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China's Economy, the NPC and CPPCC

Government Report Releases Signs of High-Quality Development*

By Yao Yang *

On Tuesday morning, Premier Li Qiang delivered the government work report, summarizing the government's work in 2023 and outlining the government's objectives for 2024. The report aligns with the principles of the Central Economic Work Conference held at the end of last year, emphasizing the prioritization of economic growth as a key government focus.

Many foreign observers claim they find it difficult to understand China's policy-making because the country's economic policy seems to have no clear goals.

In advanced economies, the government's ability to manage the economy is very much limited to monetary and fiscal policies whose goals are well defined — monetary policy mainly helps keep prices stable and employment rate high, while fiscal policy is mainly aimed at managing demand. But the Chinese government has more responsibilities than its Western counterparts, not least because it has to fulfill different goals and formulates its economic policy for a year or a five-year plan period accordingly.

China's economic development model is in transition. In the past, exports and domestic investments were the main economic growth drivers. But over the past decade, the government has been promoting high-quality development — development that does not prioritize high-speed growth and, instead, promotes domestic consumption- and innovation-driven development.

Of late, the government has also begun promoting a new means to boost productivity — new quality productive forces, which needs to increase total factor productivity. As such, the speed of capital accumulation retreats to a secondary importance.

Other changes have followed these developments. For example, the central authorities have become more alert to debt. They have learned lessons from the consequences of the stimulus package of 4 trillion yuan ($586 billion at the 2008 exchange rate), which was announced right after the global financial crisis broke out in 2008.

That stimulus did accelerate growth but it also increased local government debt. And the Chinese people, by nature, do not like debt. They prefer tightening their belts to borrowing from others in times of difficulty. The Chinese government shares the same philosophy.

The Chinese authorities have also learned lessons from the recent record inflation in Western economies. During the COVID-19 pandemic, Western governments handed out large amounts of cash to families and companies, as well as increased their expenditure. This led to rising inflation. And the Chinese people also dislike inflation, prompting the government to take measures to keep inflation low.

Controlling local governments' debt has thus become one of the key objectives of the central government in recent years. The central authorities are determined to not bail out local governments. Heavily indebted provinces are not allowed to borrow anew, because it would further increase their debt. In response to local budget shortfalls, local governments have been asked to "live a tight life".

The central government's policy on the real estate sector follows the same logic. Many China watchers tend to liken today's China to Japan of the 1990s, because like Japan in the 1990s, China's real estate sector has declined sharply since mid-2021. But such China watchers miss the point, for they fail to understand the causes of the real estate sector's decline. The decline is not a consequence of burst bubbles, but a result of the central government's deliberate move to control the disorderly expansion of the sector, because the top authorities are worried about rising debts — the real estate sector consumes a lot of resources and creates too much debt.

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* This article appeared on China Daily on March 5, 2024.
* Yao Yang, Liberal Arts Chair Professor at Peking University.

China's short-term economic performance depends on the importance the central authorities attach to different goals. Over the past several years, it has become clear that the central government does not attach the same importance to high-speed growth that it did in the past. The Central Economic Work Conference in December 2023 signaled a shift toward growth, though, for it called for government policy to "seek progress while maintaining stability" and "establish the new before abolishing the old".

"Stability" here means stabilizing growth, and "to establish the new" means laying a sound economic foundation for high-quality development.

Premier Li Qiang reiterated the government's commitment to this objective in the government work report, which sets this year's growth target at around 5 percent. While this doesn't appear to be an aggressive target, given that it is consistent with last year's, the planned fiscal and monetary policies are evidently more aggressive than those implemented last year. The central government deficit will increase by 180 billion yuan compared to the previous year's budget, and special-purpose bonds for local governments will increase by 100 billion yuan. Additionally, the government plans to issue ultra-long special treasury bonds to fund public investments.

The inflation target has been set at around 3 percent, and "aggregate financing and monetary supply will align with the projected economic growth and CPI increase." The relatively high inflation target is noteworthy given recent CPI performance, signaling the potential for more aggressive monetary policies in the year ahead. With these measures in place, this year's growth may indeed exceed 5 percent.

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China's Growth Perspectives: Obstacles and Oppotunities*

By NOUT WELLINK *

Introduction

The Chinese government is currently forecasting a growth rate of "around" 5% for the year 2024. "Around" is also used for the unemployment rate, the CPI increase, energy consumption, etc. The use of "around" reminds me of a saying attributed to John Maynard Keynes: "It is better to be roughly right than precisely wrong". "Roughly" reflects the many uncertainties, even in short-term forecasts: the existence of unforeseeable events (black swans), the complexity of the economic system, irrational behaviors of economic actors, the impact of policy decisions, etc.

Keynes formulated his statement during a period of profound global uncertainty- the interwar years, which spanned the period between World War I and World War II. This era was characterized by an unprecedented economic downturn and the emergence of dangerously hostile international relations. Today's world is full of uncertainties again: climate challenges, migration flows, regional wars, the aftermath of the corona crisis, and geopolitical tensions. Under these uncertain circumstances, unpleasant surprises from unexpected quarters cannot be ruled out.

GDP growth: less volatile and lower

Looking from a certain distance at the real GDP growth of the Chinese economy, at least two things stand out. Firstly, a substantial reduction in volatility, and secondly a significant slowdown in growth.

A measure of the decreased volatility is the variance between the highest and lowest annual growth rates observed in consecutive ten-year intervals. This variance was 31,8 in the 1970s, 13,8 in the 1980s, 9,5 in the 1990s, and in the first two decades of this millennium 3,5 and 2,1 respectively. This pattern suggests that the authorities have in general responded pragmatically to setbacks, especially since 1978 when Deng Xiaoping announced his far-reaching reform measures. However, unforeseen fluctuations will continue to occur, partly because more and more elements of a market economy – albeit with Chinese characteristics – are being introduced. Therefore, alertness remains necessary.

Since the 2008 Financial Crisis, the annual GDP growth rate has also declined considerably, predictable and desirable. Predictable after a period of leapfrogging efficiency improvements, due to labor moving at a massive scale from the low-productivity agricultural sector into the industry and from the state sector into the private sector. This led to an average growth of TPF – total factor productivity – of 4% to 4,5% in the period 1978-2008, an unprecedented figure compared to other countries. Desirable because previous high growth rates had caused an unacceptable burden on the climate and derailed public finances. The government rightly chose high-quality development over high growth and, for example, successfully accelerated efforts to protect and improve the environment.

Naturally, then the question arises as to which high-quality growth rate is realistic and worth pursuing. As mentioned above, the authorities decided to target a growth rate of "around 5%", which is a little higher than the average growth rate in the very difficult (corona) period 2020-2023 (4,7%). The comparable figures for the US and the eurozone are 1,6% and 0,9% respectively. Only India's average growth rate in these years (4,5%) comes close to China's.

The IMF publishes estimates for China's growth rate in its Art. IV Consultation Staff Reports. These forecasts are published in February of each year and contain estimates for the current year but also the four subsequent years. In February 2020 an average growth rate of 5,7% was foreseen for the next 4 years (2021-2024). These 4-year averages declined from 5,7%, via 5, %%, 5%, 4,4% to 3,7% for the period 2025-2028. If economic forecasts point consistently, for years in a row, in a direction that deviates from a targeted growth rate this should be taken seriously.

