies (CBDCs).<sup>1</sup>

The European Central Bank is one of them.

Not because we want to keep up with fashionable trends, but because we have to be ready. Ready to embrace financial technological innovation which has the potential to transform payments and money faster, and in more disruptive ways, than ever before.

We are technology neutral. But if our customers, the people of Europe signalled a change in payments behaviour, we would want to preserve their direct link to the ultimate owner of our currency by maintaining their access to central bank liabilities in euro. Although cash often gets a bad press, demand is not receding. We currently see no indication that the public at large is willing to abandon the valued and trusted advantages of cash. But we are preparing to be ready should things change.

### **Part of ECB mandate to be ready for change**

One implication of financial technological innovation could be an increasingly cashless economy in which people may no longer be able to hold risk-free central bank money. Reliable access to money would then hinge on the stability and efficiency of private retail infrastructures. And trust in money itself would rely on trust in the intermediaries that issue private money.<sup>2</sup>

This is one reason why central banks keep fully up to speed on financial technological developments. After all, providing safe money and a reliable means of payment have been an integral part of the mandate and core business of central banks since their very inception. The ECB is no exception.

So we should be looking ahead and consider whether, in the future, central banks will need to provide the public with some form of digital currency. While electronic payments are already crowding out the use of cash in some countries, whose currencies seem less attractive than the euro, there is no such trend away from cash in the euro area. Some 76% of all transactions in the euro area are carried out in cash, amounting to more than half of the total value of all payments.<sup>3</sup> The demand for cash in the euro area currently outstrips the rate of nominal GDP growth. In crisis times, the demand for cash surges even higher. At mid-March this year, the weekly increase in the value of banknotes in circulation almost reached the historical peak of €19

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\*Speech by Mr Yves Mersch at the Consensus 2020 virtual conference, 11 May 2020.

<sup>1</sup>Yves Mersch, Member of the Executive Board of the European Central Bank and Vice-Chair of the Supervisory Board of the European Central Bank

<sup>2</sup>See Boar, C., Holden, H. and Wadsworth, A. (2020), "Impending arrival – a sequel to the survey on central bank digital currency", BIS Paper, No 107.

<sup>3</sup>Including payment solutions denominated in currencies other than the euro, which could affect monetary sovereignty.

<sup>4</sup>Survey data from 2017; see Esselink, H. and Hernández, L. (2017), "The use of cash by households in the euro area", Occasional Paper Series, No 201, ECB.

billion.<sup>4</sup>

The ECB's debate on CBDCs is therefore mainly analytical. Whether and when it becomes more of a policy debate will largely depend on the preferences of households. We are always willing to innovate in the form of money and payment services that we provide. If, for instance, people voiced a preference tomorrow for plastic or polymer banknotes rather than the traditional paper ones, we would happily accommodate them. In the same vein, we closely follow technological developments and reflect on the type of money and payments that are best suited to the needs of an increasingly digital economy.

The lack of a concrete "business case" for a CBDC at present should and does not stop us from seriously exploring the optimal design of a CBDC so that we will be well prepared should we ever take a policy decision to issue a digital currency. To this end, we have set up a task force on a CBDC within the Eurosystem.

Let me give you a preview of our deliberations, starting with different design options.

### **Legally solid despite fancy design?**

Most of the money issued by central banks is in fact already digital, albeit not called CBDC. This is true for the bulk of the money issued through our wholesale credit operations with our counterparties. At present, access to the central bank balance sheet offers the possibility to access digital central bank money.

What could change in the future is the scope of the parties eligible to access our central bank balance sheets. Indeed, this lies at the heart of the discussion on CBDCs.

A wholesale CBDC, restricted to a limited group of financial counterparties, would be largely business as usual. However, a retail CBDC, accessible to all, would be a game changer. So a retail CBDC is now our main focus.

Setting up a CBDC would require a solid legal basis, in line with the principle of conferral under EU law. One key consideration here is whether a retail CBDC could and should have the same legal tender status as banknotes and coins. In practice, legal tender status implies that a CBDC would have to be usable at any location and under any condition, possibly even offline. Without legal tender status, the legal basis would need to be clarified, as would the relationship between a CBDC and euro banknotes and coins, along with the process by which one could be exchanged for the other. Should it not be acknowledged that the ECB's exclusive right to authorise issuance in euro would also be applicable to a digital issuance?

A retail CBDC could be based on digital tokens, which would circulate in a decentralised manner – that is without a central ledger – and allow for anonymity towards the central bank, similar to cash. Some argue that a token-based digital currency might not guarantee complete anonymity. If that proved to be the case, it would inevitably raise social, political and legal issues. We are currently looking into the legal questions raised by the potential use of intermediaries to facilitate the circulation of a CBDC and also the processing of transactions in a CBDC. To what extent are we permitted to outsource public law tasks to private entities? And what would be the appropriate extent of supervision over such entities?

Alternatively, a retail CBDC could be based on deposit accounts with the central bank. Though involving vast numbers of accounts, it would not be a particularly innovative option from a technological viewpoint. For the euro area, it would basically mean increasing the number of current deposit accounts offered from around ten thousand to between 300 and 500 million. A CBDC of this nature would enable the central bank to register transfers between users, thereby

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<sup>4</sup>Blog post by Fabio Panetta, Member of the Executive Board of the ECB, (28 April 2020): "Beyond monetary policy – protecting the continuity and safety of payments during the coronavirus crisis".

providing protection against money laundering and other illicit uses (or those considered illicit by the rulers of the day), depending on the degree of privacy granted to users.

These are just two of the many ways to design a CBDC. We are currently scrutinising the various options to assess their potential impact – both positive and negative – on the financial system and on our ability to honour our mandate.

### **Disintermediation – economically inefficient and legally untenable**

You may wonder why central banks have not chosen to provide retail access to central bank money, despite the technology for an account-based CBDC already being largely available. The main reason is that introducing a retail CBDC could have major consequences for the financial system.

If households were able to convert commercial bank deposits into a CBDC at a rate of 1 to 1, they may find it far more attractive to hold a risk-free CBDC rather than bank deposits. During a systemic banking crisis, this could trigger digital bank runs of unprecedented speed and scale, magnifying the effects of such a crisis.

Banks might manage to render their deposits more attractive than central bank ones. They could, for instance, provide additional services to those offered by central banks. Such services could include paying bills, or cross-selling financial insurance products. Otherwise – even in the absence of a crisis – a readily convertible CBDC could crowd out bank deposits, leading to the disintermediation of the banking sector. This could have far-reaching implications for the structure of the financial system and for the ability of central banks to perform their core tasks and ensure that their monetary policy is transmitted to the real economy.

If the central bank were to take retail deposits, it might also have to provide loans, with all the ensuing consequences. The central bank would need to launch customer-facing business lines. Deposit and lending facilities would also require the central bank to take on the burden of regulatory compliance in areas such as anti-money laundering, consumer protection and confidentiality.

Some argue that this may reinforce monetary sovereignty, as disintermediation would make the financial system safer and reduce the moral hazard of banks by diminishing their role in money creation.<sup>5</sup>

But disintermediation would be economically inefficient and legally untenable. The EU Treaty provides for the ECB to operate in an open market economy, essentially reflecting a policy choice in favour of decentralised market decisions on the optimal allocation of resources.

Historical cases of economy-wide resource allocation by central banks are hardly models of efficiency or good service. Furthermore, a retail CBDC would create a disproportionate concentration of power in the central bank.

These potentially highly adverse effects on the financial system would appear to outweigh the benefits envisaged by the introduction of a retail CBDC.

What, then, could be done to mitigate the impact of a CBDC on the financial system?

One option could be to remunerate CBDC at below-market rates in order to create incentives for non-banks to rely more on market-based alternatives rather than on central bank deposits. The drawback would be that, in times of crisis, it may become necessary to apply highly negative rates, which could generate criticism from the public and substantially undermine public confidence in the central bank as well as in the basic values of saving which underlie our societies.

Another option is a tiered remuneration system.<sup>6</sup> In line with the functions of money, the first

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<sup>5</sup>Dyson, B. and Hodgson, G. (2016), “Digital cash: why central banks should start issuing electronic money”, Positive Money.  
<sup>6</sup>See Bindseil, U. (2020), “Tiered CBDC and the financial system”, Working Paper Series, No 2351, ECB.

tier could serve as a means of payment. The central bank would have to refrain from setting a lower or a negative interest rate in order to keep a CBDC attractive to the public as a means of payment. While the second tier could serve as a store of value, the central banks could discourage people from using it as such by setting unattractive interest rates. However, such schemes should draw from the experience of multiple exchange rate regimes. And the repercussions of the intentional use of such schemes need to be subjected to an additional comprehensive investigation.

So we have plenty of questions on CBDC to discuss. I am nearing the end of my speech but look forward to exchanging views with you during our virtual Q&A session.

## **Conclusion**

In monitoring the evolution and uses of technology, the ECB respects technological neutrality. We do not serve technology – technology serves us. We will only introduce a digital currency if we become firmly convinced that it is both necessary and proportionate to fulfil our tasks in ensuring the stability of our currency.

In the meantime, we take a keen interest in digital innovation and in the changing expectations of money users, and we are refining our thinking on CBDC – both within the ECB, the Eurosystem and in the international central banking community. CBDC design choices are not merely technical questions. They have policy and legal implications. This is why we are devoting so much attention to every detail.

If and when the time comes, we want to be ready – and we will be ready.



## Learning the Value of Resilience and Technology:

### The Global Financial System after Covid-19\*

By BENOÎT CŒURÉ\*

Thank you for inviting me to speak at this webinar.<sup>1</sup> I will not venture to describe the world after Covid-19. I don't know how this crisis will unfold nor when it will end. The shockwaves it sends across the global economy are just starting to be felt in the emerging and developing world - and they will spill back to us.

I would only like to suggest that two themes will shape the conversation on the "day after Covid-19": resilience and technology. Let me elaborate on what it means for international finance.

#### 1. The value of resilience in international finance

The global financial system has withstood the Covid-19 shock better than the Great Financial Crisis. This success owes much to central banks bold action. With hindsight, it also owes a lot to action taken by regulators in the decade after the G20 Pittsburgh Summit.

Spurred by regulators, banks have built capital and liquidity buffers, improved risk management practices and internalised the social cost of risk-taking. As a result of these efforts, they were much better prepared to cope with a major shock in 2020 than they were in 2008. They can use buffers which were simply not there at the time.

But despite progress made by macro prudential policy, we have been less good at making the global financial system more resilient as an interconnected system. We knew it before Covid-19 and the crisis has confirmed it.

Market-based finance is a well-identified gap in our macroprudential framework. We lack instruments to curb procyclicality in non-bank lending. In recent years, asset managers and funds have filled the gap left by the retrenchment of large systemic banks. Today, in the face of outflows, they may be forced to sell assets and amplify price adjustment.

Worse, the first weeks of the Covid-19 crisis have uncovered the fragility of the price discovery mechanism in large swathes of our capital markets. Market liquidity has deteriorated faster and more broadly than in the Great Financial Crisis - when money markets had been the most affected. Major funding markets have been strained in advanced economies<sup>2</sup>. And strains are spreading fast to emerging markets, exacerbated by their uneven access to short-term dollar funding<sup>3</sup>.

As a result, in the past few weeks, not only had central banks to address aggregate demand shortage, as they traditionally do, but they had to perform laser surgery on a number of market segments to make them functional again, crossing into uncharted territory.

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\*Remarks by Benoît Cœuré at the Reinventing Bretton Woods Committee - Chamber of Digital Commerce webinar on "The world economy transformed", 17 April 2020.

<sup>1</sup>Benoît Cœuré, Head of the Bank for International Settlements Innovation Hub

<sup>2</sup>All views expressed here are mine and not those of the Bank for International Settlements.

<sup>3</sup>See International Monetary Fund, Global Financial Stability Report, April 2020. For a discussion of price action in Treasuries and corporate bond markets, see Schrimpf, A., Shin, H.S., and V. Sushko, "Leverage and margin spirals in fixed income markets during the Covid-19 crisis", BIS Bulletin, No. 2, 2 April 2020, and Aramonte, S., and F. Avalos, "The recent distress in corporate bond markets: cues from ETFs", BIS Bulletin, No. 6, 14 April 2020.

<sup>4</sup>See Avdjiev, S., Eren, E., and P. McGuire, "Dollar funding costs during the Covid-19 crisis through the lens of the FX swap market", BIS Bulletin, No. 1, 1 April 2020.

The jury is still out yet as to whether combined central bank and government intervention will be enough to avoid the liquidity crisis morphing into a solvency one - which would raise a host of new issues.

While it is too early to start the post-mortem, there are already lessons for central banks and regulators in the post-Covid-19 world.

Efforts to make the global financial system more resilient should not be dialled back, and if anything, they should be increased.

Flexibility embedded in rules can be fully used<sup>4</sup> but the rulebook itself should be protected and public support should come with conditions, such as restrictions on dividends and bonuses.<sup>5</sup> And we should renew the impulse to improve the resilience of market-based finance.

We should complete the global financial safety net as a matter of urgency, focussing on the smallest and most vulnerable economies.

The extension of the global foreign currency swap and repo network is an important step to address dollar funding needs, but it doesn't benefit all. I see lots of merits in the proposal of a new allocation of IMF Special Drawing Rights: by providing liquidity to all IMF members, large and small, it would "get in all the cracks" of the global financial system.

## 2. The value of technology

The crisis has exposed the value of technologies which enable the economy to operate at arm's length and partially overcome social distancing. Such drastic changes in work and consumption patterns, such as the dramatic shift to online shopping<sup>6</sup>, will have a lasting impact on economic relationships.

The payment industry immediately comes to mind. Payments have been at the forefront of technological change recently. A rapid shift towards digital payments can improve cost, transparency and convenience for billions of consumers. International cooperation is needed to support technological capacity in developing economies, ensure interoperability between national systems, enhance cross-border payments and remittances, and support financial inclusion - in short, to avoid spatial and social fragmentation.

The Financial Stability Board (FSB) and Committee on Payments and Market Infrastructures (CPMI) action plan on cross-border payments, which was released last week, comes timely, as well as the FSB consultative report on the regulatory implications of stablecoins<sup>7</sup>.

The current discussion on central bank digital currency also comes into sharper focus. Whether Covid-19 will accelerate the demise of cash is an open question. But already, it highlights the value of having access to diverse means of payments, and the need for any means of payments to be resilient against a broad range of threats<sup>8</sup>.

Covid-19 will accelerate the digital transition beyond payments. Will customers find their way back to banking branches when lockdowns are lifted and economies restart? Will this accelerate the shift towards virtual banking? In the next months and years, the BIS Innovation Hub will remain busy scanning technological trends in finance and their consequences for central banks and financial regulators, based on practical projects. Issues such as tokenisation, open banking, and using technology to support regulatory and supervisory compliance ("regtech" and "supotech") are high on our agenda.

Let me conclude by coming back to today's urgency.

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<sup>4</sup>See Basel Committee on Banking Supervision, "Measures to reflect the impact of Covid-19", 3 April 2020.

<sup>5</sup>See Borio, C., and F. Restoy, "Reflections on regulatory responses to the Covid-19 pandemic", FSI Briefs, April 2020.

<sup>6</sup>See Leatherby, L., and D. Gelles, "How the Virus Transformed the Way Americans Spend Their Money", The New York Times, 11 April.

<sup>7</sup>See Financial Stability Board, "Enhancing Cross-border Payments - Stage 1 report to the G20", 9 April 2020, and "Addressing the regulatory, supervisory and oversight challenges raised by "global stablecoin" arrangements: Consultative document", 14 April 2020.

<sup>8</sup>See Auer, R., Cornelli, G., and J. Frost, "Covid-19, cash, and the future of payments", BIS Bulletin, No. 3, 3 April 2020.

Technology can help mitigate the economic and social impact of the Covid-19 crisis.

The debate is raging on how technology can help track the virus spread, enforce quarantines and administer remote consultations - and on which safeguards are needed to protect privacy. Technology can also help mitigate the economic cost of lockdowns and avoid irreversible damage to the social fabric. The most vulnerable in our societies are less likely to be reached by traditional support measures. This is particularly the case in economies where direct tax infrastructures are less developed and the informal economy is pervasive. Digital payments can enable governments to provide emergency support to households and small businesses affected by the virus. They can help "pump the rescue funds down the last mile"<sup>9</sup>.

Jurisdictions which have established retail payment and identity rails are already leveraging them to enhance their crisis response. As noted by the World Bank, the ID-linked basic account in Chile, Cuenta Rut, will allow 2 million vulnerable Chileans to benefit from Covid-related support already this month<sup>10</sup>. International coordination is key, for example to keep remittances flowing, as those normally sending them are disproportionately affected by the crisis.

For those jurisdictions which haven't established digital infrastructures, it is not too late to do so. Recent guidance by the CPMI and World Bank helps them design the right strategies to advance financial inclusion through innovation in payments<sup>11</sup>.

Learning the right lessons from this crisis is not enough - there is still time to act.

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<sup>9</sup>See Carstens, A., "Bold steps required to pump corona virus rescue funds down the last mile", Financial Times, 29 March 2020.

<sup>10</sup>See Rutkowski, M., Garcia Mora, A., Bull, G., Guermazi, B., and C. Grown, "Responding to crisis with digital payments for social protection: Short-term measures with long-term benefits", World Bank Blogs, 31 March 2020.

<sup>11</sup>See Committee on Payments and Market Infrastructures and World Bank, "Payment aspects of financial inclusion in the Fintech era", 14 April 2020.

## China's New Crypto-Currency – First Step to Full Dedollarization?

By PETER KOENIG\*

*'We'll cut off the whole relationship'* – Trump threatened China in a recent Fox-Business interview, suggesting he may cut diplomatic relations with China and thereby saving US\$ 500 billion. He didn't say how, though.