The relatively pessimistic IMF forecasts can largely be attributed to some obvious problems, both external and domestic. These indeed require and get serious attention. In the words of Li Qiang (at the Second Session of the 14th National People's Congress) on March 5, 2024: "While recognizing our achievements, we are keenly aware of problems and challenges that confront us". In his speech, therefore, numerous measures were announced. In my opinion, almost all these economic measures are in the right

* Puclished on 27 March 2024.
* Former Governor of the Dutch Central Bank and former member of the Governing Council of the European Central Bank

direction and supportive of the growth target. The IMF also sees room for higher growth: "With a comprehensive package of pro-market reforms the economy could grow considerably faster than a status quo scenario. This additional growth would amount to a 20% expansion of the real economy over the next 15 years". (Kristalina Georgieva, the Managing Director of the IMF, at the China Development Forum. Beijing, March 24, 2024).

In my view, the real challenge is implementing the necessary measures in a sufficiently timely and coordinated way. The latter is not easy in a system that is more decentralized with regard to the implementation of economic policies than many realize.

External developments

What is striking in the forecasts of the IMF is the negative contribution of net exports to GDP growth in 2023 and 2024, and the absence of any contribution in the following years. The external environment has become less favorable for the Chinese economy. As far as this reflects weak global demand, it is a fact of life and everyone's problem.

However, these unfavorable developments also result from geopolitical developments. Globalization has reached its peak for security and other reasons Many countries feel the need to become more self-reliant and are pursuing a de-risking strategy. In the case of China, shifting the focus more to the domestic market, was initially the logical consequence of the country's development stage and the government's policy to avoid the so-called middle-income trap. The dual circulation approach, launched in the 14th Five-Year Plan (2021-2025), was a reinforcement of an already existing policy to shift the focus more to the domestic market. By tapping the huge unexploited domestic potential, the country would become more resilient to external shocks and could spread the benefits of economic growth more widely among its population ("common prosperity").

In recent years self-reliance has appeared much more prominently on the radar screen, internationally and in China, mirroring an increasingly hostile and complex international environment. Friend-shoring and re-shoring have become buzzwords in some circles. Sometimes there are good reasons for building up supply chain resilience. However, such an approach should always be the result of a careful process in which disadvantages are also seriously considered. After all, self-reliance comes at a price, and countering the rising trend of protectionism is, unlike a tit-for-tat strategy, a win-win for everybody. Fortunately, just as during the Financial Crisis of 2008 and the Corona crisis, China is still making positive contributions to international trade. According to the Dutch Central Planning Bureau world trade has decreased by almost 2% for the whole of 2023 compared to 2022. Except for China, all parts of the world showed a decline in imports and/or exports (China imports +2,9%; exports +3%).

Extreme geoeconomic fragmentation is still a tail risk, but current developments are nevertheless cause for concern, politically and economically. Tentative calculations of the IMF, presented in its latest Art.4 Consultation Report on China, point towards a substantial negative impact of so-called friend-shoring (global output losses of 1.8% of GDP) and re-shoring (losses of 4.5% of GDP). Re-shoring (relying on domestic sources) is a step further towards independence from third countries than friend-shoring and, therefore, comes at a much higher price in terms of GDP losses.

Surprisingly, the IMF model generates for China GDP losses (percent deviation of the baseline scenario) of the same magnitude from friend-shoring and re-shoring scenarios, with losses for China in both scenarios amongst the highest (slightly more than 6%). The question is whether these estimates do sufficient justice to the huge domestic potential of China and the benefits that can be reaped from accelerated regional integration, e.g. the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (a free trade agreement among 11 countries).

Domestic developments

The lack of buoyancy in the IMF forecasts of the Chinese economy is also due to relatively weak consumption growth (on average 4% in the period 2025-2028), problems in the real estate sector and local finances. These problems are partly interrelated, and solutions must take these mutual relationships into account.

Last year in "The Economist" (10 October 2023) a famous statement of Adam Smith was recalled: "Consumption is the sole end and purpose of all production", to which the author immediately added, " that this maximum has never held much sway in China". Compared to e.g. the USA or the UK the share of consumption in GDP is indeed extremely low (about 30%-points lower). The difference with a country

like Germany is less spectacular (20%-points), but still large anyway. This suggests much scope for consumption to become an important growth driver, assuming that the income is available to support demand and sufficient account is taken of changes in the structure of demand and the quality of the requested products.

Household income is on the one hand driven by productivity and depends on the other hand on the scope of the social security and pension system. Increasing productivity through schooling, modernizing the industrial system, innovation, reducing income inequality, and responding to changing consumer demand require continued structural reform measures. A lot of work is underway in all these areas and numerous new measures have been announced.

Until 2000 the consumption ratio (final consumption as a percentage of GDP) showed a gradually declining trend. After 2000 this ratio fell sharply (and household savings as a percentage of disposable income skyrocketed) until it reached its lowest point in 2010. Since then, the share of consumption went up (from 48,9% in 2010 to 56% in 2019 but declined in the following years to 53%.

It is interesting to note that in the same period, the consumption ratio in the US and UK (but also in other Western countries) has shown a development that is contrary to that of China. When this ratio fell in China, it rose in other countries, and vice versa. A deeper dive into the available figures and various studies shows convincingly the role played by China-specific characteristics and in particular the property sector. Reforms in the housing sector since 1988 (but also several other developments, including demographics) led to rapidly rising prices, initially mainly in the Tier 1 cities but over the years spreading to less-better-off cities.

Financial stability problems often originate in the property sector. This is because of the size of this and related sectors, the huge involvement of the banking industry, the impact of wealth effects on spending, the widespread use of real estate as collateral for loans, etc. All these aspects play, for various reasons, a stronger role in China than in most other countries. Despite measures of the government, much has gone wrong in the real estate sector during the last two decades. The local authorities and private companies that were instrumental in these developments are now in serious financial trouble.

A prerequisite for making consumption a primary growth driver is putting in the coming years the property sector and local finances on a more sustainable path. The central government has taken responsibility, but it is a balancing act. For moral hazard and financial reasons, a government cannot take responsibility for solving all problems caused by others. Furthermore, deeply rooted problems can rarely be solved overnight. Changes that are too rapid and/or drastic can cause serious new problems. In Li Qiang's words "Seek progress while maintaining stability" or, as one of my former ICBC colleagues said, "The bank's duty is serving society, but this is only possible as long as we are a solid bank".

Meanwhile and confronted with these legacies of the past and new challenges, the government must maintain its credibility and confidence in the effectiveness of its policies. Therefore, policy implementation – including the sequences of the measures - must be closely monitored so that, if need be, adjustments can be made quickly. This is a necessary condition for restoring consumer and investor confidence that had fallen dramatically at the beginning of 2022 due to the corona crisis and the increasingly visible problems in the property sector.

The need for a strong banking sector and orderly public finances

A strong financial system is a prerequisite for financial stability. Such a system has many dimensions but, focusing on banks, my experience in China with two big banks (BoC and ICBC) is that the big, international banks are well-capitalized and professionally run. Some concerns, especially when the problems in the property sector are not addressed timely and adequately, I do have about smaller banks and some bigger domestic banks. The smaller banks are perhaps in themselves less relevant for the stability of the financial system and an occasional bankruptcy keeps management and customers on their toes, but problems with these banks can spread, and harm confidence which is a crucial building stone for financial stability. Furthermore – as I have experienced as a supervisor during the 2008 Financial Crisis – they "disproportionally" damage the reputation of the authorities, especially if bankruptcies of small banks do not fit into the "culture" of a country (which was for example the case in my country, the Netherlands, but is different in the US with 566 bank failures from2001 through 2024).

Following the financial crisis of 2008, far-reaching additional rules were imposed on systemically relevant banks ("too big to fail"), to reduce moral hazard and budgetary risks. Lessons learned since then (e.g. regarding Credit Suisse) make it clear that there is still room for further improvement. I have often asked myself during my involvement with Chinese banks when these big banks will become "too big to

manage". Admittedly, I don't know the answer and technological progress can postpone that moment. Yet my question becomes more relevant as the banking business becomes more complicated.

Orderly public finances

Orderly public finances are also a prerequisite for financial stability. The Chinese authorities interpret their 2023 and 2024 fiscal policy as proactive, referring to several fiscal measures and more specifically to the issuance of an additional RMB 1 trillion of government bonds in the fourth quarter, to contain the risks and alleviate the consequences of high local government debt.

However, the IMF characterizes China's fiscal policy in both years as more or less neutral. This is because the IMF uses a different concept for assessing public finances, namely the "augmented" deficit and "augmented" debt". These concepts include government-guided funds and the activity of local government vehicles. The Chinese authorities do not believe this is the right approach, because these items do not fall under the formal responsibility of the central government. That may be true, but if and as far the central government - for financial stability or other reasons - is forced to take ultimate responsibility, these items become relevant from a financial point of view. I understand that under present circumstances it may be advantageous for presentational reasons to qualify fiscal policy as pro-active. Still, from a financial stability perspective, I feel reassured by the IMF's assessment based on the broader concepts.

The IMF assessment underscores that the Chinese authorities have learned important lessons from the 2008 Financial Crisis and the Corona Crisis. Budgetary bazookas are a tempting instrument, but after launch, one can still be confronted with undesirable consequences for years in a row. The lessons learned by the authorities are also applied to monetary policy. This policy is rightly accommodative and will undoubtedly be further relaxed, if necessary, but is not nearly as loose as it has been in the past in, for example, the US or the eurozone.

In conclusion

In my opinion, despite all the challenges (geopolitical headwinds, local finances, the property sector), a continuation in the coming years of a GDP growth of around 5% seems quite feasible, assuming that no unexpected setbacks occur and the policies presented in the Work Program are implemented in a sufficiently timely and coordinated way. China has a huge unexploited potential and a proven record of making policy adjustments when things don't go as expected.

Addressing climate requirements, technological innovation, improving the efficiency of resource allocation, and "common prosperity" are important spearheads of China's economic policy. These are the same priorities as in the Western world, sometimes under a different naming and with different accents. Common interests require us to work together as much as possible.

China's Economy Robust in Q1, Higher Rate Expected Ahead*

By XINHUA

BEIJING -- China's economy welcomed a robust start in the first quarter of this year, a report by the Bank of China said Monday, forecasting a year-on-year gross domestic product growth of about 4.8 percent.

In terms of external environment, the global demand is warming up and international trade sentiment is on the rise, which contributes to the rebound in China's export growth, the report said.

Internally, the intrinsic growth momentum of the economy has been strengthened, as consumption has performed better than anticipated, manufacturing investment has accelerated, production has been steadily recovering, and the trend of industrial upgrading and transformation is evident.

The report forecast that China's GDP growth for the second quarter will be around 5.1 percent.

Looking ahead to the second quarter, the potential of service consumption is expected to be further unleashed.

On the other hand, fiscal policy is set to significantly increase its support, utilizing a comprehensive range of policy tools to help maintain a high growth rate in infrastructure investment, said the report.

* Puclished on China Daily on April 1, 2024.

IMI International Monetary Review

China Remains a Powerhouse of Global Economy*

By OTTON SOLIS [*]

The dream of every developing country is to eradicate poverty and to achieve a high GDP economic growth rate. As simple and obvious as these two objectives might appear, the fact is that in most countries of the world, in both academia and policy-making circles, there are widely diverging positions on the issue.

Should economic growth take priority, relegating poverty reduction policies when a high level of per capita income becomes a reality? Is there a causality relationship between economic growth and poverty reduction? If so, does economic growth per se lead to poverty reduction, rendering the correct trickle-down approach? If poverty reduction is given priority, will that help or hinder economic growth?

China did not dwell too much on these issues, nor did it wait for agreements on the issue. With its unbounded pragmatism and distaste for ideological dogmas, China, under Deng Xiaoping's leadership, decided to meet the two challenges at once with extraordinary success.

China's economy grew at an average rate of about 10 percent per year for four decades, which allowed it to lift more than 800 million people out of extreme poverty. Its economy became the industrial powerhouse of the world and its mastering of advanced technologies, either adopting from other countries or created locally, generated a substantial competitive edge vis-à-vis both the developed Western economies and the Global South.

The reaction of some countries, the same ones that have preached free trade almost as if it was a religion, to the point of imposing them on many developing countries, has been to instigate trade wars against China. So far, the impact of those wars has been feeble, as China continues to be competitive in world trade.

Yet the quality development which China's top leader has called for might be the best answer to a potential enhancement of trade protectionism against China. Never mind the intensity of trade obstruction measures, if the price, technological quality and values (for example, sustainability) of Chinese products continue to be a magnet for consumers and businesses across the world, there is little harm that geopolitical protectionism can cause to the Chinese economy.

Toward that path, China should feel optimistic, since it registers optimal conditions to keep the economy growing at a faster pace than most economies in the world and to compete with the advantages of quality development. It has big trade surplus and substantial foreign reserves. This wide room for maneuvering is accompanied by the high rate of household savings: 44 percent of disposable income, more than double the corresponding ratio for Western economies.

Therefore, China not only wants to improve the quality and increase the quantity of investment and the pace of capital accumulation; it also has the macroeconomic means to proceed without fear of trade deficit, a payment crisis or an inflationary outburst.

At any rate, unlike most emerging economies China tallies a large domestic market, capable of matching up any consequences of anti-Chinese export policies in other countries. Given the high rate of household savings, demand can be boosted even without increasing government expenditure.

And since the Chinese government's debt is lower than 60 percent of GDP, it has enough room for increasing public expenditure in order to boost demand. This is a luxury few countries can afford given the high ratio of government debt to GDP. For instance, in the United States, the corresponding ratio is 122 percent and in Japan 261 percent, according to the IMF. The ratios for other Western developed economies are similarly high. Perhaps the exception is Germany, whose debt ratio is only 66 percent.

China has already won the favor of global markets as far as high-tech and environmentally friendly products are concerned. A quarter of China's manufactured exports are high-tech products. China accounts for about 80 percent of the global market for solar panels and more than 60 percent of wind energy production. Given that environmental certifications are becoming an imperative in sale pitching, sustainable energy is of paramount importance.

Importantly, China is also the largest manufacturer of electric vehicles.

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* This article first appeared on China Daily on March 6, 2023.