Mr. Trump's anger referred to what he calls China's "mismanagement" of the corona crisis. This is consistent with the new China bashing hard line being pushed by his administration. *"I'm very disappointed in China,"* Trump said during the same Fox interview. "We asked to go over and they said no," he continued, referring to the Centers for Disease Control and Prevention's (CDC) February offer of assistance to the virus-stricken city of Wuhan. *"They didn't want our help. And I figured that was OK because they must know what they are doing. So, it was either stupidity, incompetence or deliberate."*

These are strong and unsubstantiated words, since there has never been a clearly documented accusation against China in how precisely China mismanaged the COVID-19 outbreak and is supposedly responsible for the COVID crisis in the US – where real mismanagement, corruption, conflict of interest and particularly pharma-interests, competing private vaccine company interests – are written all over the walls, the walls of shame, falsifying corona statistics, by falsifying death certificates, paying hospitals for declaring any patient a COVID-patient, even if many of them aren't, and for using ventilators, though it is widely known that ventilators are causing death in 60% to 80% of patients; see <https://www.globalresearch.ca/minnesota-doctors-receiving-instructions-to-report-covid19-as-a-cause-of-death-even-if-patient-was-never-tested/5709269>.

It is almost certain that the virus was created in a US bio-weapons lab from where it escaped deliberately or by accident and that patient zero was in the US and that the virus was brought to China in one way or another. President Trump knows it. He also knows about the real mismanagement of the crisis in his country, the United States. But he has always been good at self-promoting propaganda and slandering perceived enemies, as long as he thinks it may help him being reelected.

It is obvious that the US China bashing has nothing to do with China's "mismanagement" of the corona epidemic, but rather with China's bold move a step further away from the dollar-economy, by

First, using the yuan and local currencies boosting trade among the ASEAN+3 countries (Association of Southeast Asian Nations – Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam; plus 3 = Japan, South Korea and China). Monetary transactions will use the CIPS (Cross-Border Interbank Payment System), avoiding the dollar controlled SWIFT payment scheme. This is mostly to prevent US interference in international monetary transactions – and also in response to the United States'

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threat of cutting off Chinese supply chains.

The cutting off supply chains, is of course, sheer bluff, as literally 80 percent-plus of US industries depend in one way or another on supplies from China. This dependence is particularly significant in medical supplies, where the US depends for 80% to 90% on China. But China is China, and President Xi acted fast calling the bluff – and the US may suddenly stand there with an empty cup, since such supply chains are not replaced overnight.

In the first quarter 2020, ASEAN countries have become China's largest trading partner with 15.1 %, outpacing the European Union (EU). Trade with South Korea and Japan amounted to another 13.7%, bringing the total close to 30%. Adding China's trade with Russia, another at least 15%, is getting close to a 50% tipping point of China's closest partners abandoning commercial transactions in US-dollars.

Second, by launching a new People's Bank of China (PBC = China's Central Bank) controlled crypto-currency for international trade, thereby further circumventing the US-dollar and SWIFT controlled international money transfer system which makes all transactions vulnerable to US interference and sanctions.

China's new cyber-money, *e-RMB* (Ren Min Bi, meaning People's Money), or Yuan, is currently being tested in several Chinese cities, including Shenzhen, Suzhou, Chengdu, and Xiong'an. In these cities it has almost universal acceptance, i.e. for salary payments, public transportation, food and most retail shopping.

The use of digital money is nothing new in China. Today about 90% of all monetary transactions are electronic, for example through WeChat and AliPay, but they do not replace the existing cash currency.

Commodity pricing today mostly dollarized, will be priced by China in yuan and traded in crypto-yuan. Yuan pricing for commodities, such as gold, crude oil and iron ore, has already started. As China is recovering from the pandemic more quickly than the rest of the world, relatively high-returning yuan-denominated investments and commodity assets will become more attractive.

The non-interference factor of a Chinese Central Bank backed crypto-currency is an additional security element that will further boost the Chinese Yuan as a reserve currency. Already now, countries around the globe are sick and tired of US meddling in their international transactions and especially with US sanctions – that may come at a whim – every time a country demonstrates her sovereignty, or disobedience to US dictates. This leads many countries that may not speak out publicly for fear of sanctions, to gradually and quietly divesting their dollar holdings into Chinese yuan.

A tipping point may be reached, when about 50% of world trade and world reserves are denominated in yuan. At this point it would be likely that the worldwide dollar hegemony will be no more, as it may be displaced by the yuan.

Several leaders of countries were killed for attempting to replace the dollar for trading with other currencies. For example, Saddam Hussein, for his intent to use the euro for trading Iraq's hydrocarbon riches, and Libya's Gadhafi, when he wanted to introduce the Gold-Dinar as a Pan-African trading currency, thereby freeing Africa from western monetary slavehood. As we all recall, he was literally lynched by NATO on 20 October 2011, at the initiative of Hillary Clinton with the strong support of then French President Sarkozy. By the way, this western monetary stranglehold on Africa prevails as of this day – a new-old kind of colonization, nobody in the western mainstream reports on.

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Once the new e-RMB (yuan) has been successfully tested locally it will be launched internationally. While China's new PBC-backed cyber-currency's internationalization will make

the yuan even more attractive among trading partners – and also as a reserve currency, China may simultaneously divest its huge reserves of US Treasury bonds (about US\$1.2 trillion) into purchasing assets abroad paid in US-dollars. The Belt and Road investments maybe a suitable vehicle to reduce dollar holdings at home.

In the current high corona debt-crisis around the world, especially the Global South, China may also consider a program of Debt Jubilee (debt forgiveness) to the poorest partner countries – which may be already or potentially be future Belt and Road associates.

At present and since October 2016, the Renminbi (Chinese yuan) is part of a 5-currency basket at the IMF that constitutes the Special Drawing Rights (SDR), the world's ultimate virtual reserve currency. The SDR share distribution is US-dollar 41.73%, euro 30.93%, Chinese yuan 10.92%, Japanese yen 8.33% and the British pound 8.09%. This currency allocation to the SDR is disproportionate with regard to the economic strength of the respective countries, especially China, the world's second largest economy, rapidly moving towards first place.

China may want to vigorously renegotiate with the IMF her currency proportion in the SDR, as well as reviewing country quotas which by now are out-of-line with member countries economic weight. An IMF capital increase is overdue. The IMF capital base today is SDR 477 billion (US\$ 677 billion). In addition, there is the temporary New Arrangement to Borrow (NAB) which in January 2020 has been doubled to SDR365 billion (US\$ 475 billion), a total resource-base of about US\$ 1.15 trillion. Yet, the IMF already today foresees US\$ 1 trillion for additional corona debt lending and debt forgiveness. Since the NAB is only a temporary arrangement, a quota increase and review, i.e. a proper adjustment for China's economy, is more than overdue.

A quota adjustment in favor of China and the corresponding adjustment of the yuan's proportion in the SDR basket would further enhance China's currency vis-à-vis the rest of the world. This coupled with an incorruptible cryptocurrency controlled by Chinas Central Bank and possibly backed by gold, would be a formidable reserve currency that most countries would like as their chief reserve asset. This, of course is what Washington is afraid of. It would clearly endanger and probably crush the global US-dollar hegemony.

The world would be a better place for it.

Therefore, the current China bashing and attributing guilt for spreading and mismanaging the corona virus, is a sheer farce – a treachery of the world, a deviation of the real reason behind Trump's attempt to demolish China's reputation around the globe, namely by doing so, hoping to destroy the rise of China and the appreciation of the Chinese yuan, and thereby the yuan's attractiveness as an investment currency for most of the rest of the world.

This is pretty similar to the real reason for the 2018-2019 US-China trade war, initiated by President Trump, had the objective of ruining the yuan's reputation in the world arena. To no avail. Washington eventually quietly and unceremoniously lost the conflict over trade. Despite Trump's loud declarations to the contrary, the US needs China much more than vice-versa. Just look at the Chinese supply chain which the west, in particular the US, cannot replace from one day to the other.

Under President Xi Jinping's leadership, China has switched gears rather fast. Preparations to orient towards Asian markets are in full swing. China is enhancing relations with Asian markets, i.e. the ASEAN countries, plus Japan and South Korea.

Members of the SCO (Shanghai Cooperation Organization) are also a trading market China is already engaged in and may further strengthen it. The SCO, in addition to China and most of the Central Asian countries, include also Russia, India and Pakistan – and Iran is waiting for imminent admission. Others, like Malaysia and Mongolia are in observer status and also slanted to become SCO members in due course.

The combination of SCO, ASEAN-plus 3, amounts to more than half the world population and accounts for more than a third of the world's economic output. This is a formidable global "market share" – and will likely increase with every atrocity – military and economic – Washington is committing around the globe.

With her new crypto-currency which eventually will be internationalized, China is well on her way to fully dedollarize, with the cyber-yuan replacing the US-dollar as the key trading and main reserve currency and to displace the United States as the world's financial and economic hegemon.

The current China bashing does not prevent China from forging ahead with her economic activities – trade – and especially the unstoppable Belt and Road Initiative (BRI) via maritime and land routes, already counting on 160 partners (about 120 countries and some 40 multinational organizations) on four continents. This revolutionary global development scheme will require trillions of yuans and dollars for investments. It will also be generating trillions in revenues over time, shared with BRI partners. All towards a common future for mankind – a world moving towards an equilibrium with justice, harmony and peace.

## Working Paper

### The Impact of COVID-19 on Stock Markets\*

By HE QING, LIU JUNYI, WANG SIZHU AND YU JISHUANG\*

**Abstract:** *This paper attempts to explore the direct effects and spill-overs of COVID-19 on stock markets. Using conventional t-tests and non-parametric Mann-Whitney tests, we empirically analyse daily return data from stock markets in the People's Republic of China, Italy, South Korea, France, Spain, Germany, Japan and the United States of America. Our empirical results show that (i) COVID-19 has a negative but short-term impact on stock markets of affected countries and that (ii) the impact of COVID-19 on stock markets has bidirectional spill-over effects between Asian countries and European and American countries. However, there is no evidence that COVID-19 negatively affects these countries' stock markets more than it does the global average. The findings contribute to the research on economic impact of the pandemic by providing empirical evidence that COVID-19 has spill-over effects on stock markets of other countries. The results also provide a basis for assessing trends in international stock markets when the situation is alleviated worldwide.*

**Keywords:** COVID-19; coronavirus disease; stock markets; spill-over effects

#### Introduction

An unanticipated disease called coronavirus disease 2019 (COVID-19) has spread worldwide since the end of 2019. In December 2019, Wuhan, a central city in China, reported the first COVID-19 case. On 3 January 2020, the Wuhan Health Committee reported 44 cases of viral pneumonia of unknown cause. Due to mass migration during the Chinese New Year and Wuhan's geographic location as an important transportation hub in China, the disease has spread silently to other provinces in China since early January 2020. On January 19, the first three confirmed cases outside Wuhan were reported, one in Guangdong and two in Beijing. Since 10 am on 23 January, bus, metro, ferry and long-distance passenger transportation in Wuhan had been suspended. As a further precaution, all outbound trains and flights were stopped. The Chinese government continues to adopt various public health policies, such as travel restrictions, curfews and school closures to prevent the spread of the epidemic. On 30 January 2020, the World Health Organization (WHO) issued its first global alert regarding COVID-19 (WHO 2020a). As the number of confirmed cases soared throughout the world, the WHO announced it as a pandemic on 11 March 2020 (WHO 2020b). So far, the countries with the largest number of confirmed cases in the world include People's Republic of China, Italy, South Korea, France,

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Spain, Germany, Japan and the United States of America. The outbreak center has been gradually shifted from China to Europe and USA. In March 2020, some researchers and media outlets reported how this terrible disease would affect the economy of the affected countries. Duan, Wang, and Yang (2020) point out that those small and medium-sized enterprises, which play a significant role in China, have been severely affected due to decline in social consumption and rigid expenditure on rents, wages and interests. This could further affect the stability of the banking system. When the China A-share market reopened on 3 February, the Shanghai Securities Composite Index declined by nearly 8% in response. The initial impact of this event so far on the stock markets of the countries with the highest number of confirmed cases is examined in this paper.

Since the public transit in Wuhan was suspended on 23 January 2020, there have been several articles in the popular press indicating that COVID-19 is having a tremendous impact on the economies of the affected countries. A report titled 'Spread and Stutter' in *The Economist* (2020a) emphasises that COVID-19 is a grave threat to the poise of global markets. 'The Right Medicine for the World Economy' (*The Economist* 2020c) also states that as fears grow about the impact of the COVID-19 virus, stock markets have slumped. Now there are signs that the virus is moving from traders' screens to the real economy. In the same month, 'Sneezy Money' (*The Economist* 2020b) notes that 'One of the ways virus damages the economy is to interfere with the supply of labour, goods and services. But more serious is its spill-over effect. Goldman Sachs estimates that global GDP will contract at an annualized rate of 2.5% in the first quarter.' Another article entitled 'Tracking the Economic Impact of COVID-19 in Real Time' (*The Economist* 2020d) also points out that modelling by academics at the Australian National University suggests that GDP in America and Europe would be 2% lower than it would have been in the absence of a pandemic and perhaps as much as 8% lower if the rate of deaths is many times higher than expected. Stock markets are pricing in fear.

Black Swan events, including terrorist attacks and epidemics, will cause shock, fear and panic among international investors and result in a sharp panic-selling response (Burch, Emery, and Fuerst 2016). An expanding body of literature, such as Carter and Simkins (2004), Chen and Siems (2004), Nikkinen et al. (2008), Kollias et al. (2011), and Papakyriakou, Sakkas, and Taoushianis (2019), has addressed the impact of terrorists on the international stock markets. As Chen and Siems (2004) point out, terrorist attacks are unexpected events which seriously affect normal life and result in panic selling ensues. Epidemics will inevitably have the same effect. Nippani and Washer (2004) focus on stock indices of eight seriously affected countries during the SARS period and find that SARS had no negative impact on the affected countries' stock markets with the exception of those based in China and Vietnam. Chen, Jang, and Kim (2007) study the impact of the SARS outbreak on the performance of hotel stocks in exchanges of Chinese mainland and Taiwan and find a significant negative impact.

The unfortunate situation created by COVID-19 gives us a unique opportunity to gauge the impact of an unexpected and dreaded disease on the economies of affected nations while globalisation continues apace. The COVID-19 virus first broke out in China and exerted a direct influence on China's stock markets. Fluctuations in China's stock markets may have spill-over effects on others due to the breadth and depth of interdependence among contemporary economies. In China, the spread of the disease is gradually being curtailed, but it continues to spread in other countries, some of which might adversely influence back on China's stock market.

To this end, we establish domestic and non-domestic COVID-19 timelines with news reports and then examine the separate impacts that COVID-19 has had on the stock markets of People's Republic of China, Italy, South Korea, France, Spain, Germany, Japan and the USA as

represented by their leading stock indices. The impact of COVID-19 on these stock indices is explored by examining the mean returns of the indices in the disease-affected period vis-à-vis a pre-event period using t-tests and Mann-Whitney non-parametric tests. Furthermore, the stock indices of these affected countries are compared with the S&P 1200 Global Index. The latter comparison is to determine if the affected stock markets' performance is significantly below the global average.

We find that COVID-19 had a negative and limited impact on the stock markets of China and other Asian countries in the early stage of the epidemic. With the spill-over effect on European and American countries, the indices underperformed after the epidemic, as opposed to the comparison period, in the middle and late stages. The evidence found in the non-domestic timeline suggests that the development of COVID-19 has had a negative impact on the European and USA stock markets, a condition that will intensify in the short term as the virus spreads.

The impact of COVID-19 on the European and USA stock markets has a backflow effect on the Asian stock markets, especially on China's stock market. Even as the spread of the disease in China has been gradually stabilised, it has started to break out in other countries. In the midst of this global spread, China's stock market has borne a glancing blow due to the spill-over effect. But if we exclude the case of China in the short event window of the domestic timeline, there is no evidence that COVID-19 has a negative impact on the major stock indices in these countries compared to the S&P 1200 Global Index.

Our paper makes contributions to the literature and international investment in three aspects. First, it documents the latest impact of COVID-19 on stock markets of the first group of countries where the epidemic started. Second, it investigates the spill-over effects of China's stock markets on those countries and the spill-over effects of their stock markets back on China by defining domestic and non-domestic COVID-19 timelines. Last, it provides a reference for assessing trends in international stock markets after the pandemic subsides.

The rest of the paper is organised as follows. The following section presents the data and methodology. The next section describes and analyses the empirical results. The last section concludes.

## **Data and methodology**

To examine the impact of COVID-19, the following stock indices are chosen: the CSI 300 Index to represent People's Republic of China, the FTSE MIB Index to represent Italy, the Korea Composite Index to represent South Korea, the CAC-40 Index to represent France, the SMSI Index to represent Spain, the DAX Index to represent Germany, the Nikkei 225 Index to represent Japan, and the S&P 500 Index to represent the USA. The above indices are arguably the most representative indices of these countries' stock markets in the world press. The data for the daily closing value and daily return of each of these indices for the period of 1 June 2019 to 16 March 2020 are collected from the web portal 'Investing.com' (cn.investing.com).

We use the stock indices of these eight countries, which are considered the representative cases in the study, to warrant some explanations. First of all, because the WHO did not report the list of countries and regions most affected by the epidemic, we initially select eight countries and regions with the largest number of confirmed cases in the world on 16 March 2020. Secondly, Japan and the Diamond Princess cruise line calculated the number of confirmed cases separately, but considering that the Diamond Princess pulled up alongside a Japanese dock and all its members entered Japan, the two parts of the data are added together to calculate the number of confirmed cases in Japan. Finally, because there is no stock index in Iran, and other commodity indices cannot be compared horizontally in this paper, Iran was removed from the list of countries. The USA, which ranks ninth in the number of confirmed cases in the time when this

paper is being writing, is added. The final list of countries studied in this paper contains the People's Republic of China, Italy, South Korea, France, Spain, Germany, Japan and the USA.

Several sources of COVID-19 news, which first appeared in the press at the close of 2019, are examined to find the exact chronology of the occurrence of COVID-19. On 3 January 2020, 44 cases of viral pneumonia of unknown cause, known as COVID-19 later, were reported by the Wuhan Health Committee. On 23 January, a strict blockade was imposed in Wuhan to prevent the spread of the epidemic to other areas. This is considered a sign of the start of an outbreak in China. The WHO issued the first global alert on 30 January 2020, which meant that the international epidemic situation has shown a slow deterioration trend. Other warnings and announcements followed in subsequent weeks. With the joint efforts of various segments of the Chinese society, the closure of the last mobile cabin hospital in Wuhan on 10 March suggests that the epidemic situation in China has eased. However, on 11 March 2020, COVID-19 was still characterised as a pandemic by the WHO. So far, the center of COVID-19 has gradually moved from China to Europe, with confirmed cases increasing and outbreaks beginning to erupt.