[*] The author is a professor at Instituto Empresarial University in Spain, a senior fellow at Beijing Club for International Dialogue and was special advisor to the president of Costa Rica from 2018-2022.

These and other indicators clearly position China in the pole position in any race for quality production. But probably the most important reason for being optimistic about the outcome of that race is the fact that the Chinese authorities are not attached to any ideological recipes.

Since the launch of reform and opening-up in the late 1970s, the Chinese leadership has dynamically adjusted policies according to whatever is needed to maintain fast economic growth, sharpen the country's competitive edge in the world market, promote technological modernization and reduce poverty. China does not adhere to any ideological or economic textbook or clichés. This flexibility contrasts with the self-imposed ideological pomposity that shapes policymaking debates in most Western economies, not only on economic decisions but also foreign policy.

The US is the world's largest economy and there is much to admire about some of its achievements. But China's strength is important for balancing the world domineering ambitions of US politicians. Therefore, the Global South would benefit if an optimistic and visionary China emerges from the annual sessions of the National People's Congress and the National Committee of the Chinese People's Political Consultative Conference — a China that will continue to promote global peace, prosperity and sustainability.

IMI International Monetary Review

Biggest Risk is not Being in China,' Says German Chamber of Commerce Executive in Shanghai

By MAXIMILIAN BUTEK [*]

SHANGHAI - China remains appealing to German businessmen, and many believe that "the biggest risk is not being in China and therefore losing global competitiveness," Maximilian Butek, executive director and board member of German Chamber of Commerce in China-Shanghai, told Xinhua in a recent interview.

German companies hope to "benefit from the innovation system" in China not only to have growth opportunities, but also to keep being competitive, said Butek, also chief representative of the Delegation of German Industry and Commerce in Shanghai.

German businessmen "are like in a 'time bubble' and see that the last three years China developed further," Butek said. "There are a lot of innovative new products. Digitalization was driven further. Artificial intelligence is developing so fast."

"Major new technologies will be developed in China, and if we are not here to participate in these developments, how can we survive abroad? Luckily, I'm not so worried because most of the German companies understood that," said Butek.

The German Chamber of Commerce in China released a business confidence survey for 2023/24 in January, with responses from 566 member companies.

Over 90 percent of the companies, shows the survey, plan to continue establishing themselves in the Chinese market; more than half of them plan to increase their investments in China over the next two years; and 78 percent are expecting consistent growth in their industry in the coming five years.

Butek believes that the Chinese economy, which has become quite mature, can be very robust in the middle and long term. He commended the ever-improving business environment in China, saying that many Germans feel that it's "easy to talk about cooperation, about partnership in China."

"I believe that Chinese companies learned quite well the last 30 years from German companies. It's time now for us to learn from Chinese companies. I think we are really on a level where cooperation could be both ways now," he said.

He noted that China provides great chances for future advancement in areas like electric car batteries and autonomous driving. "That's why also startups are coming to China."

Butek voiced confidence that the visa-free policy for some European countries, including Germany, will encourage more Germans to travel to China, hence more business and cultural exchanges.

[*] Chief Representative of the German Chamber of Commerce and Industry Shanghai Representative Office, Executive Director of the German Chamber of Commerce Abroad Shanghai.

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Testament to Appeal of China's Economy: China Daily Editorial*

By MARK RUTTE*

Testifying to the Chinese economy's lasting appeal, a number of foreign leaders and representatives of international organizations and the global business community have been visiting China to seek to further expand economic and trade cooperation.

Dutch Prime Minister Mark Rutte and Minister for Foreign Trade and Development Cooperation Geoffrey van Leeuwen are the latest to add their names to the guestbook, visiting from Tuesday to Wednesday.

China's open and welcoming attitude toward foreign investment and business, the downward pressure on the Dutch economy, and China's economic complementarity with the Netherlands all serve to justify the high hopes the Dutch business community pins on Rutte's visit helping expand access to the Chinese market, especially in the financial, high-tech and service sectors that Beijing has vowed to further open up.

That the Rutte government is seeking "opportunities for economic cooperation" with China, seemingly in defiance of Washington, is because of the practical needs to promote a sustainable recovery of the Dutch economy and straighten out the Netherlands' relations with its second-largest trading partner outside the European Union.

The big fluctuations in Sino-Dutch trade over the past two years — bilateral trade surged 12 percent year-on-year in 2022 hitting $130.2 billion and plummeted 9.8 percent to $117 billion in 2023 — indicates how the tech war the United States is waging against China has affected the common interests of China and the Netherlands, with the latter's exports of advanced chipmaking equipment bearing the brunt of the US' restrictive measures. It is thus hoped that Rutte's visit can help the Dutch companies find ways to break the deadlock for a win-win result.

Both the Dutch government and enterprises will know that doing the US' bidding is tantamount to sacrificing Dutch interests for the narrow ends of a handful of China-bashing US politicians. The Republic of Korea government and some major ROK chipmaking companies, as well as their counterparts in France, Australia, New Zealand and Germany have all proved that it is completely possible to strike a balance between the two. Dealing with China does not actually harm their US relations.

Three days prior to the start of Rutte's visit, Bavaria's Minister-President Markus Soeder, who is also leader of the Christian Social Union in Bavaria, an economic powerhouse of Germany, embarked on what he called "a very, very important trip" to China up to Thursday for the similar objective of strengthening economic ties and dialogue.

The German government and enterprises have also long realized that "de-risking" is by no means a panacea for the ills of the German economy, but a ruse Washington is using to drag the EU onto its anti-China bandwagon. The US peddles its "value diplomacy", but refuses to help its allies to find markets to consume their products and services that it dictates that they should not sell to China.

Apart from its strong manufacturing base, superlarge market and global connections, China's pursuit of innovation-driven growth, high-quality development and sustainability has made it a major player in the digital economy, artificial intelligence, green technology, new energy and information technology on the world stage.

The openness of China and the robustness of its economy, and its commitment to economic globalization, free trade, multilateral governance and fair competition only make the country more attractive to businesses in an increasingly volatile world where people have been fed up with the US' beggar-thy-neighbor preaching about unilateralism, protectionism and hegemony.

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* This article first appeared in chinadaily.com.cn on 2024-03-25

* Dutch Prime Minister

IMI International Monetary Review

Walking on Two Legs, the Two Sessions of the NPC and the CPPCC

By HERBERT POENISCH*

The double meetings in March of every year are clear to Western observers as far as the annual parliamentary meeting (NPC) is concerned but puzzling as far as the joint meeting of the China Peoples Political Consultative Conference (CPPCC) is concerned. This article will shed some light on this body and its functions. Coming from Austria where the economic partners take all economic decisions in a consultative reiterative process, the Chinese process is not new.

Since the restoration of the Austrian economy after WW2, avoiding frictions between various economic groups was deemed so important that a social partnership (Partnership) was established to consult and achieve a compromise in preparation of economic policy decisions of the government. The groups represented were the businesses (Wirtschaftskammer), the workers (Arbeiterkammer) and the agricultural sector (Landwirtschaftskammer). The result was social harmony and the avoidance of social conflicts, such as strikes. This consultative process worked under whichever political party was in power.

The CPPCC set up is similar with the participation of different social groups and institutions, a consultative process and reiterative review of proposals by the ruling party, the Communist Party of China (CPC). The history dates back to 1946, but the CPC established the 'new' CPPCC after the foundation of the Peoples' Republic. It was revived in 1974 with Deng Xiaoping as chairman. A new 'Economy Sector' was created for the new business elite in the 1990s. At present it is a forum where all relevant actors inside and outside the CPC come together, party elders, intelligence officials, diplomats, military and propagandists, united front workers, academics and the business community. It is a platform for 'various political parties, people's organisations, and people of all ethnic groups and from all sectors of society' to participate in state affairs. Politbureau member Wang Huning is presently chairman of the CPPCC National Committee. There are also regional committees of the CPPCC.

The role of the CPPCC is enshrined in the Chinese constitution as 'a broadly based representative organisation of the united front which has played a significant historical role, will play a still more important role in the country's political and social life. President Xi Jinping attends the annual meetings of the CPPCC and this year joined the discussion of CPPCC members from the Revolutionary Committee of the Chinese Guomindang, the sector of science and technology, and the sector of environment and resources.

In recent years the CPPCC has become the pillar of China's version of democracy, the Consultative Democracy practised through the CPPCC. China's consultative democracy is a unique form and distinct advantage of socialist democracy. It is rooted in long-term trials carried out as the CPC has led people through revolution, reconstruction, and reform, and is based upon deep cultural, theoretical, practical and institutional foundations. The CPPCC is a political organisation, has a distinctly people-oriented character and promotes multiparty cooperation. It is perfectly inclusive, focusing on its holistic character and coordinated character of its work. Its website gives all information in English http://en.cppcc.gov.cn

China has been extraordinarily successful in spreading its economic influence round the world. It has become the most important trading partner of some 150 countries. It has attracted a lot of interest among its trading partners in how it achieved its economic prowess. China has not only propagated its mixed economy, key state sectors and private, often government linked vibrant business sector, which has produced success stories like Alibaba, Tencent, Huawei, BYD and many others, but also stressed social harmony as essential for economic development.

As China assumes its rightful global leadership role, it needs to underpin its economic role model by a political role model to win the hearts and minds of peoples round the world. As Communism, even with Chinese characteristics is not palatable to most countries, it has created the Consultative Democracy as practised by the CPCC as an example to the world.

This form of democracy is the input of China into the present global struggle between various political systems providing an alternative to Western democratic models which have come under increased scrutiny by emerging markets in the southern hemisphere. China, which is positioning itself as a leader of the global south thus offers a new version of democracy for countries which abhor dictatorial regimes while at

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the same time do not subscribe to Western democratic models which have been the standard recipe for countries coming out of colonialism.

In order to propagate its version of democracy, China has not only used international organisations which they control, such as the Shanghai Cooperation Organisation (SCO), the BRICS initiative but also its Belt and Road Strategy which by now encompasses close to 150 countries. To showcase this philosophy it has opened a vast exhibition on the City Balcony in Hangzhou. This was opened before the G20 summit in Hangzhou in 2016 by President Xi Jinping. It welcomes visitors from all over the world and explains the merits of China's Consultative Democracy with amazing technical displays. More information is available on https://ct.zj.gov.cn

IMI International Monetary Review

Climate Policy and Green Finance

Climate Goals Need Trade Collaboration*

By CYN-YOUNG PARK*

The countries responsible for 88 percent of global carbon emissions, including large emitters in Asia, have pledged net-zero emissions by 2050(with some realizing the goal between 2060 and 2070), yet current efforts are insufficient to achieve that target. Integrating trade policies with climate initiatives could break the gridlock and bring us closer to achieving this crucial goal.

A growing number of countries have pledged to achieve the time-bound net-zero emissions. More than 140 countries, which account for about 88 percent of global emissions, including the biggest emitters — China, the United States, India and the European Union — have now signed up. Their net-zero targets are translated into climate action plans, or Nationally Determined Contributions, to reduce emissions and slow the pace of global warming.

However, the current NDCs are not enough to achieve the climate goal set in the Paris Agreement to keep global temperature rise to below 1.5 degrees Celsius above the average preindustrial level.

Trade policies need to become more integrated with the NDCs to cover the shortfall. Unfortunately, the nexus between trade policy and climate actions continues to be overlooked in formulating the NDCs. The economic rationales for improving the interface between trade policy and climate actions are compelling. For example, green trade can offer many solutions to climate change by expediting the transition to renewable energy, promoting technology transfer, and encouraging investment in green sectors and low-carbon technologies among others.

Leveraging green trade and investment is also key to successfully facilitating the energy transition and the NDCs' implementation in developing countries which face difficulties in gaining access to finance and technologies.

Policy frameworks under the NDCs, which help create new trade and investment opportunities in renewable energy for example, can support just transitions in developing countries and increase their NDC ambitions.

But geoeconomic fragmentation is a growing threat to the transition to clean energy and developing a net-zero economy. Conflicting national interests in the name of energy security have led many countries to undertake unilateral actions and restrict trade in materials critical for energy transition. And as enterprises compete in the global race to secure the supplies of critical minerals for new business opportunities, governments lend their support to domestic companies and promote domestic energy transition through additional protectionist measures.

With many governments leaning toward protectionism, businesses and investors retreat further from overseas activities. Protectionist policies could persist despite their adverse consequences on the reliability of global supply chains and national long-term energy security, if the lack of collective global actions continues to create uncertainties over trade and supply chains.

Given the complex workings of deeply interconnected global value chains, protectionist measures such as export bans, tariffs and subsidies create uncertainty, which in turn will discourage investments. They can also distort business incentives, create supply chain bottlenecks, and disrupt the flow of essential inputs that could be detrimental to the successful transition to clean energy technologies.

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Trade policies need to become more integrated with the NDCs to address the shortfall the current NDCs represent in delivering on the global climate goal. It would be more sensible therefore to implement proactive policies such as encouraging investment in infrastructure and human capital development, and implementing reforms to improve the overall business environment while preserving open trade and investment regimes.

As global energy transitions gather pace, developing reliable, diversified and responsible supply chains for critical mineral and clean energy manufacturing is becoming strategically important in Asia and the Pacific. The region boasts rich natural resources, well-established manufacturing and industrial bases for clean energy technologies, as well as a high-quality and skilled workforce.

To unlock the massive economic potential from the global energy transition, the region's policymakers must take coordinated measures to reduce business uncertainties, help manage environmental, social and governance risks, and support reforms to address supply-side constraints. Governments, for their part, can encourage private and foreign investors to input capital into projects by "de-risking" investments, leveraging government funding and tax incentives, and forging strategic partnerships to reduce policy uncertainties and political instability.

A united front on green trade and investment can exert significant influence on national climate pledges. For example, trade agreements with strong environmental provisions can help increase the NDC ambitions and make their implementation more efficient by aligning private sector incentives with climate goals and creating an environment conducive to green trade and investment.

More importantly, coherent policies and coordinated actions across countries will help strengthen their NDC targets and expedite their implementation. The current trade tensions and geoeconomic fragmentation harm our chances of capitalizing on these opportunities and reaching the global climate goals in time to avert the climate crisis.

The collective ambition to achieve net-zero emissions underscores the urgent need to leverage trade policies for climate action. Trade policy reforms focusing on transparent trade rules and regulations can reduce market uncertainties that hamper investment in green projects, boost confidence and trust by increasing market access for private and foreign investors, and facilitate cross-border investment and technical transfers.