Considering the time difference between the whole process of outbreak and mitigation in China and that in the world, it is unlikely that a study at this stage of events will be able to distinguish its actual impact on the stock market. In this paper, we have two timelines for the outbreak of COVID-19 in China and the outbreak in other countries, and the stock indices in the two parallel timelines are studied respectively. This approach lets us explore the spill-over effect of the outbreak in China on the international community, as well as the spill-over effect of the outbreak in other countries on China. Due to the fact that the pandemic has not been alleviated worldwide yet, we can only base our empirical research on the outbreak stage in the assigned timeline, while also providing a reference for the trend of stock markets when the situation is alleviated worldwide.

For the China's timeline, the entire period of study is divided into several sub-periods in order to examine the impact of COVID-19, and the main time points are related to the important events of epidemic within China. The first sub-period examined is from 3 January 2020 to 22 January 2020. We identify this sub-period as the pre-event window. We hypothesise that there is a negative impact on the stock indices of the seriously affected countries. More specifically, we suspect that China's indices could bear some of the worst blows because of newspaper reports of COVID-19.

We mark the actual event period as the beginning when Wuhan announced the closure of public spaces, i.e. 23 January 2020. As mobile cabin hospitals specialise in treating novel coronavirus infected patients with mild symptoms and suspected cases, the closure of the last mobile cabin hospital in Wuhan on 10 March implies that the large-scale transmission in China had come to an end, which can be regarded as a sign of domestic epidemic mitigation. The period from 23 January 2020 to 10 March 2020 is thus called the 'long event window', and it examines the impact of the whole battle against COVID-19 in China. A 'short event window' is also looked at to assess the immediate impact of the closure of Wuhan city, and this runs from 23 January 2020 to 3 February 2020, ten days after the event. Our hypothesis for both the short event window and long event window is that COVID-19 has a negative impact on the stock market index of China and spill-over effects on other indices.

The performance of the stock market indices mentioned above are from 1 June 2019 to 2 January 2020. The daily returns of these stock indices are grouped into the pre-event window, short event window and long event window for comparison. Simple heteroscedastic t-tests and the non-parametric Mann-Whitney (1947) tests are conducted. The performance of these indices during the three periods are also compared with the performance of the S&P 1200 Global Index. For example, to compare the performance of the FTSE MIB index with the global index in the

short event window, the daily returns of the two indices are from 23 January 2020 to 3 February 2020. We infer that if the FTSE MIB index were more negatively affected than the rest of the world, it would underperform the world index.

For the timeline of the selected countries in this paper, the above segmentation and testing approaches also apply. The entire period of study is divided into several sub-periods, and the main time points are related to the important events of epidemic outside China. The ‘pre-event window’ is from 30 January 2020 to 10 March 2020. This represents the period from the appearance of symptoms outside China to the outbreak of the pandemic in the world. Since the pandemic is not over yet, the data collected are up to 22 March 2020. The period from 11 March 2020 to 22 March 2020 is called the ‘short event window’, and it examines the impact of the battle with COVID-19 outside China since the outbreak. The hypothesis for the short event window is that COVID-19 has a negative impact on the stock market indices of the whole world. At present, we can only forecast the situation in the long event window of the timeline of selected countries according to the domestic timeline. The performance of the stock market indices mentioned above is compared from 1 June 2019 to 29 January 2020. The heteroscedastic t-tests and non-parametric Mann-Whitney tests are used.

## **Empirical results**

We start by looking at the results of the domestic timeline. The mean returns, standard deviations, t-statistics and statistical significance levels for the pre-, short, and long event windows of the domestic timeline using the t-tests are presented in Table 1. The table also includes a column showing the number of trading days for each window. According to Chen and Siems (2004), the t-statistics essentially test the significance of the economic impact of an event on the capital market as measured by the deviation of index returns from their average. If the event had no consequence, one would expect an insignificant return deviation.

Panel A shows that each index had a positive average daily return over the comparison period, indicating these stock markets which were performing well before the outbreak of COVID-19 in China. The hypothesis tested is whether the outbreak has a significant negative effect on stock market returns.

Panel B compares the mean return of the pre-event window with the comparison period. It appears that half of these indices were adversely affected shortly before the outbreak, but not in a statistically significant way.

In the short event window seen in Panel C, the CSI 300 Index and the Korea Composite Index has a mean return that underperformed the comparison period at the 1% level of significance, while the Nikkei 225 Index underperformed its comparison period at the 5% level. The outbreak of COVID-19 in Asian countries seems to offer a satisfactory explanatory basis for this market reaction.

The results over the long event window are shown in Panel D. Except for the CSI 300 Index, all other indices underperformed their comparison period. The Korea Composite Index and the S&P 500 Index have mean returns that differ from the comparison period at the 5% level of significance. The FTSE MIB Index, the CAC-40 Index, the SMSI Index, the DAX Index and the Nikkei 225 Index all underperformed their comparison period at the 1% level.

It is also interesting to note that, the stock market of China, as the first country to be hit by the outbreak of COVID-19, was not severely affected. Thus, China’s stock market shows a high degree of resilience compared to the rest of the world by rebounding performance following its initial plunge. Our empirical results indicate that the outbreak of COVID-19 had a negative but limited impact on stock markets.

Furthermore, huge drops are observed in the stock markets of the countries that had not yet

been severely affected by the virus. A tentative explanation for this seemingly counterintuitive finding is that the impact of COVID-19 in the stock markets of Asian countries has spill-over effects on European and American countries. The spill-overs appear to be related to the spread of COVID-19 and the shock, fear and panic among international investors.

**Table 1.** Differences in mean returns of domestic timeline.

Index	Number of trading days	Event group's mean and std. dev.	Event group's <i>t</i> -value
<b>Panel A: Comparison period from 1-June-2019 to 2-Jan-2020</b>			
CSI 300	146	0.10% (0.91%)	
FTSE MIB	148	0.13% (0.95%)	
Korea Composite	145	0.05% (0.78%)	
CAC-40	151	0.10% (0.84%)	
SMSI	151	0.04% (0.79%)	
DAX	147	0.09% (0.85%)	
Nikkei 225	144	0.10% (0.80%)	
S&P 500	149	0.12% (0.77%)	
<b>Panel B: Pre-event window from 3-Jan-2020 to 22-Jan-2020</b>			
CSI 300	14	0.03% (0.83%)	-0.51
FTSE MIB	14	-0.04% (0.61%)	-0.64
Korea Composite	14	0.03% (0.88%)	-1.15
CAC-40	14	-0.04% (0.41%)	-0.61
SMSI	14	-0.10% (0.44%)	-0.66
DAX	14	-0.07% (0.65%)	-0.10
Nikkei 225	12	0.14% (1.22%)	0.16
S&P 500	13	0.15% (0.47%)	0.16
<b>Panel C: Short event window from 23-Jan-2020 to 3-Feb-2020</b>			
CSI 300	2	-5.49% (3.38%)	-8.28**
FTSE MIB	8	-0.12% (1.78%)	-0.68
Korea Composite	6	-1.12% (1.25%)	-3.47**
CAC-40	8	-0.37% (1.31%)	-1.50
SMSI	8	-0.23% (1.08%)	-0.93
DAX	8	-0.43% (1.40%)	-1.64
Nikkei 225	8	-0.56% (1.09%)	-2.12*
S&P 500	8	-0.27% (1.03%)	-1.36
<b>Panel D: Long event window from 23-Jan-2020 to 10-March-2020</b>			
CSI 300	28	-0.02% (2.33%)	-0.44
FTSE MIB	34	-0.79% (2.60%)	-3.46**
Korea Composite	32	-0.44% (1.69%)	-2.45*
CAC-40	34	-0.74% (2.07%)	-3.82**
SMSI	34	-0.71% (2.05%)	-3.51**
DAX	34	-0.73% (2.01%)	-3.72**
Nikkei 225	32	-0.58% (1.60%)	-3.51**

S&P 500	33	-0.40% (2.46%)	-2.14*
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Notes: Std. dev. in parentheses. \* Significant at the 5% level; \*\* significant at the 1% level.

The results from non-parametric Mann-Whitney tests are presented in Table 2 and partly consistent with those in Table 1. Perme and Manevski (2019) point out that the Mann-Whitney tests' null hypothesis is that the two random variables share the distribution. It is often seen as the non-parametric alternative of the t-test.

In the pre-event window shown in Panel B, the median returns for the indices are not statistically different from the comparison period. In the short event window shown in Panel C, the CSI 300 Index (1% level) and the Korea Composite Index (5% level) underperformed the comparison period.

In the long event window shown in Panel D, the Nikkei 225 Index underperformed its comparison period at the 5% level of significance. The other six countries underperformed, as opposed to the comparison period, but not in a way that was statistically significant. Surprisingly, the CSI 300 Index outperformed the indices in the reference period. Our findings confirm that COVID-19 had negative but limited impact on stock markets. Though psychological factors cannot be directly observed, it is possible that the elapsed time had a calming effect, as investors were able to take additional time to absorb the news of the outbreak and avoid from panic. It is also possible that Chinese investors boosted stocks out of a heightened sense of patriotism.

**Table 2.** Differences in median returns of domestic timeline.

Index	Number of days	Median return	W-value
Panel A: Comparison period from 1-June-2019 to 2-Jan-2020			
CSI 300	146	0.06%	
FTSE MIB	148	0.11%	
Korea Composite	145	0.07%	
CAC-40	151	0.15%	
SMSI	151	0.05%	
DAX	147	0.58%	
Nikkei 225	144	0.12%	
S&P 500	149	0.09%	
Panel B: Pre-event window from 3-Jan-2020 to 22-Jan-2020			
CSI 300	14	-0.11%	11823
FTSE MIB	14	-0.25%	12229
Korea Composite	14	0.49%	11401
CAC-40	14	-0.02%	12759
SMSI	14	-0.23%	12764
DAX	14	0.01%	11957
Nikkei 225	12	0.32%	11239
S&P 500	13	0.19%	12145
Panel C: Short event window from 23-Jan-2020 to 3-Feb-2020			
CSI 300	2	-5.49%	11023**
FTSE MIB	8	0.29%	11631
Korea Composite	6	-1.14%	11269*

CAC-40	8	-0.14%	12155
SMSI	8	0.49%	12030
DAX	8	-0.40%	11584
Nikkei 225	8	-0.77%	11222
S&P 500	8	0.01%	11875

Panel D: Long event window from 23-Jan-2020 to 10-March-2020

CSI 300	28	0.35%	12564
FTSE MIB	34	0.06%	13851
Korea Composite	32	-0.15%	13275
CAC-40	34	-0.21%	14524
SMSI	34	0.03%	14302
DAX	34	-0.21%	13891
Nikkei 225	32	-0.47%	13287*
S&P 500	33	-0.16%	14096

Notes: \* significant at the 5% level; \*\* significant at the 1% level.

The returns on each of these indices are compared to the S&P 1200 Global Index returns for the pre-, short and long event windows. Such a comparison shows which of these indices performed negatively as compared with the global average for the affected periods. Table 3 compares the event period returns for the eight countries with the S&P 1200 Global Index using *t*-tests (Panel A) and non-parametric Mann–Whitney tests (Panel B).

Looking at the grand picture of all event period results reported in Table 3, there is no strong evidence that these major indices of the stock markets differ significantly from the S&P 1200 Global Index. The only market with a statistically significant negative mean return over three event horizons was China's over the short event window. The mean return was -5.49%, significant at the 1% level under the *t*-test (Panel A) and at the 5% level under the Mann-Whitney test (Panel B). This can be explained by the fact that China was the first country in the world to be hit by the outbreak and the related fact that the first site of an outbreak suffers a comparatively stronger negative impact compared with the global average. The findings further confirm the significantly negative but limited impact of COVID-19 on stock markets.

**Table 3.** Returns relative to global index of domestic timeline.

Index	Pre-event period		Short event window		Long event window	
	3-Jan-2020—22-Jan-2020		23-Jan-2020—3-Feb-2020		23-Jan-2020—10-March-2020	
Panel A: <i>t</i> -test on daily returns relative to S&P 1200						
	Mean	<i>t</i> -value	Mean	<i>t</i> -value	Mean	<i>t</i> -value
S&P 1200	0.10% (0.33%)		-0.34% (0.77%)		-0.46% (1.90%)	
CSI 300	0.03% (0.83%)	0.56	-5.49% (3.38%)	4.67**	-0.02% (2.33%)	-0.82
FTSE MIB	-0.04% (0.61%)	0.76	-0.12% (1.78%)	-0.33	-0.79% (2.60%)	0.61
Korea Composite	0.03% (0.88%)	-0.79	-1.12% (1.25%)	1.44	-0.44% (1.69%)	-0.05
CAC-40	-0.04% (0.41%)	0.99	-0.37% (1.31%)	0.32	-0.74% (2.07%)	0.59
SMSI	-0.10% (0.44%)	1.35	-0.23% (1.08%)	-0.12	-0.71% (2.05%)	0.52
DAX	-0.07% (0.65%)	0.17	-0.43% (1.40%)	0.16	-0.73% (2.01%)	0.57
Nikkei 225	0.14% (1.22%)	-0.11	-0.56% (1.09%)	0.46	-0.58% (1.60%)	0.29

S&P 500      0.15% (0.47%)      -0.31      -0.27% (1.03%)      -0.15      -0.40% (2.46%)      -0.11

Panel B: Mann-Whitney test

	Median	W-value	Median	W-value	Median	W-value
S&P 1200	0.08%		-0.23%		-0.23%	
CSI 300	-0.11%	193	-5.49%	3*	0.35%	987
FTSE	-0.25%	188	0.29%	74	0.06%	1199
MIB						
Korea Composite	0.49%	229	-1.14%	37	-0.15%	1078
CAC-40	-0.02%	175	-0.14%	46	-0.21%	1175
SMSI	-0.23%	162	0.49%	47	0.03%	1192
DAX	0.01%	196	-0.40%	69	-0.21%	1163
Nikkei 225	0.32%	175	-0.77%	64	-0.47%	1059
S&P 500	0.19%	189	0.01%	72	-0.16%	1136

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Notes: Std. Dev. in parentheses. \* Significant at the 5% level; \*\* significant at the 1% level.

Before we turn to the timeline of the selected countries, we first sum up our empirical investigation in the domestic timeline at the first stage. The evidence suggests that COVID-19 had a negative but limited direct impact on the stock markets of Asian countries. Furthermore, it appears that such impact has the spill-over effects on European and American countries. Except in China, none of these indices significantly underperformed the S&P 1200 Global Index in either event period.

We now proceed with the second stage of our investigation focusing on the impact of outbreak of COVID-19 in selected countries. Given the similarity between the outbreak of COVID-19 in China and in other countries, conclusions obtained from the domestic timeline may be further confirmed in the foreign timeline. Two further research questions are investigated:

-Does the outbreak of COVID-19 significantly affect stock markets in selected countries?

-Does the impact of COVID-19 on stock markets in Europe and the USA have a spillover effect on stock markets of China?

The mean returns, standard deviations, t-statistics and statistical significance levels of the foreign timeline using the t-tests are presented in Table 4. Panel A shows that each index has a positive median daily return during the comparison period. In the pre-event window shown in Panel B, except for the CSI 300 Index, the other stock indices have been significantly negatively affected. The MIB Index, the CAC-40 Index, the SMSI Index, the DAX Index (at the 1% level) and the Korea Composite Index, the Nikkei 225 Index and the S&P 500 Index (at the 5% level) underperformed the comparison period.

These results differ from the results obtained from Panel C in Table 1, which could tentatively be interpreted that the negative impact over the pre-event period is derived from the spill-over effects of COVID-19 in Asian countries. It is worth mentioning that the CSI 300 Index has a good performance over the pre-event period, which is consistent with the results shown in panel D of Table 1 and Table 2.

The results of the short event window are shown in Panel C. All indices underperformed the comparison period at the 1% level of significance, even further deteriorated compared with the pre-event period. Recent articles explain why the stock market has plummeted. A report titled 'What is the Root Cause of the Continued Collapse of US Stocks?' (Wang 2020) points out that the external trigger of the sharp decline of USA stocks is the market panic caused by the



COVID-19 epidemic and Saudi Arabia's oil price war, depicting COVID as the straw that broke the camel's back. The findings imply that the COVID-19 epidemic bears direct responsibility for part of the sharp decline, which confirms the conclusion that the outbreak of COVID-19 significantly affected the stock markets.

It is worth noting that the CSI 300 Index underperformed the comparison period at the 1% level as well, despite the fact that the COVID-19 epidemic has eased in China. It would appear that the impact of COVID-19 on stock markets in Europe and the USA has a spill-over effect on Chinese stock markets. From the findings shown in Table 1 and Table 4, the bidirectional spill-over effect caused by the outbreak of COVID-19 is confirmed.

**Table 4.** Differences in mean returns of foreign timeline.

Index	Number of trading days	Event group's mean and std. dev.	Event group's <i>t</i> -value
Panel A: Comparison period from 1-June-2019 to 29-Jan-2020			
CSI 300	161	0.07% (0.93%)	
FTSE MIB	167	0.12% (1.00%)	
Korea Composite	162	0.05% (0.83%)	
CAC-40	170	0.08% (0.84%)	
SMSI	170	0.03% (0.78%)	
DAX	166	0.08% (0.86%)	
Nikkei 225	161	0.08% (0.85%)	
S&P 500	167	0.11% (0.76%)	
Panel B: Pre-event window from 30-Jan-2020 to 10-March-2020			
CSI 300	27	0.10% (2.29%)	0.13
FTSE MIB	29	-1.00% (2.68%)	-4.14**
Korea Composite	29	-0.35% (1.69%)	-1.98*
CAC-40	29	-0.84% (2.15%)	-4.08**
SMSI	29	-0.82% (2.16%)	-3.90**
DAX	29	-0.81% (2.08%)	-3.98**
Nikkei 225	27	-0.59% (1.69%)	-3.19*
S&P 500	28	-0.42% (2.65%)	-2.12*
Panel C: Short event window from 11-March-2020 to 22-March-2020			
CSI 300	8	-1.37% (1.69%)	-4.05**
FTSE MIB	8	-1.50% (7.46%)	-2.54**
Korea Composite	8	-2.69% (4.50%)	-6.17**
CAC-40	8	-1.83% (6.22%)	-3.56**
SMSI	8	-1.77% (6.64%)	-3.25**
DAX	8	-2.07% (5.61%)	-4.20**
Nikkei 225	7	-2.55% (2.08%)	-7.43**
S&P 500	8	-2.52% (7.32%)	-4.40**

Notes: Std. dev. in parentheses. \* Significant at the 5% level; \*\* significant at the 1% level.