IMI International Monetary Review

Addressing Barriers to Climate Investments in EMDEs*

By EKATERINA GRATCHEVA *

To mitigate and adapt to the severe and systemic consequences of climate change, emerging market and developing economies require substantial investments. in interest rates globally over the past two years, coupled with heightened policy and geopolitical uncertainty, have dampened investors' appetites for investing in EMDEs as developed markets offer more attractive risk profiles.

Against an increasingly challenging financial backdrop, significant volumes of concessional resources will be required to improve the risk profile of climate investments in EMDEs and to make them financially viable for private capital. Blended finance can play a transformational role in bridging the interests of public and private capital if the proper policy, institutional and climate frameworks – tailored to EMDE-specific circumstances – are in place to foster a conducive investment environment.

Scaling up blended finance

To meet the rising expectations for blended finance in channelling private capital to EMDEs, existing practices must evolve to address seemingly conflicting objectives. This involves improving low mobilisation and leverage ratios and optimising the limited concessional capital from public sources to scale up blended finance volumes and attract private capital more effectively and efficiently.

In 2022, the Network for Greening the Financial System launched the Blended Finance Initiative to complement its existing work on greening the financial system aimed to use its convening power to raise awareness about blended finance. At COP28 in December 2023, the NGFS published 'Scaling Up Blended Finance for Climate Mitigation and Adaptation in Emerging Market and Developing Economies'. This document identifies key barriers to scaling up climate blended finance solutions, provides policy recommendations to address these barriers and showcases demonstrative projects from various EMDEs that have successfully crowded in private capital into climate financing projects.

Achieving these objectives in EMDEs involves tackling structural issues, addressing limited investment opportunities for climate projects, bridging knowledge disparities within the blended finance ecosystem and navigating the customised nature of financial instruments. Investors also emphasise challenges related to a lack of climate policies, data gaps, regulatory clarity and the need for a broad enabling environment.

Collaboration across the industry

To address these barriers, partnership across the public and private sectors, multilateral development banks and development finance institutions is needed in designing and implementing blended finance solutions. These institutions operate under different mandates, regulatory regimes and project timelines, and play complementary roles. They are influenced by evolving market practices and standards, international conventions and proliferating blended finance initiatives.

Considering their diverse perspectives, these institutions may not fully appreciate the realities of other stakeholders, which could lead to potential misinterpretations and inconsistencies in expectations for blended finance across the financial system. To effectively scale up blended finance in EMDEs, we recommend focusing on the following key areas.

First, policy-makers should approach the blended finance ecosystem in a holistic way, looking at an 'ecosystem of solutions' across the blended finance value chain to bridge the knowledge gap between public and private sectors. Policy-makers should clarify where blended finance is needed and assess the right amount of concessional funding necessary to finalise a project, attract private capital

Second, investors are looking for EMDEs to put in place the right climate policies (such as carbon pricing) and strengthen the climate information architecture. This includes collecting high-quality, comparable and reliable climate data, appropriate pathways for adopting disclosure standards and

* This article first appeared on 15 March 2024.

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establishing classification systems and transition taxonomies. It is also important to have robust governance and to deepen domestic capital markets.

Third, there is a need to engage with EMDE project sponsors from the early conceptualisation stage through financing to develop and bring to market a pipeline of viable projects. Efforts should focus on design, funding and technical support to improve project viability and success. Promoting greater standardisation would help reduce information asymmetries between investors and project developers, leading to more efficient allocation of capital and better risk management.

Fourth, policy-makers should promote effective risk mitigation and support innovative blended finance solutions that encourage risk diversification through risk pooling and tranching. Public-private risk sharing, through enhancing financial capacity and operating models of MDBsis crucial to attracting more capital to EMDEs. Policy-makers should also provide greater regulatory clarity for blended finance and address practical and regulatory barriers that may disincentivise private sector participation in blended finance transactions in EMDEs.

Finally, information intermediaries such as credit rating agencies and environmental, social and governance data providers need to be part of the effort to improve the investability of EMDEs and realign relevant products with blended finance realities. Intermediaries between the supply and demand of blended finance play a critical role and should be further scaled up.

Against an increasingly challenging financial backdrop, EMDEs require more investment support than ever before. Through public and private sector collaboration, blended finance could be transformational in the fight against climate change.

Digital Currency

Project Agorá: Central Banks and Banking Sector Embark on Major Project to Explore Tokenisation of Cross-Border Payments*

By BIS

The Bank for International Settlements (BIS) together with seven central banks today announced plans to join forces with the private sector to explore how tokenisation can enhance the functioning of the monetary system.

Project Agorá (Greek for "marketplace") brings together seven central banks: Bank of France (representing the Eurosystem), Bank of Japan, Bank of Korea, Bank of Mexico, Swiss National Bank, Bank of England and the Federal Reserve Bank of New York. They will seek to work in partnership with a large group of private financial firms convened by the Institute of International Finance (IIF).

The project builds on the unified ledger concept proposed by the BIS and will investigate how tokenised commercial bank deposits can be seamlessly integrated with tokenised wholesale central bank money in a public-private programmable core financial platform. This could enhance the functioning of the monetary system and provide new solutions using smart contracts and programmability, while maintaining its two-tier structure.

Smart contracts can enable new ways of settlement and unlock types of transactions that are not viable or practical today, in turn offering new opportunities to benefit businesses and people.

This major public-private partnership will seek to overcome several structural inefficiencies in how payments happen today, especially across borders, which add a layer of challenges: different legal, regulatory and technical requirements, operating hours and time zones. Plus the increased complexity of carrying out financial integrity controls (eg against money laundering and customer verification), which today are often repeated several times for the same transaction, depending on the number of intermediaries involved.

BIS Innovation Hub projects are generally experimental in nature and aim to explore and deliver public goods to the global central banking community.

Next steps

The BIS will issue a call for expressions of interest to private financial institutions to join Project Agorá. The IIF will act as the intermediary and convener of private sector participants. It is envisaged that several regulated financial institutions will participate representing each of the seven currencies. Specific instructions and requirements will be issued in due course. Being a member of the IIF is not a requirement to participate.

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Transition to Digital Payments Must Be 'Carefully Managed'*

By THIBAULT PELÉ*

The role of CBDCs in broader financial inclusion

The World Bank identified approximately 1.7bn unbanked adults globally in 2017. The mission to catalyse financial inclusion works in concert with fostering economic growth. But studies have identified several barriers to financial inclusion, including a lack of trust in financial institutions and services.

Public distrust has led some individuals to explore cryptocurrencies, which operate independently of central authorities. However, cryptocurrencies are often subject to price volatility, further complicating their use.

In order to reduce this volatility, stablecoins were introduced but concerns regarding security and the management of private keys remain – posing risks of loss and hacking. These issues are particularly severe for the unbanked population, which typically has limited financial education. The collapse of cryptocurrency Terra/Luna, for example, led to significant financial losses for many families.

Cash continues to be the primary medium of exchange for the unbanked. Yet, the Covid-19 pandemic has accelerated the transition, and inclination, towards digital payments. For instance, in India, the pandemic prompted 80m adults to make their first digital transaction.