Table 5 shows the returns of the pre- and short event windows in the timeline of the selected countries compared with the comparison period using the non-parametric Mann-Whitney tests.

In the pre-event window shown in Panel B, the DAX Index underperformed the comparison period at the 5% level of significance. In the short event window shown in Panel C, the CSI 300 Index, the Korea Composite Index and the Nikkei 225 Index (1% level) underperformed the comparison period.

Considering that the pandemic has not peaked while this paper is being written, the empirical results of the domestic timeline for the long event window provide a reference for the trend of stock markets when COVID-19 eventually subsides. According to the results in Panel D of Table 1 and Table 2, we can predict that, if the pandemic were to be controlled within two months, the impact of COVID-19 on stock markets would be limited. Andersen (2020) also notes that in the research papers of formally modeling pandemic scenarios, many find a large short-run economic impact, but none of them finds a significant long-run impact, even in a very severe scenario.

There may be several factors that make a potential pandemic-generated economic slowdown different from usual recessions. First, recent recessions have been accompanied by large-scale reallocation of labour and other resources across sectors. By contrast, workers unemployed or put on furlough because of coronavirus are likely to resume their former positions. In other words, the former pattern of economic activity can be resumed, whereas usual recessions and their aftermath entail a reconfiguration of economic activity. Second, a general recession is often prolonged by a lack of confidence on the part of investors, firms and consumers. It seems logical, however, that these groups would regain their confidence in the markets once the pandemic recedes.

**Table 5.** Differences in median returns of foreign timeline.

Index	Number of days	Median return	W-value
Panel A: Comparison period from 1-June-2019 to 29-Jan-2020			
CSI 300	161	0.06%	
FTSE MIB	167	-0.25%	
Korea Composite	162	0.07%	
CAC-40	170	0.14%	
SMSI	170	0.00%	
DAX	166	0.14%	
Nikkei 225	161	-0.47%	
S&P 500	167	0.09%	
Panel B: Pre-event window from 30-Jan-2020 to 10-March-2020			
CSI 300	27	-0.35%	14886
FTSE MIB	29	-0.05%	16876
Korea Composite	29	-0.06%	15857
CAC-40	29	-0.23%	17540
SMSI	29	0.01%	17302
DAX	29	-0.27%	16831*
Nikkei 225	27	-0.39%	15652
S&P 500	28	-0.23%	16770
Panel C: Short event window from 11-March-2020 to 22-March-2020			
CSI 300	8	-1.37%	14107**
FTSE MIB	8	1.02%	14604
Korea Composite	8	-3.31%	14334**

CAC-40	8	0.63%	15193
SMSI	8	0.20%	15197
DAX	8	0.21%	14517
Nikkei 225	7	-2.27%	14077**
S&P 500	8	-4.61%	14912

Notes: \* Significant at the 5% level; \*\* Significant at the 1% level.

Table 6 compares the daily returns with the S&P 1200 Global Index in the timeline of the selected countries using t-tests (Panel A) and non-parametric Mann–Whitney tests (Panel B). From the findings reported in Table 6, it appears that no unequivocal picture seems to emerge when it comes to the market’s reaction in the foreign timeline compared with the S&P 1200 Global Index. Over the pre- and short event windows, the S&P 1200 Global Index has a return that is not significantly different from the eight indices; this is consistent with the results obtained from Table 3. There is no evidence that COVID-19 has a negative impact on the major stock indices in these countries compared with the S&P 1200 Global Index.

**Table 6.** Returns relative to global index of foreign timeline.

Index	Pre-event period 30-Jan-2020—10-March-2020		Short event window 11-March-2020—22-March-2020	
<b>Panel A: t-test on daily returns relative to S&amp;P 1200</b>				
	Mean	t-value	Mean	t-value
S&P 1200	-0.02% (0.60%)		-2.84% (8.23%)	
CSI 300	0.10% (2.29%)	-1.00	-1.37% (1.69%)	0.50
FTSE MIB	-1.00% (2.68%)	0.83	-1.50% (7.46%)	0.34
Korea	-0.35% (1.69%)	-0.25	-2.69% (4.50%)	0.04
<b>Composite</b>				
CAC-40	-0.84% (2.15%)	0.65	-1.83% (6.22%)	0.28
SMSI	-0.82% (2.16%)	0.62	-1.77% (6.64%)	0.29
DAX	-0.81% (2.08%)	0.61	-2.07% (5.61%)	0.22
Nikkei 225	-0.59% (1.69%)	0.21	-2.55% (2.08%)	0.09
S&P 500	-0.42% (2.65%)	-0.10	-2.52% (7.32%)	0.08
<b>Panel B: Mann-Whitney test</b>				
	Median	W-value	Median	W-value
S&P 1200	-0.23%		-1.60%	
CSI 300	-0.35%	868	-1.37%	68
FTSE MIB	-0.05%	849	1.02%	67
Korea	-0.06%	873	-3.31%	68
<b>Composite</b>				
CAC-40	-0.23%	845	0.63%	66
SMSI	0.01%	856	0.20%	65
DAX	-0.27%	837	0.21%	68
Nikkei 225	-0.39%	763	-2.27%	66
S&P 500	-0.23%	821	-4.61%	69

Notes: Std. dev. in parentheses. \* Significant at the 5% level; \*\* Significant at the 1% level.

Overall, the study of the timeline of the selected countries indicates that COVID-19 negatively affected stock markets. Specifically, the development of the COVID-19 pandemic has had a negative impact on the European and American stock markets and, as the virus spread, the negative impact will be also further intensified. We postulate, however, that the impact on stock markets will be short-term rather than long-term. Once again, it is worth noting that the impact of COVID-19 on the European and American stock markets has a spill-over effect on the Asian stock market. When we combine our study of the foreign timeline with our study of the domestic one, the bidirectional spill-over effect caused by the outbreak of COVID-19 is confirmed.

## **Conclusion**

This paper studies the direct effects and spill-over effects of COVID-19 on stock markets. The development of the epidemic up to the date when this paper was written is divided into two parallel timelines: the domestic timeline and the foreign timeline. Using conventional t-tests and non-parametric Mann-Whitney tests, an empirical analysis is conducted based on daily return data of stock markets in the People's Republic of China, Italy, South Korea, France, Spain, Germany, Japan and the USA.

Despite the facts that COVID-19 is fiercely hurting the world with its outbreak not reaching a turning point and that the foreign timeline is still extending, the following conclusions can be drawn. Evidence from the domestic timeline and the timeline of the selected countries suggests that COVID-19 has a negative but short-term impact on the stock markets of the eight affected countries. The impact of COVID-19 on stock markets has bidirectional spill-over effects between Asian countries and European and American countries. Furthermore, except for China in the short event window of the domestic timeline, there is no evidence that COVID-19 has a negative impact on the major stock indices in these countries compared to the S&P 1200 Global Index.

These findings contribute to research in economic impacts of the pandemic by providing empirical evidence that COVID-19 has bidirectional spill-over effects on between Chinese economy and seven other countries that are affected by the outbreak. Admittedly, though, since there is no a pandemic mitigation period in the other countries yet while this paper is being written, this study merely provide a reference for the trend of capital markets when the COVID-19 pandemic subsides worldwide.

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# Spillover Effects of Capital Controls on Capital Flows and Financial Risk Contagion<sup>\*</sup>

By FAN HAICHAO, GOU QIN, PENG YUCHAO, XIE WENJING<sup>\*</sup>

**Abstract:** *This paper aims to explicitly investigate the multilateral effects of capital controls on capital flows and the risk contagion from global financial shocks to emerging market economies (EMEs). Using a comprehensive portfolio allocation data set from EPFR and a newly constructed high-frequency similarity-weighted average capital control (SWACC) index of the rest of the world in 19 EMEs from 2001 to 2015, this paper then empirically explore the spillover effect of capital controls on capital flow and capital price co-movement. We find that SWACC is positively associated with the global fund's portfolio weight allocated to a country, the total portfolio flows into that country, and the capital market co-movement between that country and the advanced countries. Further analysis shows that these impacts are more pronounced for capital inflow control or, in extreme circumstances, when capital flows are extremely high or low. Our results are robust to a variety of alternative measures, regression designs, and methods.*

**Keywords:** capital control; capital flow; spillover effect; risk contagion; emerging market

**JEL Classification:** F3, F42, G32

## 1. Introduction

The past decade has witnessed an impressive increase in the capital flow volatility of emerging market economies (EMEs), an increase that raises both macroeconomic challenges and financial stability concerns. Historically, such volatility is nothing new as flows have been episodic (Ghosh et al., 2014), but increased volatility has reignited debates about the necessity of using capital controls in managing capital flows into EMEs. Economists and policy makers in support of capital controls have written a series of theoretical papers modeling how capital controls can increase social welfare (Korinek, 2010, 2011; Jeanne and Korinek, 2010; Costinot et al., 2014; Jeanne, 2012; Prasad, 2018; Devereux and Yu, 2019; Devereux et al., 2019), a series of IMF reports to develop scenarios in which capital controls could be “part of a policy toolkit” (IMF, 2011a, 2011b, 2012a, 2012b, 2017, 2018; Ostry et al., 2010, 2011), and a series of policies aimed at reducing portfolio inflows and at avoiding financial risk as well as aimed at other macroeconomic purposes.<sup>1</sup>

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<sup>1</sup>For example, Brazil reinstated a 2% tax on portfolio inflows (IOF) in October 2009 to discourage carry trade and increased it twice to 6% on debt inflows

In contrast to the massive attention in the abovementioned literature given to the economic benefits of implementing capital controls, research on the multilateral effect of capital controls on other countries is scant. It has long been studied in the trade literature that an increase in tariffs of one importing market can deflect exports to other markets. This effect is called the "deflection effect" (Bown and Crowley, 2006, 2007). In the same spirit, if capital controls in one country could potentially deflect capital flows into another and transfer the corresponding financial risk from one economy to another, this multilateral effect should be incorporated when reassessing the desirability of capital controls and calls for international policy coordination of the use of capital controls (Forbes et al., 2016).

As Ghosh et al. (2014) noted, capital flows to recipient countries must be determined by both supply-side (push) and demand-side (pull) factors. Meaningfully, if one country implements capital inflow controls that increase funding costs and thereby reduce capital inflows to this country, it may deflect international capital flows and bring corresponding challenges to other recipient countries on the demand side. Several recent papers have shed some light on the externalities of capital controls on capital flows to other countries (Forbes et al., 2016; Giordani et al., 2017). There is also a growing theoretical literature attempting to pin down the multilateral externalities on social welfare (Korinek, 2011; Costinot et al., 2014, Jeanne, 2012; Giordani et al., 2017). Yet, to date, there has been little evidence on whether capital controls can make other countries' capital market more sensitive to global financial shocks, namely increasing risk contagion from global market to receipt countries. It can be also regarded as a important spillover effect to inflict financial risks on other countries. As well, the literature is silent on offering direct empirical evidence of the degree to which the similarity inherent to the economies, such as region, market size, trade openness, and capital market risk, affect the spillover effects of capital controls.

This paper aims to explicitly test for the multilateral effects of capital controls on capital flows and the financial risk contagion from the global shocks to EMEs. By employing a novel and high-frequency quarterly index of capital control and global portfolio flows stemming from Emerging Portfolio Fund Research (EPFR) in 19 EMEs from 2001 to 2015, we empirically investigate whether capital controls deflect capital flows. In order to simultaneously identify the effect that capital controls of all other EMEs have on one EME's capital flow, we construct a "similarity-weighted average capital control" index, or SWACC. We calculate country-pair similarity across four dimensions for EMEs, specifically region, market size, trade openness, and capital market risk. Data on portfolio flows contain not only information about portfolio investment flows on equity markets at the fund level but also weekly micro-details of the weights allocated to each recipient economy from the global funds. These novel data sets allow us to identify the deflection effect of capital controls on a fund's weight allocation across recipient countries at the fund-country level and the deflection effect on the aggregate portfolio investment flows at the country level with high frequency.

The baseline empirical results, further confirmed by robustness checks, first show that capital controls may deflect the portfolio share allocation of global funds to other countries with similar economic and regional characteristics. Furthermore, when we aggregate the portfolio flows across all funds in each period for each economy, the empirical results further support the existence of a deflection effect. Lastly, we find that the deflection effect is mainly driven by inflow controls rather than by outflow controls, and both controls on portfolio flows and those on the overall capital account have similar deflection effects on portfolio investments.

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in October 2010 in the face of exchange rate appreciation. Peru introduced additional capital requirements for FX credit risk exposure in July 2010. Indonesia implemented a 1-month minimum holding period for central bank papers in June 2010. See IMF (2011a) for more information about managing capital inflows since the 2008 financial crisis.

Subsequently, we empirically explore whether one EME's capital market is more sensitive to the global capital market shocks, namely financial risk contagion, in response to a reinforcement of other EME capital controls. Specifically, we measure the financial risk contagion by the co-movements between each EME's capital market index and the overall capital market index of all developed countries. We consistently find that SWACC is positively associated with the financial risk contagion. To our knowledge, this is the first paper that investigates the spillover effect of capital controls on risk contagion.

Finally, to support our empirical findings, we also build a parsimonious multinational model based on Giordani et al. (2017), to identify a cross-border effect of capital controls on capital flows to the other EMEs and financial risk contagion. All propositions are in line with our empirical results. We put the model in Appendix A to save the space.

This paper contributes to the literature on twofold. First, this paper adds to the literature on the deflection effect of capital controls on capital flows. A growing literature considers the deflection effect. Based on the event study approach, Forbes et al. (2016) and Lambert et al. (2011) present evidence of the deflection effects on the capital flows of the capital control policies implemented in Brazil. Giordani et al. (2017) and Gurnain et al. (2018) are among the first to provide cross-sectional evidence that capital controls in one economy will shift capital flows to other countries with similar economic characteristics in a deflection effect. In contrast, Boero et al. (2019) construct a global econometric model to capture the dynamic interactions between capital flows and domestic and global fundamentals and find only limited evidence of the deflection effect for a small number of emerging market countries. In this paper, we provide both micro-fund-country-level and macro-country-level evidence of the deflection effect based on novel global fund-level data and in cross-sectional study approach. In this way, we are different from Forbes et al. (2016) and Lambert et al. (2011) that we investigate the deflection effect of weighted multi-country policies rather than just one event in the Brazilian economy.

Second, we contribute to literature on the multilateral effect of capital controls on macro challenges and financial risk. In contrast to the abundance of attention given to the deflection effect on capital flows, less evidence is found about whether capital controls generate meaningful externalities on other countries. Several theoretical studies find that capital controls in one economy might generate positive or negative externalities on the welfare in other economies based on different model assumptions (Korinek, 2011; Costinot et al., 2014; Jeanne, 2012). However, there has been little empirical evidence of whether one EME's capital control could lead to an increase of financial risk contagion from developed countries to other EMEs. We contribute to the literature by providing the very first evidence that capital controls from one EME have increased the extreme capital market co-movement between other EMEs with regional and economical similarity and developed countries. This finding has an important policy implication: multilateral coordination on managing capital flows is urgent.

The rest of the paper proceeds as follows. In the next section we provides information about the empirical methodology and available data. Section 3 presents our main empirical findings, followed by a robustness check in Section 4. Section 5 concludes.

## **2. Data and Empirical Specification**

### **2.1 Data**

Our sample mainly contains three aspects of data: capital controls, country portfolio allocations, and capital market price. A tremendous literature assesses country-level capital controls and constructs indicators (see, e.g., Chinn and Ito 2008 for the Chinn-Ito index). However, most indicators are at the year level. To capture the instantaneous response of capital flow to the change of capital control policy, we use quarterly data on capital controls sourced



from Gurnain et al. (2018). In this database, we have not only the overall capital control index but also the portfolio investment (referred as “hot money”) control index. Moreover, the capital control index can be separated into inflow and outflow controls.

To analyze the spillover effects of capital controls on a country’s portfolio allocation, we use a novel data set stemming from EPFR. EPFR contains both weekly portfolio investment flows at the fund level and portfolio holding data at the fund-country level. The EPFR data have several advantages. First, they present good representativeness (Fratzscher, 2012; Forbes et al., 2016). For example, EPFR tracks equity and bond funds that invest globally and held \$2.8 trillion in total assets in 2018. Another strength of the data comes from its high time frequency disaggregated information at the fund level. Specifically, EPFR contains information on daily, weekly, and monthly fund flows, tracking the amount of cash flowing into and out of thousands of investment funds. At a country’s portfolio allocation level, the EPFR database has a sub-data-set called “Country Weightings,” which includes actual country and regional weightings, expressed as a percentage, of individual funds at the end of each month.

The MSCI indices, which are popular among researchers, have covered the majority of the stock markets in the world (Jotikasthira et al., 2012; Korbes et al, 2016). Therefore, this paper follows the relevant literature in using the MSCI country indices to proxy the capital price in corresponding emerging market countries and uses the MSCI developed country indices to proxy the overall capital price of developed countries. The MSCI has adjusted the range of emerging market countries many times, but we use 19 emerging market countries<sup>2</sup> for consistency.

The data for the other control variables come from a standard global database. Monetary policy rates and exchange rates are extracted from BIS, and the return and risk of local capital markets are calculated using MSCI indices.

Because our main focus is on stock markets, we only use equity fund data. To avoid outliers or the survival issue of some individual funds, we exclude small funds with less than USD 5 million. Finally, because of data availability, our sample covers 19 emerging market countries from January 2001 through December 2015. The fund-group-level sample contains 419 active equity fund groups, and 489,934 fund-group-country-month observations. The majority of fund groups in the sample are registered in advanced countries, and the remaining groups are registered in tax-free islands.