The shift to digital payments, spurred by the pandemic, highlights the potential importance of central bank digital currencies in practice. CBDCs – often considered digital equivalents of cash – offer key features in an increasingly digital economy, such as accessibility, minimal costs, privacy and security. Discussions around CBDCs frequently consider a two-tier system that emphasises the role of financial intermediaries, including commercial banks and payment service providers. These entities could facilitate access to digital wallets, particularly for the unbanked.

Moreover, CBDCs could offer significant benefits to micro-, small- and medium-sized enterprises by shortening settlement cycles, enhancing transaction efficiency, improving cash flow management and reducing costs. Pilot projects have also demonstrated how CBDCs can improve the delivery and effectiveness of government subsidies. In China, for example, trials in Jiangsu and Fuyang have aimed to refine the use of a digital renminbi for more targeted subsidy distribution.

Such initiatives fall under the 'government payments' use case, which seek to enhance the precision and reach of subsidies. By utilising digital currencies, governments can ensure that subsidies are more effectively distributed to those in need. A more systematic use of CBDCs could also help facilitate access to financial resources and serve as an introduction to manage digital wallets.

However, the transition to digital payments must be carefully managed. It involves leveraging existing systems and ensuring that public institutions play a role in educating individuals on how to use their digital wallets. Gradually, the integration into the digital economy will be underway.

Offline payments and financial inclusion

In the pursuit of financial inclusion, offline capabilities play a crucial role, especially in areas lacking the necessary infrastructure for internet or mobile connectivity. In regions prone to natural disasters, offline functionality is critical for monetary system resilience. A survey by the Bank for International Settlements highlighted a divide between emerging markets and advanced economies concerning the importance of offline payments: 34.5% of respondents from emerging markets deemed them crucial, compared to 14.5% in advanced economies.

The connection between offline capabilities and financial inclusion is evident. While 90% of individuals in high-income countries have easy internet access, this figure drops to just 58% for those in low- and middle-income countries. Given their reliance on cash and existing infrastructure for cash access, it is vital for central banks to use current systems to facilitate access to CBDCs, such as postal networks or ATMs, for topping up offline CBDC wallets or synchronisation.

However, the development of offline CBDCs must consider the accessibility of necessary devices. Many current offline technologies rely on smartphones and secure elements, which may not be affordable for

* This article first appeared on 5 April 2024.

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everyone. Policy-makers, together with manufacturers, should standardise secure elements, ensuring compatibility across a wide range of devices, including affordable options and potentially wearables.

Incorporating cards equipped with secure elements for offline transactions is also essential. These cards, which can be topped up via phone, ATMs or cash transactions at post offices, offer a cost-effective solution for storing digital wallets.

It is clear that financial inclusion will not rely on a single device or technology. It will rest on central banks' ability to provide a variety of devices, to enhance their efficiency and ensure their interoperability.

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Digital Assets Need Interoperability to Achieve Global Scale*

By JONATHAN EHRENFELD*

For tokenisation to really take off, a global mindset and interoperability between different networks and systems is essential.

The discussion around tokenised assets and their use cases has surged in the past year. A recent study from BNY Mellon showed that 97% of institutional investors think that tokenisation is set to revolutionise asset management. Boston Consulting Group also estimates global illiquid asset tokenisation alone will be worth $16tn by 2030.

As a result, many institutions are now looking to tokenisation as a way to create new markets, solve longstanding inefficiencies and overcome liquidity challenges. This interest is particularly strong across markets that are characterised by complex processes with many different transacting counterparties, such as securities post-trade settlement.

The interoperability challenge

As tokenisation gathers pace, the need to avoid fragmentation has become even more apparent. This is particularly important when we consider the underlying technology that tokenisation is built on. Still in its relative infancy, blockchain has potential to bring new levels of trust and assurance to processes that incorporate numerous counterparties looking for improved transparency over a particular transaction lifecycle.

But blockchain is not a silver bullet. In order to create an interconnected global market, a common connectivity layer is critical to eliminating friction and enabling interoperability between the existing financial system and various emerging blockchain networks hosting tokenised assets.

This need for interoperability extends to collaboration between blockchains and other infrastructures, as well as between different blockchain platforms themselves. In the absence of well-defined legal and regulatory guidelines concerning different blockchains' coexistence, the onus is on the industry to prioritise interoperability.

Building on existing infrastructure

Fortunately, it is possible for firms to leverage their existing infrastructure, message implementations and proven business processes to connect to blockchain ledgers, where tokens are recorded in a way that is both compliant and secure.

This was the finding of our recent collaborative experiments to help the industry in its effort to make tokenised assets work in concert with existing financial infrastructure.

Our tokenisation journey started in 2022, with a set of experiments that demonstrated the ability for Swift to act as a single access point, linking up multiple tokenisation platforms and providing access to multiple payment options. Then in 2023, we went much further, collaborating with more than a dozen major financial institutions to test how firms can leverage their existing Swift infrastructure to efficiently instruct the transfer of tokenised value over a range of public and private blockchains.

Moving forward, we will continue working with the financial community to understand the most comprehensive use cases for tokenised asset adoption and invest in the relevant capabilities to support the transfer of tokenised assets over the Swift network.

As interest in digital assets grows, we must innovate with a global mindset to avoid fragmentation. The future of tokenisation is not yet fully defined but is expected to be multi-chain. It's therefore vital to enable secure interoperability to ensure global reach.

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* This article first appeared on 14 March 2024.

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IMI International Monetary Review

A Stablecoin Pilot in China?

By ANDREW SHENG AND XIAO GENG [*]

HONG KONG – The Hong Kong Monetary Authority (HKMA) and Financial Services and the Treasury Bureau (FSTB) are working to establish a regulatory regime for stablecoin issuers in the territory as soon as possible. Asset managers and fintech firms are reportedly following the effort very closely. Other governments should do so as well.

Stablecoins are a type of cryptoasset that is supposed to maintain a value relative to a target currency. "Collateralized" stablecoins are backed by a pool of reserve assets, whether fiat currencies, other cryptoassets, or commodities. But not all stablecoins are backed by reserve assets: unbacked stablecoins seek to maintain a stable value by other means, such as through algorithms, which limits their supply, creating a market value for the stablecoins.

There is currently no universally agreed standard for stablecoins, let alone a regulatory framework governing them. But the market is large – and growing fast. Since the beginning of 2020, the estimated total market value of stablecoins skyrocketed from $5.9 billion to about $130 billion. Stablecoins pegged to the US dollar dominate the market, owing to the US dollar's enduring global dominance as a means of payment, store of value, and unit of account, as well as the liquidity and convenience of the US dollar asset market.

Tether leads the way, with about 70% of the market, followed by USD coin, with 20%. Tether reports that, at the end of September 2023, it held $86.4 billion of assets – including some $56.6 billion in US Treasury bonds, $5.1 billion in secured loans, $3.1 billion in precious metals, $1.7 billion in Bitcoin, and $2.3 billion in other investments – against $83.2 billion in liabilities. In the first quarter of 2023, the firm reported a net profit of $1.4 billion.

The purpose of stablecoins is to offer a more reliable alternative to cryptocurrencies like Bitcoin, which are tethered to nothing and have proved highly volatile. According to the Bank for International Settlements, collateralized stablecoins have "generally been less volatile than traditional cryptoassets." At the same time, "not one of them has been able to maintain parity with its peg at all times."