## 2.2 Measurement

To analyze the spillover effect of multiple countries’ capital controls simultaneously, we first construct a weighted average index to capture the overall degree of capital controls from other similar countries, in a similar spirit to Giordani et al. (2017). However, different from Giordani et al. (2017), we choose multi dimensions of country-pair similarity as the weight, instead of gross domestic product (GDP). When investors cannot allocate assets in one country because of exogenous restrictions, they will try to find a substitute to reallocate their portfolio. The substitute should be geographically and economically similar to the original country (Forbes, et al., 2016). Therefore, we propose a new measure, e.g., "the similarity-weighted average capital controls of other countries" (SWACC), and measure it for country  $c$  in quarter  $q$  as

$$SWACC_{c,q}^{ex} = \frac{\sum_{d \in S^c} (Control_{d,q} \times Similarity_{c,d})}{\sum_{d \in S^c} Similarity_{c,d}}, \quad (1)$$

where subscript  $c$  indexes the country;  $q$  indexes the quarter; *Control* is the capital control index;

<sup>2</sup>See Table C1 in Appendix C for the country list. In our sample, both Hong Kong and China mainland belong to one nation; however, because of their different economic policies, we follow the literature and treat them as two emerging market economies. Here, “country” indexes region. To simplify the expression, we use “emerging market countries” and “emerging market economies” interchangeably.

and  $S^c$  means the country set, except for country  $c$ .  $Similarity_{c,d}$  is the similarity between country  $c$  and country  $d$ . Similarity is calculated as the multiplicative inverse of the Euler distance:

$$Similarity_{c,d} = \frac{1}{\left[ \sum_i (\chi_c^i - \chi_d^i)^2 \right]^{\frac{1}{2}}}, \quad (2)$$

where  $\chi$  refers to standardized country characteristics.<sup>3</sup> Forbes et al. (2016) document that, when reallocating assets in response to changes in capital control conditions, investors mainly consider the following four major factors: region, market size, dragon play<sup>4</sup>, and control risk. Similarly, this paper calculates the country-pair similarity by adopting a series of characteristics including region, market size, trade openness, and capital market risk.<sup>5</sup> See the appendix for more details about the measurements of each characteristic and for details about country-pair similarities.

Similarly, we construct "the similarity-weighted average capital inflow control of other countries" (SWACC\_in) and "the similarity-weighted average capital outflow control of other countries" (SWACC\_out) by separating the capital control index by capital inflow control and capital outflow control.

We use two measures of capital flow. One is the global fund's portfolio allocation weights across countries, which is the level of accumulated capital flow. Another is "flow-implied fund allocation changes" (*FIFA*), which was proposed by Jotikasthira et al. (2012) and measures the net capital flow to each country. *FIFA* is constructed as follows:

$$FIFA_{c,m} = \sum_i \left( f_{i,m}^* \times \omega_{i,c,m-1} \times TNA_{i,m-1} \right), \quad (3)$$

where  $f_{i,m}^* = \sum_{s=1}^6 f_{i,m+s-1}$  is the sum of capital flows experienced by fund  $i$  over two quarters after and including month  $m$ .<sup>6</sup>  $\omega_{i,c,m-1}$  is the percentage of fund  $i$ 's total net asset investment in country  $c$  at the end of month  $t-1$ , and  $TNA_{i,m-1}$  is the total net asset of fund  $i$  at the end of month  $m-1$ . To eliminate the impact of dimension, we scale *FIFA* by the size of the stock market of country  $c$  at the end of month  $m$ .

Besides capital flow, this paper focuses on the capital market co-movement across countries as well. After the global financial crisis, a growing literature focuses on global systemic risk, that is, capital market co-movement under extreme condition, especially when a stock market crash occurs. To analyze the spillover effects of capital controls on global systemic risk, we construct a measurement of the extreme co-movement using the dynamic symmetrized Joe-Clayton Copula method (Patton, 2006; Huang et al., 2019).<sup>7</sup> We first calculate the daily return rate of each country's capital market, that is, the logarithm difference of the closing price of stock market index. Then we use the Copula method to calculate the daily lower tail co-movement rate between each emerging market country  $c$  and the advanced country index.<sup>8</sup> Finally, we use the

<sup>3</sup>For example, if country  $c$  and country  $d$  belong to the same region,  $\chi_c - \chi_d = 0$ ; otherwise,  $\chi_c - \chi_d = 1$ .

<sup>4</sup>This factor is proposed by Forbes et al. (2016) to capture countries' benefits from strong growth of China, and it is measured as one country's exports to China as percent of GDP.

<sup>5</sup>Korbes et al. (2016) focus on the spillover effect of one country's capital account control (Brazil), whereas our paper focuses on the multinational spillover effect. "Dragon play," which means trading with China, is not a proper characteristic for our research. Instead, we take trade openness into account. Meanwhile, control risk is an important factor considered by investors to allocate assets, but we already introduce capital controls in our main regressions. Considering that capital market risk also affects fund managers' investment decisions, we use capital market risk instead of control risk. Moreover, another reason to take capital market size into account is that financial development has an important impact on capital inflows Desbordes and Wei (2017).

<sup>6</sup>When calculating *FIFA*, we extend the measure to two quarters in order to capture a longer impact of capital control policy. For robustness, we also try the measure of short-term *FIFA* and only consider a one-quarter flow, in line with Jotikasthira et al. (2012). The results hold.

<sup>7</sup>See Huang et al. (2019) for more information on the method.

<sup>8</sup>We also try the co-movement rate between emerging market countries and the MSCI global index. The results hold.

median value in 1 calendar month as the extreme co-movement rate of country  $c$  in month  $m$ .<sup>9</sup>

### 2.3 Empirical Strategy

This paper estimates spillover effects of capital controls through both micro-level and macro-level regressions. First, we analyze the spillover effects of capital controls on portfolio allocations of global fund groups across countries. Based on the setting of Korbes et al. (2016), we include both variables capturing the domestic and the spillover effect of capital controls from other countries:

$$\omega_{c,f,m} = \beta Control_{c,q-1} + \gamma SWACC_{c,q-1} + \delta X_{c,m} + \mu_m + e_f + v_c + \xi_{c,f,m} \quad (4)$$

In Equation (4), subscript  $f$  denotes the global fund group, whose funds are issued by the same company;  $c$  indexes the country that the fund flows into; and  $q$  and  $m$  index the quarter and month, respectively.  $\omega_{c,f,m}$  measures the allocation weights of global fund group  $f$  to country  $c$  in month  $m$ .  $Control_{c,q-1}$  measures the capital control policy of country  $c$  in quarter  $q-1$ , whereas  $SWACC_{c,q-1}$  is the similarity-weighted average of capital controls of all other countries for country  $c$ , measuring the spillover effect of other countries.<sup>10</sup> In the regression, we consider two kinds of capital control index. One is the capital control policy only restricting the cross-border portfolio investment (e.g., short-term equity and bond investment), and the other is the overall capital control policy restricting all kinds of capital flows. Furthermore, we separate the index into capital inflow control and capital outflow control, and we re-estimate Equation (4) to determine whether different policies have different spillover effects.

$X$  is a series of variables that may affect the portfolio allocation of global funds, including the first difference of the real effective exchange rate (*Deer*), the first difference of the monetary policy rate (*Dcbrate*), the recipient country's capital market return rate (*Return*), and the recipient country's capital market risk (*Risk*).<sup>11</sup> We include country fixed effects and fund group fixed effects to capture all the time-invariant country and fund group characteristics, which might influence the outcome of interest. We also include year and month fixed effects to control global shocks in a particular year and month likely to have affected all countries in a similar manner.

Second, we analyze the spillover effects of capital controls on *FIFA*, which is at the macro level. The empirical model is as follows:

$$FIFA_{c,m} = \beta Control_{c,q-1} + \gamma SWACC_{c,q-1} + \delta X_{c,m} + \mu_m + v_c + \xi_{c,m}. \quad (5)$$

This regression is at the country-month level, and *FIFA* measures net capital inflows. The control variables  $X$  are the same as those used in Equation (4). Both country fixed effects and year-month fixed effects have been controlled.

In the Appendix A, we have built a parsimonious multinational model based on Giordani et al. (2017), to identify a cross-border effect of capital controls on capital flows to the other EMEs and financial risk contagion. According to **Proposition A1**, we predict that both coefficients of  $SWACC_{c,q-1}$  in Equations (4) and (5) are significantly positive, which means that the capital controls of one emerging market country will bubble thy neighbor, in line with Forbers et al., (2016).

Third, we examine the spillover effect of capital controls on financial risk contagion by employing the following empirical model:

<sup>9</sup>For robustness, we also try to use the mean value in 1 calendar month as the extreme co-movement rate of country  $c$  in month  $t$ . The results are consistent with those from the baseline regression.

<sup>10</sup>Because of data availability, the data for capital controls are at a quarterly frequency.

<sup>11</sup>According to general theory and the literature, we predict that the coefficient of the first difference of the real effective exchange rate is positive; the coefficient of the first difference of the monetary policy rate is positive (because of a decline in the capital price in response to a tightening monetary policy); the coefficient of the capital market return rate is positive; and the coefficient of capital market risk is negative.

$$ExComove_{c,m} = \beta Control_{c,q-1} + \gamma SWACC_{c,q-1} + \delta X_{c,m} + \mu_m + v_c + \xi_{c,m} \quad (6)$$

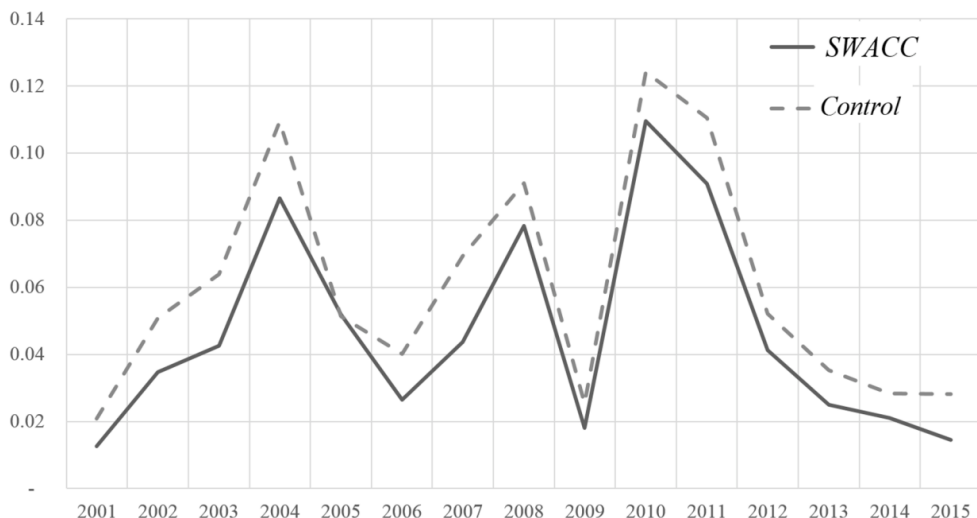
where  $ExComove_{c,m}$  is the extreme capital market co-movement rate between country  $c$  and developed countries in month  $m$  that measures risk contagion. The control variables  $X$  are the same as those used in Equation (4). Both country fixed effects and year-month fixed effects have been controlled. As Proposition A2 shows, we predict that the coefficient of  $SWACC_{c,q-1}$  will be significantly positive, indicating that an increase in other similar countries' capital controls leads to more exposure to global financial risk.

Table 1 reports the summary statistics of the main variable. Figure 1 shows the summary of the hot money capital control index and the weighted average hot money capital control index of the other countries. According to Panel A of Figure 1, we can observe that the trend of two kinds of policy is volatile and highly correlated. It reveals that one country's policy simultaneously affects itself and other similar countries. Panel B reports the bin chart of two kinds of capital control across countries. We first find that the two indexes are significantly uncorrelated, meaning the capital control policies do not respond to the spillover effect from other countries. This finding is in line with that of Giordani et al. (2017). Meanwhile, although some countries do not implement capital control policies to manage capital flow, they are still affected by other countries' capital control policies.

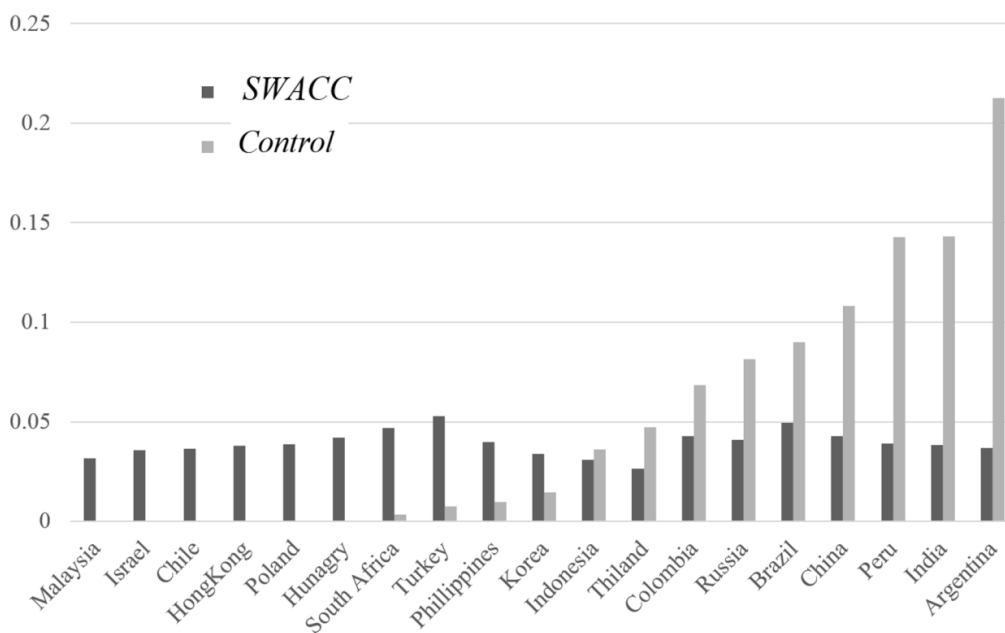
**Table 1. Summary statistics**

Variable	Obs.	Mean	SD	Median
$\mathcal{O}$	489,934	1.81	3.51	0.03
FIFA (%)	3,466	0.02	0.15	0.01
ExComove (%)	3,954	65.23	3.49	65.26
SWACC (Portfolio investment)	3,954	0.04	0.05	0.02
Control (hot money)	3,954	0.05	0.25	0.00
SWACC (overall capital account)	3,954	0.03	0.04	0.02
Control	3,954	0.04	0.20	0.00
Return	3,954	0.01	0.17	0.02
Risk	3,954	0.67	0.40	0.58
Deer	3,954	-0.04	3.00	0.10
Dcbrate (%)	3,954	-0.03	12.24	0.00

**Figure 1. Capital controls on hot money and the SWACC**



Panel A: Yearly trend



Panel B: Nineteen emerging market economies

### 3. Empirical Results

#### 3.1 Fund Weight

We begin by reporting the spillover effect of capital controls onto fund's portfolio allocation weights across countries in Table 2, by estimating specification (4). Columns (1)–(3) report results when the capital control index measures the de jure control on cross-border portfolio investment. Robust standard errors clustered by fund group and country are reported for all

estimates. All the specifications are able to explain more than 30% of the variation in country portfolio weights. All control variables, except for risk, are significant determinants of country portfolio weights, and their coefficients have the expected signs.

**Table 2. Spillover effects of capital controls onto the funds' portfolio allocation weights**

This table reports the spillover effect of capital controls on country portfolio weights, using specification (12). The unit of analysis is a country-fund-month. The dependent variable is the share of a fund group's portfolio allocated to a country. The variable SWACC denotes the similarity-weighted average capital controls of the rest of the world. SWACC\_in and SWACC\_out measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. The variable Control measures the capital controls of own country. In columns (1)–(3) all the index of capital control measures the de jure control on the cross-border portfolio investment, and in columns (4)–(6) all the index of capital control measures the de jure control on all types of cross-border investments through the capital account, including the portfolio investment, FDI and other investments. Appendix B defines the control variables. Country fixed effects, fund group fixed effects, and year and month fixed effects are included. Robust standard errors, clustered by fund group and country, are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

	(1)	(2)	(3)	(4)	(5)	(6)
	$\omega$	$\omega$	$\omega$	$\omega$	$\omega$	$\omega$
	<u>Index of capital controls on portfolio investment</u>			<u>Index of capital controls on all investment</u>		
<i>SWACC</i>	1.021*** (0.249)	0.807*** (0.293)		1.736** * (0.357)	1.649*** (0.419)	
<i>SWACC_in</i>			0.776*** (0.296)			1.769*** (0.450)
<i>SWACC_out</i>			0.946 (0.698)			1.273 (0.907)
<i>Control</i>		-0.0516 (0.0335)	-0.0511 (0.0341)		-0.0209 (0.0450)	-0.0225 (0.0458)
<i>Return</i>	0.175*** (0.0281)	0.175*** (0.0281)	0.175*** (0.0282)	0.173** * (0.0281)	0.173*** (0.0280)	0.174*** (0.0280)
<i>Risk</i>	-0.0012 (0.0348)	-0.0002 (0.0348)	0.000 (0.0345)	0.0006 (0.0348)	0.0010 (0.0348)	0.0003 (0.0345)
<i>Deer</i>	0.0106*** (0.0013)	0.0104*** (0.0013)	0.0104*** (0.0014)	0.0105* ** (0.0013)	0.0105*** (0.0014)	0.0105*** (0.0014)
<i>Cbrate</i>	0.0002** (0.0001)	0.0002** (0.0001)	0.0002** (0.000)	0.0002* * (0.0001)	0.0002** (0.0001)	0.0002** (0.0001)
<i>Constant</i>	1.768*** (0.0407)	1.777*** (0.0413)	1.777*** (0.0411)	1.753** * (0.0408)	1.756*** (0.0415)	1.757*** (0.0414)
Observations	489,934	489,934	489,934	489,934	489,934	489,934
R-squared	0.313	0.313	0.313	0.313	0.313	0.313
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes
Fund group FEs	Yes	Yes	Yes	Yes	Yes	Yes

For our key variable of interest, SWACC, the results show a positive and statistically significant relationship between it and the country portfolio weights, whether or not including the country's capital controls index itself in columns (1) and (2). This finding implies that the portfolio capital controls may have deflected portfolio allocation to other countries with similar economic and regional characteristics. Using the estimate in column (2), the 0.807 coefficient indicates that increasing SWACC by a standard deviation of 0.05, the fund groups correspondingly allocate 0.04 percentage points more to one country. Although this effect seems to be small in the magnitude, it is strong for emerging countries, because it is larger than the median of emerging countries' monthly weight of 0.03. But we find that the capital controls of the recipient country have an insignificant effect on the country's portfolio weights.

According to our theoretical model's predictions, the spillover effect of capital inflow controls should be positive, while that of capital outflow controls should be negative. Column (3) reports results when we further divide the portfolio capital controls into capital inflow controls (SWACC\_in) and capital outflow controls (SWACC\_out). We find SWACC\_in show significant deflection effects on portfolio allocation, which is in line with our model prediction. However, capital outflow controls (SWACC\_out) have no significant spillover effects. This is due to two reasons. First, the fund groups are mainly from developed countries (Jotikasthira et al, 2012). According to the IMF database from 2008 to 2018, for portfolio investment the capital flow from developed countries to emerging economies accounts for 80.8% in the total capital flow to emerging countries, but the capital flow from emerging economies to developed countries only accounts for 11.8% in total capital flow to developed countries. Compared with the capital outflow from emerging economies, the capital inflow to emerging economies is crucial to explain the real global capital flow. Compared with the capital outflow from emerging economies, the capital outflow from developed countries is crucial to explain the capital inflows to emerging economies. Our empirical regressions focus on emerging economies. As a result, only the capital inflow control (measured by SWACC\_in) has the significant spillover effect. Second, the capital outflow controls have subtle effects on net capital flows. On one hand, the capital outflow controls can directly limit the capital outflow. On the other hand, the signal of strengthening controls on capital outflows indirectly leads to smaller capital inflows (Bartolini and Drazen, 1997). Due to contradictory effects, the effect of capital outflow controls on net capital flow should be small. This further explains why the impact of capital outflow controls (measured by SWACC\_out) is not significant.

In columns (4)–(6), the capital control index measures the de jure control on all types of cross-border investments through the capital account, including the portfolio investment, foreign direct investment (FDI), and other investments. We consistently find a positive and statistically significant effect of the overall capital controls and the capital inflow controls, despite a significant increase in its estimated magnitude.

### 3.2 Portfolio Flows at the Country Level: FIFA

If the deflection effect of capital controls on a fund's portfolio share allocation is important, one may expect a deflection effect on the aggregate portfolio flows at the country level. Then we aggregate the portfolio flows across all funds in each period for each country to FIFA and estimate specification (5) to examine the deflection effect of capital controls at the country level.<sup>12</sup> Table 3 presents the results.

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<sup>12</sup>As a robustness check, we reconstruct the measurement of FIFA in two different ways. One is to scale FIFA by GDP, and another is to shorten the window during which we calculate cumulative capital flow from 6 months to 3 months. The results hold. See Table A1 in the appendix for details.

**Table 3. Spillover effects of capital controls onto the funds' portfolio allocation flows**

This table reports the spillover effect of capital controls on country portfolio flows, using specification (13). The unit of analysis is a country-month. The dependent variable is the country-specific portfolio flows of all allocated fund groups. The variable SWACC denotes the similarity-weighted average capital controls of the rest of the world. SWACC\_in and SWACC\_out measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. The variable Control measures the capital controls of own country. In columns (1)–(3) all the index of capital control measures the de jure control on the cross-border portfolio investment, and in columns (4)–(6) all the index of capital control measures the de jure control on all types of cross-border investments through the capital account, including the portfolio investment, FDI, and other investments or whole capital account. Appendix B defines the control variables. Country fixed effects and year-month fixed effects are included. Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>FIFA</i>	<i>FIFA</i>	<i>FIFA</i>	<i>FIFA</i>	<i>FIFA</i>	<i>FIFA</i>
	Index of capital controls on portfolio investment			Index of capital controls on all investment		
<i>SWACC</i>	0.290*** (0.0845)	0.267*** (0.0959)		0.419*** (0.116)	0.398*** (0.130)	
<i>SWACC_in</i>			0.293*** (0.103)			0.452*** (0.144)
<i>SWACC_out</i>			0.136 (0.180)			0.209 (0.253)
<i>Control</i>		-0.00623 (0.00648)	-0.00661 (0.00643)		-0.00562 (0.00920)	-0.00618 (0.00901)
Observations	3,466	3,466	3,466	3,466	3,466	3,466
<i>R</i> -squared	0.397	0.397	0.397	0.397	0.397	0.398
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes

In columns (1) and (2) when the capital control index measures the control on cross-border portfolio investment, we find that an increase in the SWACC significantly increases aggregate portfolio flows to a country. The estimates in column (2) indicate that if SWACC increases by a standard deviation of 0.05 for a country, this country will receive an increase of portfolio inflows by 0.01 percentage points as a ratio of its capital market size. This effect is strong for emerging countries, because it is almost equal to the median of the monthly portfolio inflows. Furthermore, the deflection effect is mainly driven by inflow controls on portfolio investment rather than by outflow controls on portfolio investment as shown in column (3). All these results are in line with our predictions.

When we apply the measure of the overall control on the capital account, we find consistently significant results for the deflection effect of capital controls in portfolio flows in columns (4) and (5) and that of inflow control in column (6), despite a slight increase in the economic magnitudes. But the results still show that capital controls themselves have an insignificant effect on portfolio inflows, consistent with the results of Forbes et al. (2015).

### 3.3 Financial Risk Contagion

So far, we have shown the deflection effect of capital controls in fund group's portfolio shares allocated to countries. A natural question is to what degree does this deflection on the portfolio



flows affect financial risk contagion between capital markets, as the trading of global funds is found to be significantly associated with price effects (Jotikasthira et al., 2012). We next investigate the spillover effect of capital controls onto capital market co-movements between EMEs and developed countries by estimating specification (6). Table 4 reports the results.

**Table 4. Spillover effects of capital controls onto capital market co-movement**

This table reports the spillover effect of capital controls on capital market co-movement, using specification (14). The unit of analysis is a country-year. The dependent variable is co-movement between emerging markets and the developed markets. The variable SWACC denotes the similarity-weighted average capital controls of the rest of the world. SWACC\_in and SWACC\_out measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. The variable Control measures the capital controls of own country. In columns (1)–(3) all the index of capital control measures the de jure control on the cross-border portfolio investment, and in columns (4)–(6) all the index of capital control measures the de jure control on all types of cross-border investments through the capital account, including the portfolio investment, FDI, and other investments or whole capital account. Appendix B defines the control variables. To save space, we have not reported the results of the control variables, but they are available on request. Country fixed effects and year-month fixed effects are included. Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>ExComove</i>	<i>ExComove</i>	<i>ExComove</i>	<i>ExComove</i>	<i>ExComove</i>	<i>ExComove</i>
	<u>Capital controls on portfolio investment</u>			<u>Capital controls on all investment</u>		
<i>SWACC</i>	3.331*** (1.041)	2.416** (1.083)		4.278*** (1.407)	2.639* (1.479)	
<i>SWACC_in</i>			2.517** (1.159)			3.233* (1.721)
<i>SWACC_out</i>			1.943 (2.990)			0.688 (3.655)
<i>Control</i>		-0.224 (0.139)	-0.226 (0.140)		-0.403** (0.174)	-0.411** (0.176)
Observations	3,954	3,954	3,954	3,954	3,954	3,954
<i>R</i> -squared	0.792	0.792	0.792	0.792	0.792	0.792
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes

The results in the first two columns show a significantly positive association between SWACC, when the control index measures controls on portfolio investment, and the co-movement between EMEs and the developed countries. These findings indicate that EME capital controls have significant spillover effect other EMEs by make them exposed to more financial risks from developed countries. The coefficient of 2.416 in column (2) implies that if SWACC of a country increases by a standard deviation of 0.05, the co-movement of the country with the developed countries increases by 1.21%. Besides, the domestic effect of capital controls on financial risk contagion is negative but insignificant.

Column (3) further shows that controls on the portfolio inflow, not the outflow controls, induce a significant spillover effect. This finding implies that if a country tightens its capital controls on portfolio investment, especially on portfolio inflow, it increases the capital market co-movement of the other emerging countries with developed countries, while it has no influence on its own correlation with developed markets.

Columns (4)–(6) reports results when the capital control index captures the controls on the whole capital account, and we obtain consistent findings for the significant and positive spillover effects of capital controls on co-movement, which is also driven by the capital inflow controls, except for two differences. One is that the economic magnitudes of spillover effects are slightly larger in columns (4)–(6) than in columns (1)–(3). Second, and more importantly, the domestic effect of capital controls on financial risk contagion is significantly negative.<sup>13</sup>

### 3.4 Influence of Global Financial Crisis

The 2008 global financial crisis witnessed huge cross boarder capital flows in to and out from EMEs, which induced many EMEs to tighten their capital control policy in order to manage capital flows and the associated macro-impacts and financial risk. One may wonder whether the spillover effects of capital controls might be different in the global financial crisis period from that in non-crisis period. Therefore, we compare the spillover effects of capital controls by interacting the SWACC with a variable of Crisis, which equals to one in 2008 and zero otherwise. The results are shown in Table 5.

The results show that for the spillover effects of capital controls on portfolio allocation weight and portfolio flows in column (1) to (4), the SWACC are still significant but its interaction term with Crisis are insignificant. This implies that there are deflection effects of capital controls on capital flows in both crisis and non-crisis period and they are not significantly different. For capital market co-movement, we also find that SWACC are significant but its interaction term with Crisis are not (in column (5) and (6)). This implies again that the spillover effects of capital controls on capital market co-movement exist in both crisis and non-crisis period and there is no significant difference between these two effects. Moreover, we find that only inflow control generates significant spillover effects and outflow control has insignificant spillover effects in column (2), (4) and (6). Overall, our empirical results in Table 5 illustrate that the spillover effects of capital control on capital flows and the associated capital market co-movement not only exist in crisis period but also in non-crisis period.

**Table 5. Spillover effects of capital controls: influence of global financial crisis**

This table reports the spillover effect of capital controls on capital flows and capital market co-movement during and without crisis period. The unit of analysis is a country-year. The dependent variable is the share of country-specific fund groups' allocated portfolio investment in columns (1) and (2), the portfolio flows to a country from all the fund groups in columns (3) and (4), and the co-movement of emerging markets and developed markets in columns (5) and (6). The variable SWACC denotes the similarity-weighted average capital controls of the rest of the world. SWACC\_in and SWACC\_out measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. The variable Crisis equals to one if it is the year is 2008 and equals to zero otherwise. The variable Control measures the capital controls of own country. All the index of capital control measures the de jure control on the cross-border portfolio investment. Appendix B defines the control variables. To save space, we have not reported the results of the control variables, but they are available on request. Country fixed effects and year-month fixed effects are included. Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	$\omega$	$\omega$	FIFA	FIFA	ExComove	ExComove
SWACC*Crisis	1.644		0.201		1.177	
	(1.416)		(0.241)		(4.983)	

<sup>13</sup>For the capital controls themselves, we find that capital controls on portfolio investment are insignificant, but capital controls on the whole capital account are negatively significant. This indicates that "wall"-type capital controls on the whole account can effectively reduce financial risk contagion, which is consistent with the findings of Forbes et al. (2015), but "gate"-type capital controls on portfolio investment cannot.

<i>SWACC</i>	0.691** (0.301)		0.252** (0.100)		2.330** (1.106)	
<i>SWACC_in*Crisis</i>		1.351 (1.292)		0.188 (0.252)		0.357 (5.156)
<i>SWACC_out*Crisis</i>		12.43 (10.74)		-0.0761 (0.819)		24.37 (29.00)
<i>SWACC_in</i>		0.651** (0.309)		0.277** (0.108)		2.467** (1.181)
<i>SWACC_out</i>		0.858 (0.699)		0.136 (0.182)		1.744 (3.007)
<i>Control</i>	-0.0551* (0.0335)	-0.0550 (0.0340)	-0.00651 (0.00649)	-0.00680 (0.00645)	-0.226 (0.138)	-0.229 (0.140)
Observations	489,970	489,970	3,466	3,466	3,954	3,954
R-squared	0.313	0.313	0.397	0.397	0.792	0.792
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes
Fund group FEs	Yes	Yes	–	–	–	–

#### 4. Robustness Checks

To address concerns about the identification assumptions that could potentially confound our inference and corroborate the findings, we conduct a battery of robustness checks.

##### 4.1 Alternative Measure of Similarity

Above all, we change the definition of similarity and correspondingly construct two alternative index of SWACC. First, we further take institutional environment into account when calculating country-pair similarity, as it is found to be important driven factor of capital flows (Alfaro et al., 2008; Gelos and Wei, 2005; Papaioannou, 2009). We reconstruct an alternative country-pair similarity based on the original four characteristics, corruption and government stability.<sup>14</sup> Empirical results with this new measure of similarity are presented in Table 6. It indicates that SWACC is again found to have increased the fund groups' portfolio share of a country and the total portfolio flows allocated to a country and to have driven up the capital market co-movement with developed countries (see columns 1, 3, and 5).<sup>15</sup> The spillover effects on capital flow and financial risk contagion are mainly driven by the inflow controls (see columns 2, 4 and 6), while capital outflow controls are not significant. These results are in line with our baseline results.

Second, in the baseline regression the risk of local capital markets is one dimension of country-pair similarity and also one of control variables, thus for fear of collinearity we reconstruct country-pair similarity based on the other three characteristics. Empirical results based on the second new measures of SWACC are reported in Table 7. Results show similar results to the baseline models, except a few differences. Domestic effect of capital controls are significant in reducing the share of fund groups' portfolio allocation and decreasing this country's co-movement with developed markets (see column 1, 5 and 6), which is however neither robust

<sup>14</sup>The data is sourced from International Country Risk Guide (ICRG).

<sup>15</sup>We also estimate the spillover effect of similarity-weighted average capital controls on all kinds of capital flow, and the results are nearly in line with those in Table 6 and Table 7. Because of limited space, we do not report the results.

nor as economically significant as the spillover effect of other countries' capital controls.

**Table 6. Robustness check: consider the similarity on institutions**

This table reports the robustness check of the spillover effect of capital controls by including a new dimension of country-pair similarity of institutional environment. The unit of analysis is a country-month. The dependent variable is the share of country-specific fund groups' allocated portfolio investment in columns (1) and (2), the portfolio flows to a country from all the fund groups in columns (3) and (4), and the co-movement of emerging markets and developed markets in columns (5) and (6). The variable SWACC denotes the similarity-weighted average capital controls of the rest of the world. SWACC\_in and SWACC\_out measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. Control measures the capital controls of own country. All the index of capital control measures the de jure control on the cross-border portfolio investment. Appendix B defines the control variables. To save space, we have not reported the results of the control variables, but they are available on request. Country fixed effects, year and month fixed effects are included in all columns, and fund group fixed effects are included in columns (1) and (2). Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	$\omega$	$\omega$	FIFA	FIFA	ExComove	ExComove
SWACC	1.028** (0.478)		0.228** (0.0978)		2.923* (1.646)	
SWACC_in		0.941* (0.485)		0.314*** (0.111)		2.911* (1.713)
SWACC_out		1.264 (0.839)		-0.0596 (0.141)		2.955 (3.413)
Control	-0.0364 (0.0408)	-0.0369 (0.0404)	-0.00581 (0.00682)	-0.00542 (0.00669)	-0.184 (0.152)	-0.184 (0.151)
Observations	489,970	489,970	3,466	3,466	3,954	3,954
R-squared	0.313	0.313	0.396	0.397	0.792	0.792
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes
Fund group FEs	Yes	Yes	–	–	–	–

**Table 7. Robustness check: Alternative measure of similarity**

This table reports the robustness check of the spillover effect of capital controls with alternative measure of country-pair similarity. The unit of analysis is a country-month. The dependent variable is the share of country-specific fund groups' allocated portfolio investment in columns (1) and (2), the portfolio flows to a country from all the fund groups in columns (3) and (4), and the co-movement of emerging markets and developed markets in columns (5) and (6). The variable SWACC denotes the similarity-weighted average capital controls of the rest of the world. SWACC\_in and SWACC\_out measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. Control measures the capital controls of own country. All the index of capital control measures the de jure control on the cross-border portfolio investment. Appendix B defines the control variables. To save space, we have not reported the results of the control variables, but they are available on request. Country fixed effects, year and month fixed effects are included in all columns, and fund group fixed effects are included in columns (1) and (2). Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

VARIABLES	(1) $\omega$	(2) $\omega$	(3) <i>FIFA</i>	(4) <i>FIFA</i>	(5) <i>ExComove</i>	(6) <i>ExComove</i>
<i>SWACC</i>	0.830*** (0.274)		0.245*** (0.0891)		2.382** (1.109)	
<i>SWACC_in</i>		0.592** (0.274)		0.264*** (0.0924)		2.260* (1.195)
<i>SWACC_out</i>		1.872*** (0.690)		0.148 (0.183)		2.949 (2.998)
<i>Control</i>	-0.0538* (0.0325)	-0.0505 (0.0330)	-0.00766 (0.00627)	-0.00788 (0.00624)	-0.232* (0.138)	-0.230* (0.138)
Observations	489,970	489,970	3,466	3,466	3,954	3,954
<i>R</i> -squared	0.313	0.313	0.397	0.397	0.792	0.792
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes
Fund group FEs	Yes	Yes	–	–	–	–

#### 4.2 Alternative Measure of Co-movement

We then change the construction of another key variable, e.g., the lower tail capital market co-movement, to check whether our baseline results are driven by some measurement error. We first replace the monthly lower tail capital market co-movement rate from the median value of daily extreme co-movement rate with the mean value of it. The first three columns of Table 8 present the results. In addition, we calculate the extreme co-movement between EMEs and the MSCI global market index instead of that between EMEs and advanced economics. The last three columns of Table 8 report the results. All the results in Table 8 are consistent with our baseline findings that capital controls have a spillover effect on extreme capital market co-movement.

**Table 8. Robustness check: Alternative measure of co-movement**

This table reports the robustness check of the spillover effect of capital controls using the alternative measure of co-movement, using specification (13). The unit of analysis is a country-month. The dependent variable is the co-movement of emerging markets and developed markets. The variable *SWACC* denotes the similarity-weighted average capital controls of the rest of the world. *SWACC\_in* and *SWACC\_out* measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. *Control* measures the capital controls of own country. The index of the capital control measures the de jure control on the cross-border portfolio investment. Appendix B defines the control variables. To save space, we have not reported the results of the control variables, but they are available on request. Country fixed effects and year and month fixed effects are all included. Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

	(1) <i>ExComove2</i>	(2) <i>ExComove2</i>	(3) <i>ExComove2</i>	(4) <i>ExComove3</i>	(5) <i>ExComove3</i>	(6) <i>ExComove3</i>
<i>SWACC</i>	3.097*** (0.999)	2.311** (1.041)		0.0326*** (0.0106)	0.0236** (0.0110)	
<i>SWACC_in</i>			2.224** (1.102)			0.0244** (0.0117)
<i>SWACC_out</i>			2.716			0.0199

			(2.904)			(0.0310)
<i>Control</i>		-0.192	-0.191		-0.0022	-0.00221
		(0.135)	(0.135)		(0.0014)	(0.0014)
Observations	3,954	3,954	3,954	3,954	3,954	3,954
R-squared	0.805	0.806	0.806	0.762	0.762	0.762
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes

In addition, to complement our baseline analysis, we calculate the daily upper tail extreme co-movement rate between each emerging economy and the advanced country index. The results presented in Table 9 show that capital controls have a significant spillover effects on upper tail extreme capital market co-movement, which are also mainly driven by the capital inflow controls rather than outflow controls. Therefore, our results are robust to different measures of capital market co-movement.

**Table 9. Robustness check: measuring capital market co-movement by upper tail risk**

This table reports the spillover effect of capital controls on upper tail extreme capital market co-movement, using specification (14). The unit of analysis is a country-year. The dependent variable is upper tail extreme co-movement of stock price between emerging market economies and the developed economies. The variable SWACC denotes the similarity-weighted average capital controls of the rest of the world. SWACC\_in and SWACC\_out measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. The variable Control measures the capital controls of own country. In columns (1)–(3) all the index of capital control measures the de jure control on the cross-border portfolio investment, and in columns (4)–(6) all the index of capital control measures the de jure control on all types of cross-border investments through the capital account, including the portfolio investment, FDI, and other investments or whole capital account. Appendix B defines the control variables. To save space, we have not reported the results of the control variables, but they are available on request. Country fixed effects and year-month fixed effects are included. Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Upper tail Risk</i>	<i>Upper tail Risk</i>	<i>Upper tail Risk</i>	<i>Upper tail Risk</i>	<i>Upper tail Risk</i>	<i>Upper tail Risk</i>
	Capital controls on portfolio investment			Capital controls on all investment		
<i>SWACC</i>	0.114***	0.100**		0.153***	0.118**	
	(0.0359)	(0.0390)		(0.0490)	(0.0532)	
<i>SWACC_in</i>			0.0887**			0.114**
			(0.0397)			(0.0576)
<i>SWACC_out</i>			0.153			0.127
			(0.105)			(0.130)
<i>Control</i>		-0.00349	-0.00330		-0.00875	-0.00871
		(0.00436)	(0.00437)		(0.00548)	(0.00554)
Observations	3,954	3,954	3,954	3,954	3,954	3,954
R-squared	0.772	0.772	0.772	0.772	0.772	0.772
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes

### 4.3 Exclude Mainland China

As some literature stresses, mainland China may play an important role in the externality effect of capital controls (Forbes et al., 2016), which may lead to concerns that the baseline results are mainly driven by mainland China. In this regard, we exclude mainland China when constructing the similarity-weighted capital control index (SWACC\_exCN, SWACC\_in\_exCN, SWACC\_out\_exCN), drop the observations of mainland China, and repeat our analysis in Table 8 to check whether the spillover effect of capital controls is still meaningful. Results in Table 10 show a similar results, despite even larger magnitudes.

**Table 10. Robustness check: Excluding China**

This table reports the robustness check of the spillover effect of capital controls when excluding the influence of China. The unit of analysis is a country-month. The dependent variable is the share of country-specific fund groups' allocated portfolio investment in columns (1) and (2), the portfolio flows to a country from all the fund groups in columns (3) and (4), and the co-movement of emerging markets and developed markets in column (5) and (6). The variable SWACC\_exCN denotes the similarity-weighted average capital controls of the rest of the world, while excluding China. SWACC\_in\_exCN and SWACC\_out\_exCN measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, while excluding China, respectively. Control measures the capital controls of own country. The index of the capital control measures the de jure control on the cross-border portfolio investment. Appendix B defines the control variables. To save space, we have not reported the results of the control variables, but they are available on request. Country fixed effects and year and month fixed effects are included in all columns, and fund group fixed effects are included in columns (1) and (2). Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

	(1)	(2)	(3)	(4)	(5)	(6)
	$\omega$	$\omega$	FIFA	FIFA	ExComove	ExComove
<i>SWACC_exCN</i>	1.024*** (0.298)		0.306*** (0.106)		3.049*** (1.151)	
<i>SWACC_in_exCN</i>		1.077*** (0.298)		0.335*** (0.115)		3.310*** (1.234)
<i>SWACC_out_exCN</i>		0.771 (0.728)		0.157 (0.195)		1.798 (3.205)
<i>Control</i>	-0.0207 (0.0351)	-0.0215 (0.0358)	-0.00287 (0.00741)	-0.00320 (0.00736)	-0.194 (0.153)	-0.198 (0.155)
Observations	465,397	465,397	3,285	3,285	3,741	3,741
R-squared	0.296	0.296	0.398	0.399	0.797	0.797
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes
Fund group FEs	Yes	Yes	–	–	–	–

### 4.4 Extreme Flows

Existing research argues that the financial risk contagion is more likely to take place under the extreme conditions because of long tail distributions of financial variables (Agarwal and Naik, 2004). The volatility of the global financial market is associated with the frequency of cross-country capital flows. Therefore, we can predict that capital flows and risk contagion is more sensitive to the deflection effects of capital control policy when capital flows are extremely high or low. To test this hypothesis, we re-estimate the heterogonous impact of SWACC on international fund portfolio weights, FIFA, and capital market co-movement by introducing an interaction term of extreme flow. We first sort the FIFA and then define the top quartile of FIFA

as the extreme high capital flow (a dummy named HiFIFA); the bottom quartile of FIFA as the extreme low capital flow (a dummy named LowFIFA); and the rest as normal capital flow (a dummy named MiFIFA).

Table 11 reports the empirical results of the spillover effects of capital controls through extreme flows. Columns (1), (3), and (5) consider the overall capital controls on all kinds of capital flow, whereas columns (2), (4), and (6) separate the capital control index into inflow control and outflow control. From the table, we can find that the impacts of SWACC on the country weight of the international fund group, FIFA, and capital market co-movement are more pronounced when the capital flow is extremely high or low. The results are consistent with our prediction. In the extreme circumstance, a minor change of capital control policy can bring out a large impact due to the investor's confidence and foresight. For fear of the subsequent capital controls of other recipient countries and the sharp crash of stock market, investors immediately respond to changes in the capital control policy. As a consequence, the deflection effect of capital controls is strengthened.

**Table 11. Robustness check: Spillover effects of capital controls through extreme flows**

This table reports the spillover effect of capital controls on capital flows and capital market co-movement. The unit of analysis is a country-month. The dependent variable is the share of country-specific fund groups' allocated portfolio investment in columns (1) and (2), the portfolio flows to a country from all the fund groups in columns (3) and (4), and the co-movement of emerging markets and developed markets in column (5) and (6). The variable SWACC denotes the similarity-weighted average capital controls of the rest of the world. SWACC\_in and SWACC\_out measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. Control measures the capital controls of own country. In columns (1)–(3) all the index of capital control measures the de jure control on the cross-border portfolio investment, and in columns (4)–(6) all the index of capital control measures the de jure control on all types of cross-border investments through the capital account, including the portfolio investment, FDI, and other investments or whole capital account. HiFIFA, MiFIFA, and Low FIFA are dummy variables defined as the top quartile of FIFA to measure extreme high capital flow, the bottom quartile of FIFA to measure extreme low capital flow, and the rest to measure normal capital flow. Appendix B defines the control variables. Country fixed effects and year and month fixed effects are included in all columns, and fund group fixed effects are included in columns (1) and (2). Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

	(1)	(2)	(3)	(4)	(5)	(6)
	$\omega$	$\omega$	FIFA	FIFA	ExComove	ExComove
SWACC*HiFIFA	2.972*** (0.474)		0.506*** (0.145)		3.512** (1.573)	
SWACC *MiFIFA	0.269 (0.293)		0.00640 (0.0534)		2.084* (1.098)	
SWACC *LowFIFA	2.264*** (0.484)		0.350*** (0.0794)		2.603* (1.548)	
SWACC_in*HiFIFA		3.684*** (0.519)		0.445*** (0.146)		6.064*** (1.702)
SWACC_in *MiFIFA		0.374 (0.308)		-0.0105 (0.0594)		1.756 (1.214)
SWACC_in *LowFIFA		2.642*** (0.528)		0.280*** (0.0915)		2.694* (1.633)
SWACC_out		0.771 (0.705)		0.410*** (0.132)		1.521 (2.992)
Control	-0.0176 (0.0351)	-0.0157 (0.0358)	0.00252 (0.0048)	0.00260 (0.0049)	-0.221 (0.139)	-0.207 (0.140)
HiFIFA	-0.13*** (0.0324)	-0.120*** (0.0313)	0.128*** (0.0054)	0.134*** (0.0049)	-0.240** (0.0998)	-0.31*** (0.0941)
LowFIFA	0.176***	0.192***	-0.14***	-0.14***	0.0929	0.0960



	(0.0319)	(0.0303)	(0.0060)	(0.0055)	(0.113)	(0.107)
Observations	489,934	489,934	3,466	3,466	3,954	3,954
R-squared	0.314	0.314	0.612	0.611	0.792	0.793
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year & month FEs	Yes	Yes	Yes	Yes	Yes	Yes
Fund group FEs	Yes	Yes	–	–	–	–

## 5. Conclusion

A growing evidence indicates that capital controls in one country will shift capital flows to other countries in a deflection effect and generate multinational externalities on the welfare in other countries. Yet, to date, there has been little evidence on whether capital controls can increase other countries' capital market co-movement with the global market associated with capital flows.

This study estimates the deflection effect of capital controls on capital flows and the explicit spillover effect on financial risk contagion. Both the simple theoretical model and cross-country empirical analysis show the deflection effect of one country's capital controls on capital flows of other countries with regional and economic similarities, as well as the spillover effect on extreme capital market co-movements of EMEs with the developed countries. Meanwhile, we find little evidence of the domestic effect of capital controls in reducing both portfolio capital inflows and financial risk contagion.

Together, these findings show strong evidence on multilateral effect of capital controls in EMEs, which is more important than generally thought, and non-ignorable for policy makers. We find clear evidence that tightening capital control can increase other similar countries exposure to global financial risk via capital flows. These substantial externalities call for an important role of multilateral coordination in using capital controls in order to incorporate these externalities.

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### Appendix A: the model

Based on a seminal work of Giordani et al. (2017), we build a two-period multicountry model to uncover the spillover effect of capital controls onto capital flow and capital price co-movement. In the model economy, there is a set  $S$  consisting of finite countries indexed by  $i$ . In the first period, the identical representative household in the country  $i$  has an endowment  $y_1^i$ , consumes  $c_1^i$ , and invests  $k^i$  with local capital price of  $q^i$ . Then  $flow^i \equiv q^i k^i + c_1^i - y_1^i$  is the trade deficit (surplus) or net capital inflow (outflow) of country  $i$  if it is positive (negative). The net capital inflow (outflow) exists as a formation of loan demand (supply). The world gross interest rate is  $R$ , which will be determined later. In the second period, the identical representative household in the country  $i$  obtains an output,  $A^i (k^i)^\alpha (l^i)^{1-\alpha}$ . The country pays back the loan and consumes the rest of the output,  $c_2^i$ . The utility function of representative household in country  $i$  is

$$\log(c_1^i) + \beta^i \log(c_2^i),$$

where  $\beta^i$  is the discount factor of country  $i$ . The budget constraint is

$$(q^i k^i + c_1^i - y_1^i)(1 + \tau^i)R = \pi^i + w^i l^i - c_2^i + T^i. \quad (7)$$

where  $w^i$  is wage rate and  $l^i$  is labor.  $w^i l^i$  denotes the wage income and  $\pi^i = A^i (k^i)^\alpha (l^i)^{1-\alpha} - w^i l^i$  is the profit of production.  $\tau^i$  is capital inflow tax (or outflow subsidy) rate charged by country  $i$ 's government, and  $T^i$  is a lump-sum transfer, which is defined as

$$T^i \equiv (q^i k^i + c_1^i - y_1^i) \tau^i R. \quad (8)$$

First-order conditions on  $k^i$ ,  $c_1^i$ , and  $c_2^i$  yield

$$\frac{1}{c_1^i} = \beta^i R (1 + \tau^i) \frac{1}{c_2^i} \quad (9)$$

and

$$q^i (1 + \tau^i) R = \alpha A^i (k^i)^{\alpha-1} (l^i)^{1-\alpha}. \quad (10)$$

Equation (10) is the demand curve of capital. To endogenize the local capital price  $q^i$ , following Dornbusch et al.(1980), Huang et al. (2017), and Devereux et al. (2019) we assume that capital supply and labor supply are fixed, that is,  $l^i \leq 1$ , and  $k^i \leq \bar{k}^i$ , where the capped capital supply  $\bar{k}^i$  is a constant. Equations (7) and (8) yield the resource constraint of country  $i$ :

$$(q^i \bar{k}^i + c_1^i - y_1^i)R = A^i (\bar{k}^i)^\alpha - c_2^i. \quad (11)$$

If the world gross interest rate,  $R$ , is given, then (9), (10), and (11) can have

$$c_1^i = \frac{1}{1 + \beta^i (1 + \tau^i)} \left[ \left( 1 - \frac{\alpha}{1 + \tau^i} \right) \frac{A^i (\bar{k}^i)^\alpha}{R} + y_1^i \right]. \quad (12)$$

The capital flow can be expressed as

$$flow^i = \frac{1}{1 + \beta^i (1 + \tau^i)} y_1^i + \frac{1 + \alpha \beta^i}{1 + \beta^i (1 + \tau^i)} \frac{A^i (\bar{k}^i)^\alpha}{R} - y_1^i. \quad (13)$$

The equilibrium of the world loan market in the first period is  $\sum_{i \in S} (flow^i) = 0$ , or

$$\sum_{i \in S} \left( \frac{1}{1 + \beta^i (1 + \tau^i)} y_1^i + \frac{1 + \alpha \beta^i}{1 + \beta^i (1 + \tau^i)} \frac{A^i (\bar{k}^i)^\alpha}{R} - y_1^i \right) = 0. \quad (14)$$

Equation (14) determines the world gross interest rate,  $R$ .

Let us focus on a net inflow country  $i$ . We first consider the impact of one country's capital control policy on the world interest rate.

**Lemma A1:** If arbitrary one country, except country  $i$  (denoted by  $j$ ), sets a higher inflow tax  $\tau^j$ , then the world interest rate  $R$  decreases, or  $dR/d\tau^j < 0$ .

See Online Appendix A1 for the proofs. Lemma 1 is straightforward. Capital controls on inflow may lead to a decline in total capital demand in the international financial market, or a subsidy on outflow may lead to a surge in total supply, so the world interest rate will decrease.

For the influence of one country's capital control on capital flows into other countries. Combining  $dR/d\tau^j < 0$  in Lemma A1 and  $dflow^i/dR < 0$  implied in Equation (13), we could easily obtain proposition A1.<sup>16</sup>

**Proposition A1:** If any other country  $j$  sets a higher inflow tax,  $\tau^j$ , then country  $i$ 's net inflow increases, or  $dflow^i/d\tau^j > 0$ , which is referred as the deflection effect.

The intuition is straightforward: a tightening of capital inflow in country  $j$  decreases the world interest rate, leads to higher demand of capital for other countries to invest, and, hence, increases capital inflows to those countries.

To further investigate how capital control policy affects co-movement of capital price, we assume there is a shock  $\varepsilon$  on capital supply  $\bar{k}^m$ , where  $\varepsilon \sim f(0, \sigma^2)$  is i.i.d.<sup>17</sup> This is to say,

<sup>16</sup>The literature argues that international financing cost is related to similarity of country characteristics (Bell et al, 2012; Gu et al., 2019). If we assume the financing cost of country  $i$  decreases in the average similarity of country characteristics ( $s^i$ ), e.g.,  $R^i = R/e(s^i)$ , with  $e'(s^i) > 0$ , **Proposition A1** still

hold. Moreover, we find that the deflection effect is stronger when the average similarity is higher. See Online Appendix A3 for the proofs.

<sup>17</sup>In this paper, we focus on capital controls and capital price co-movement, so we consider a capital shock. Consistent with the real data, the sign of correlation of  $q$  is positive under the capital shock. In our sample, the mean of the correlation on capital returns is 0.42.

the capital supply in country m should be  $\bar{k}^m(1 + \varepsilon)$ .

Let's consider a negative shock,  $\varepsilon < 0$ , on country m's capital supply,  $\bar{k}^m$ . The capital price in country m ( $q^m$ ) intermediately increases, whereas the total value of investment in the first period,  $q^m(1 + \varepsilon)\bar{k}^m$ , still decreases according to Equation (10). Therefore, owing to the resource constraint, the capital outflow of country m increases and the world interest rate decreases. As the world interest rate declines, country  $i$ 's local capital price rises according to Equation (10). As a consequence, we can observe the capital prices of countries  $i$  and m positively co-moving under the capital supply shock of country m. In the online Appendix A2, we prove the inflow tax would increase the capital price covariance. Hence, we have the following Proposition:

**Proposition A2:** Around the steady state, if any other net inflow country j sets a higher inflow tax  $\tau^j$ , then the capital price covariance between net inflow country  $i$  and country m will increase,  $dCov(q^i, q^m)/d\tau^j > 0$ .

## Online Appendix

### Online Appendix A: Proofs of the Model

#### A1. Proof of Lemma A1

Define the function

$$F(R; \tau^j) \equiv \sum_{i \in \mathcal{S}} \left( \frac{1}{1 + \beta^i (1 + \tau^i)} y_1^i + \frac{1 + \alpha \beta^i}{1 + \beta^i (1 + \tau^i)} \frac{A^i(k^i)^\alpha}{R} - y_1^i \right) = 0 \quad (15)$$

The previous equation implies  $\partial F / \partial R < 0$  and  $\partial F / \partial \tau^j < 0$ . According to the implicit function derivation theorem, we have:

$$\frac{dR}{d\tau^j} = - \frac{\partial F / \partial R}{\partial F / \partial \tau^j} < 0 \quad (16)$$

Hence, Lemma 1 holds.

#### A2. Proof of Proposition A2

In order to prove how inflow tax affect the capital price co-movement, there are two steps.

First, we show that the capital price covariance are positive. We perform a first-order expansion around the steady state  $q^i \approx \left. \frac{dq^i}{dk^m} \right|_{\varepsilon=0} \bar{k}^m \varepsilon + \bar{q}^i$  and  $q^m \approx \left. \frac{dq^m}{dk^m} \right|_{\varepsilon=0} \bar{k}^m \varepsilon + \bar{q}^m$ , where  $\bar{q}^i$  and  $\bar{q}^m$  is the steady state of  $q^i$  and  $q^j$ , respectively. Then the capital price covariance can be simplified as

$$Cov(q^i, q^m) \approx \left. \frac{dq^i}{dk^m} \right|_{\varepsilon=0} \left. \frac{dq^m}{dk^m} \right|_{\varepsilon=0} \sigma^2 \quad (17)$$

According to Equation (10), we have

$$\frac{dR}{dk^m} = \frac{\frac{1 + \alpha\beta^m}{1 + \beta^m(1 + \tau^m)} \alpha A (\bar{k}^m)^{\alpha-1}}{\sum_i \left[ y_1^i - \frac{1}{1 + \beta^i(1 + \tau^i)} y_1^i \right]} > 0 \quad (18)$$

$\frac{dq^i}{dk^m}$  and  $\frac{dq^m}{dk^m}$  satisfy:

$$\frac{dq^i}{dk^m} = -\frac{\alpha A^i (k^i)^{\alpha-1}}{(1 + \tau^i)} \frac{1}{R^2} \frac{dR}{dk^m} < 0$$

$$\frac{dq^m}{dk^m} = \frac{\alpha A^i}{(1 + \tau^i)} \left[ -(\bar{k}^m)^{\alpha-1} \frac{1}{R^2} \frac{dR}{dk^m} - (1 - \alpha)(\bar{k}^m)^{\alpha-2} \frac{1}{R} \right] < 0$$

Hence, the capital price covariance are positive.

Second, we show that how the inflow tax affect the capital price co-movement.

$$\frac{dCov(q^i, q^m)}{d\tau^j} \approx \sigma^2 \left[ \frac{d^2 q^i}{dk^m d\tau^j} \frac{dq^m}{dk^m} + \frac{d^2 q^m}{dk^m d\tau^j} \frac{dq^i}{dk^m} \right]_{\epsilon=0}.$$

where

$$\frac{d^2 q^i}{dk^m d\tau^j} = -\frac{\alpha A^i (k^i)^{\alpha-1}}{(1 + \tau^i)} \left[ -\frac{2}{R^3} \frac{dR}{d\tau^j} \frac{dR}{dk^m} + \frac{1}{R^2} \frac{d^2 R}{dk^m d\tau^j} \right] < 0$$

$$\frac{dq^j}{dk^m d\tau^j} = -\frac{\alpha A^i}{(1 + \tau^i)} \left[ (\bar{k}^m)^{\alpha-1} \left[ -\frac{2}{R^3} \frac{dR}{d\tau^j} \frac{dR}{dk^m} + \frac{1}{R^2} \frac{d^2 R}{dk^m d\tau^j} \right] - (1 - \alpha)(\bar{k}^m)^{\alpha-2} \frac{1}{R^2} \frac{dR}{d\tau^j} \right] < 0$$

The proofs of the previous two equations less than zero base on the following equation

$$\left[ -\frac{2}{R^3} \frac{dR}{d\tau^j} \frac{dR}{dk^m} + \frac{1}{R^2} \frac{d^2 R}{dk^m d\tau^j} \right] > 0 \quad (19)$$

Thus, around the stead state, we have

$$\frac{dCov(q^i, q^m)}{d\tau^j} > 0.$$

**Proof of Eq.(19):**

First, we calculate

$$\frac{dR}{d\tau^j} = \left[ \frac{(1+\alpha\beta^j)A^j(k^j)^\alpha}{\sum_i \left[ y_1^i - \frac{1}{1+\beta^i(1+\tau^i)} y_1^i \right]} + \frac{y_1^j \sum_i \frac{1+\alpha\beta^i}{1+\beta^i(1+\tau^i)} A^i(k^i)^\alpha}{\left\{ \sum_i \left[ y_1^i - \frac{1}{1+\beta^i(1+\tau^i)} y_1^i \right] \right\}^2} \right] \frac{-\beta^j}{(1+\beta^j(1+\tau^j))^2}$$

$$\frac{d^2R}{d\tau^j dk^m} = \frac{y_1^j \frac{1+\alpha\beta^m}{1+\beta^m(1+\tau^m)} \alpha A^m(k^m)^{\alpha-1}}{\left\{ \sum_i \left[ y_1^i - \frac{1}{1+\beta^i(1+\tau^i)} y_1^i \right] \right\}^2} \frac{-\beta^j}{(1+\beta^j(1+\tau^j))^2}$$

According to above two equations and Eq. (18), we have

$$\frac{2}{R} \frac{dR}{d\tau^j} \frac{dR}{dk^m} - \frac{d^2R}{dk^m d\tau^j} = \left\{ -y_1^j - \frac{2(1+\alpha\beta^j)A^j(k^j)^\alpha}{R} \right\} \frac{\frac{1+\alpha\beta^m}{1+\beta^m(1+\tau^m)} \alpha A^m(k^m)^{\alpha-1}}{\left\{ \sum_i \left[ y_1^i - \frac{1}{1+\beta^i(1+\tau^i)} y_1^i \right] \right\}^2} \frac{\beta^j}{(1+\beta^j(1+\tau^j))^2} < 0$$

Then, we have the equation (19):

$$-\frac{2}{R^3} \frac{dR}{d\tau^j} \frac{dR}{dk^m} + \frac{1}{R^2} \frac{d^2R}{dk^m d\tau^j} = -\frac{1}{R^2} \left[ \frac{2}{R} \frac{dR}{d\tau^j} \frac{dR}{dk^m} - \frac{d^2R}{dk^m d\tau^j} \right] > 0$$

### A3. Proof of model with similarity

Let  $s^i$  denote the country  $i$ 's average similarity to other countries. Then, budget constraint is

$$(q^i k^i + c_1^i - y_1^i)(1+\tau^i)R / e(s^i) = A^i(k^i)^\alpha - c_2^i + T^i. \quad (20)$$

Where,  $1/e(s^i)$  is a cost function faced by country  $i$ ,  $e'(s^i) > 0$ .  $T^i$  is a lump-sum transfer, which is defined as

$$T^i \equiv (q^i k^i + c_1^i - y_1^i) \tau^i R / e(s^i). \quad (21)$$

First-order conditions (FOCs) on  $k^i$ ,  $c_1^i$ , and  $c_2^i$  yield

$$\frac{1}{c_1^i} = \beta^i (1+\tau^i) \frac{1}{c_2^i} R / e(s^i) \quad (22)$$

and

$$q^i (1+\tau^i) R = \alpha A^i e(s^i) (k^i)^{\alpha-1}. \quad (23)$$

Thus, net capital inflow can be expressed as,

$$flow^j = \frac{1}{1 + \beta^i(1 + \tau^i)} y_1^i + \frac{1 + \alpha\beta^i}{1 + \beta^i(1 + \tau^i)} \frac{A^i e(s^i) (\bar{k}^i)^\alpha}{R} - y_1^i \quad (24)$$

The equilibrium of the world loan market in the first period is  $\sum_{i \in S} (flow^i) = 0$ , or

$$\sum_{i \in S} \left( \frac{1}{1 + \beta^i(1 + \tau^i)} y_1^i + \frac{1 + \alpha\beta^i}{1 + \beta^i(1 + \tau^i)} \frac{A^i e(s^i) (\bar{k}^i)^\alpha}{R} - y_1^i \right) = 0. \quad (25)$$

The world interest rate  $R$  satisfies:

$$R = \frac{\sum_i \frac{1 + \alpha\beta^i}{1 + \beta^i(1 + \tau^i)} A^i e(s^i) (k^i)^\alpha}{\sum_i \left[ y_1^i - \frac{1}{1 + \beta^i(1 + \tau^i)} y_1^i \right]} \quad (26)$$

which implies that the impact of inflow tax  $\tau^j$  on the world interest rate equals to:

$$\frac{dR}{d\tau^j} = \frac{(1 + \alpha\beta^j) A^j e(s^j) (k^j)^\alpha \sum_i \left[ y_1^i - \frac{1}{1 + \beta^i(1 + \tau^i)} y_1^i \right] + y_1^j \sum_i \frac{1 + \alpha\beta^i}{1 + \beta^i(1 + \tau^i)} A^i e(s^i) (k^i)^\alpha}{\left\{ \sum_i \left[ y_1^i - \frac{1}{1 + \beta^i(1 + \tau^i)} y_1^i \right] \right\}^2} \frac{-\beta^j}{(1 + \beta^j(1 + \tau^j))^2}$$

Let  $X^i = \frac{1 + \alpha\beta^i}{1 + \beta^i(1 + \tau^i)} A^i (\bar{k}^i)^\alpha > 0$ . Then, we know:

$$\frac{dflow^i}{dR} = -X^i e(s^i) \frac{1}{R^2}$$

Hence, we have:

$$\begin{aligned} \frac{dflow^j}{d\tau^j} &= \frac{dflow^j}{dR} \frac{dR}{d\tau^j} \\ &= \frac{X^j e(s^j) (1 + \alpha\beta^j) A^j e(s^j) (k^j)^\alpha \sum_i \left[ y_1^i - \frac{1}{1 + \beta^i(1 + \tau^i)} y_1^i \right] + y_1^j \sum_i X^i e(s^i)}{R^2 \left\{ \sum_i \left[ y_1^i - \frac{1}{1 + \beta^i(1 + \tau^i)} y_1^i \right] \right\}^2} \frac{\beta^j}{(1 + \beta^j(1 + \tau^j))^2} \end{aligned}$$

which implies that due to  $e'(s^i) > 0$ ,  $\frac{dflow^j}{d\tau^j}$  will increase as  $s^i$  increases. Hence, the deflection effect is stronger when the average similarity is higher.

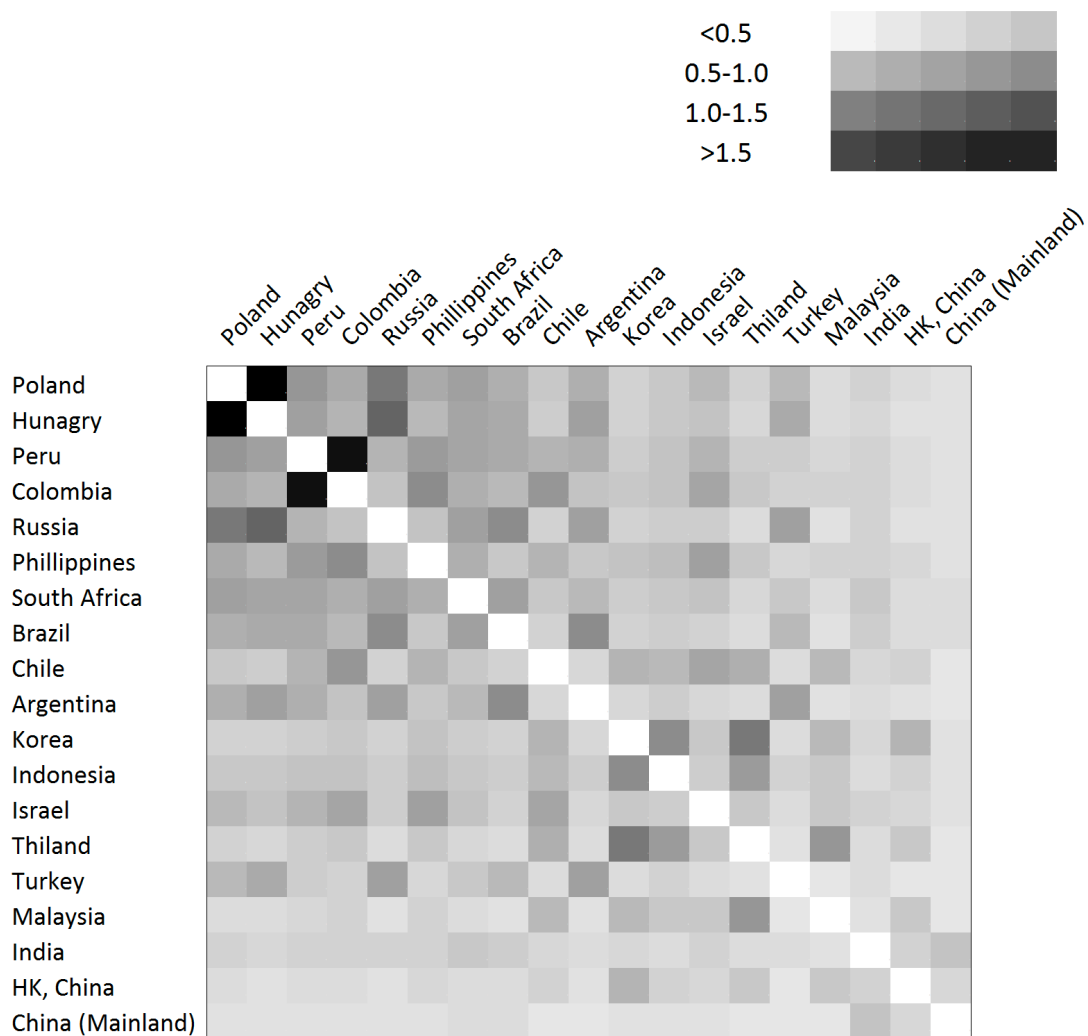


### Online Appendix B. Data Definitions

- $\omega$  (%): The actual country and regional weightings for each fund group, expressed as a percentage, at the end of month
- FIFA (%): Flow-implied fund allocation changes scaled by the market size of each country, expressed as a percentage. FIFA is calculated by 
$$FIFA_{c,m} = \sum_i (f_{i,t}^* \times \omega_{i,c,m-1} \times TNA_{i,m-1})$$
, where  $f_{i,m}^* = \sum_{s=1}^6 f_{i,m+s-1}$  is the sum of capital flows experienced by fund  $i$  over the two quarters after and including period  $t$
- ExComove (%): Extreme co-movement by the dynamic symmetrized Joe-Clayton Copula method (Patton, 2006; Huang et al., 2019) based on the daily return rate of each country's capital market and daily return rate of developed country stock market index (all from MSCI indices). We use the Copula method to calculate the daily lower tail extreme co-movement rate between each emerging market country  $c$  and the developed country index. Finally, we use the median value in 1 calendar month as the extreme co-movement rate of country  $c$  in month  $m$
- Control*: The capital control index on portfolio investment or the capital control index on all kinds of capital flow sourced from Gurnain et al. (2018)
- SWACC*: The similarity-weighted average of the capital control index on portfolio investment or the weighted average degree of the capital control index on all kinds of capital flow. The weight is the country-pair similarity. Similarity is calculated by the multiplicative inverse of the Euler distance:  $Similarity_{c,d} = \left[ \sum_i (\chi_c^i - \chi_d^i)^2 \right]^{-\frac{1}{2}}$ , where  $\chi$  is standardized country characteristics, including region, market size, trade openness, and capital market risk
- SWACC\_in*: The similarity-weighted average of the capital inflow control index on portfolio investment or the weighted average degree of the capital inflow control index on all kinds of capital flow
- SWACC\_out*: The similarity-weighted average degree of the capital outflow control index on portfolio investment or the weighted average degree of the capital outflow control index on all kinds of capital flow
- Return*: Month-average daily return rate of each country's capital market. The daily return rate is the logarithm difference of the closing price of the stock market index (MSCI)
- Risk*: The risk of each country's capital market, and the standard deviation of the daily return rate of each country's capital market
- Deer*: The first difference of the real effective exchange rate of each country
- Dcbrate* (%): The first difference of each country's central bank interest rate

Online Appendix C

Figure C1. Matrix of country-pair similarity



**Table C1. Robustness check: Alternative measure of FIFA**

This table reports the robustness check on the spillover effect of capital controls on country-portfolio flows, using specification (13). The unit of analysis is a country-month. The dependent variables are alternative measure of the portfolio flows of all fund groups allocated to a country. The variable *SWACC* denotes the similarity-weighted average capital controls of the rest of the world. *SWACC\_in* and *SWACC\_out* measure the similarity-weighted average capital inflow and outflow controls of the rest of the world, respectively. *Control* measures the capital controls of own country. In columns (1)–(3), all the index of capital control measures the de jure control on the cross-border portfolio investment, and in columns (4)–(6) all the index of capital control measures the de jure control on all types of cross-border investments through the capital account, including the portfolio investment, FDI and other investments or whole capital account. Appendix B defines the control variables. Country fixed effects and year-month fixed effects are included. Robust standard errors are presented in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>FIFA2</i>	<i>FIFA2</i>	<i>FIFA2</i>	<i>FIFA3</i>	<i>FIFA3</i>	<i>FIFA3</i>
<i>SWACC</i>	0.746*** (0.219)	0.413** (0.174)		0.197*** (0.0668)	0.194** (0.0768)	
<i>SWACC_in</i>			0.525*** (0.196)			0.189** (0.0794)
<i>SWACC_out</i>			-0.111 (0.532)			0.217 (0.139)
<i>Control</i>		-0.0809** (0.0320)	-0.0828** (0.0326)		-0.000877 (0.00482)	-0.000811 (0.00480)
Observations	3,705	3,705	3,705	3,466	3,466	3,466
<i>R</i> -squared	0.267	0.272	0.272	0.451	0.451	0.451
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year-month FEs	Yes	Yes	Yes	Yes	Yes	Yes

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