Moreover, the BIS points out that "there is currently no guarantee that stablecoin issuers could redeem users' stablecoins in full and on demand." Ultimately, none of the more than 200 stablecoins in circulation today meets the "key criteria for being a safe store of value and a trustworthy means of payment in the real economy."

But that could change. For the stablecoin market to succeed, four conditions need to be met. First, all stablecoins must be linked to a widely accepted legal tender or fiat currency. Second, they should operate within a globally accepted regulatory and licensing framework. Third, issuers should be able to innovate in areas such as distribution, market support, and infrastructure. And, lastly, stablecoins should be applied widely within the field of decentralized finance (DeFi).

There is reason to think that Hong Kong could help drive progress. The territory's own currency, the Hong Kong dollar, is pegged to the US dollar, making its "Digital HKD" essentially a stablecoin. (The HKMA's September 2023 policy document essentially treated the Digital HKD as just that.) More important, Hong Kong's monetary and regulatory authorities are well regarded, and its open, market-oriented, globally connected institutional environment is well-suited for pilot schemes.

One such project could involve the creation of a stablecoin pegged to the offshore renminbi for use in the Greater Bay Area – an economic zone comprising nine cities around the Pearl River Delta in Guangdong province, plus Hong Kong and Macau, with a combined GDP of $1.9 trillion. This "GBA Stablecoin" could facilitate the issuance, trade, and settlement of new digital financial products in Hong Kong, and be exchanged readily with the offshore renminbi, the Hong Kong dollar, and the US dollar. Financial products issued outside mainland China could be priced in GBA Stablecoin.

Under this scheme, the digital infrastructure, financial products, and trading would be in Hong Kong, but their underlying physical assets,such as offshore bonds issued by local governments and enterprises in GBA, would be largely in mainland China, similar to H shares where stocks of essential Mainland based

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companies are traded in Hong Kong. The result would essentially be an operational offshore digital renminbi – a currency that benefits from the added market confidence brought about by HKMA oversight. This would bolster demand for offshore renminbi, thereby accelerating renminbi internationalization without risk to the stability of onshore renminbi.

The HKMA has already conducted a six-week central bank digital currency (CBDC) pilot with its counterparts in mainland China, Thailand, and the United Arab Emirates. Known as Project mBridge, it was among the first multi-CBDC projects to settle real-value, cross-border transactions on behalf of corporations.

Following the pilot's success, the monetary authorities are now working to develop the mBridge platform to expedite cross-border retail or wholesale payments. This suggests that, with the right digital financial infrastructure – which takes advantage of distributed blockchain technology, including to enable "smart contracts" – GBA Coin could provide offshore financing for China's ambitious multi-country Belt and Road Initiative (BRI) and facilitate international trade and investment more broadly.

Such a pilot's success would depend not only on financial institutions' willingness to issue the stablecoins, but also on the needs of banks, businesses, consumers, and investors. Within the current US dollar-based financial system, some might hesitate to use GBA Stablecoin. But given America's geopolitically-motivated weaponization of global finance, plenty of market participants – such as those engaging in BRI projects – are seeking a reliable alternative to the US dollar, including dollar-backed stablecoins.

Ultimately, the balance between the returns on equity and the risks associated with a given stablecoin will determine which coins gain a competitive edge. A long process of trial and error lies ahead.

IMI International Monetary Review

The Need for Regulating Crypto-Assets - A Global Effort*

By MR KLAAS KNOT*

I am grateful for the chance to speak about a topic that is not for the faint-hearted: crypto-assets. As some of you who've invested in Bitcoin know, the price curve has gone through some steep inclines and quick descents the past couple of years. And it is not just the price of Bitcoin that resembles a rollercoaster. The crypto-ecosystem itself also continues to evolve rapidly and in different directions. It is not just some retail investors that are 'dipping their toes' into crypto – large institutional parties continue to show serious interest in crypto-assets and its underlying technologies.

In its role as 'guardian' of global financial stability, the FSB has been closely monitoring crypto-asset markets since 2018. While we have been working hard to address crypto's potentially systemic implications, we do recognize the possible benefits of this innovation. In our opinion, effective regulation should create the right conditions for innovation to unfold in a responsible manner. Being technology neutral forms a guiding principle of the FSB's recommendations.

In recent years we have for example seen the potential benefits of distributed ledger technology. We have also seen that these benefits will not be realized without the comprehensive regulation of financial activities built on top of this technology.

For the FSB, supporting effective regulation of crypto-assets has so far meant addressing the risks related to it. Since 2018 we have repeatedly expressed concern about the risks associated with crypto's fast evolving nature and its growing interconnectedness with traditional finance. As an example, some of crypto's inherent financial vulnerabilities became painfully apparent during the crypto-winter of 2022 and 2023. Think only of the spectacular rise and fall of FTX.

The authorities represented at the FSB have taken important steps to effectively regulate crypto-related activities – either through the introduction of new rules or through the enhanced enforcement of existing rules & regulations.

In recent years we have also seen that those national initiatives were not always fully aligned with each other. Therefore, the FSB published a Global Regulatory Framework last year, aimed at supporting the consistency and comprehensiveness of regulatory approaches to crypto-asset activities. But the job is not done yet. 'Crypto' is at a cross-roads, and if society wants to stay on the path towards responsible innovation, we cannot be complacent.

Let me highlight two interesting market developments.

First of all, the emergence of so-called 'multifunction crypto-asset intermediaries', or MCIs, has shown that crypto may not be as decentralized as some claim it to be. These entities combine economic functions in a manner that is not commonly seen in traditional finance. We also find that most MCIs lack proper governance. As a result, the functioning of MCIs may actually amplify financial vulnerabilities.

MCIs can also form nodes that link the crypto-ecosystem with the broader economy and investors. This means that, at a certain scale, their failure could have serious implications for the wider financial system. A key policy lesson we thus learned is that, if needed, these entities should be able to be wound down in an orderly manner: memento mori, or in this case, remember that you may fail.

Next to MCIs, we have seen revived interest in the stablecoin market, following earlier crypto-market turmoil. Some of this interest has come from BigTechs and traditional financial institutions. These institutions could leverage large existing customer bases and rapidly issue a more widely used stablecoin. The potentially significant systemic implications of such a stablecoin means they require careful regulation and oversight. After all, these coins have proved to not always be that 'stable'.

It is thus essential that we keep opting for fitting regulation. At the same time, let me be clear: opting for regulation is not a stamp of approval. Investing in crypto remains a risky and volatile business, illustrating that our work is not done yet. In the meantime, I'd like to therefore also stress: memento perdere – remember that you may lose.

The FSB's regulatory framework forms a global baseline. However, on top of this baseline, individual jurisdictions can implement additional measures should national circumstances require them to do so. For

* This speech first appeared at the Asia Securities Industry & Financial Markets Association (ASIFMA) Annual Conference, Hong Kong, 29 February 2024.

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example, we observed that the financial stability risks presented by crypto-assets may already be heightened in some EMDEs. These jurisdictions often have weaker domestic currencies or large underbanked populations.

I do recognize that not all EMDEs are the same. As we can see right here in Asia, there can be a wide variety of EMDEs in a single region, and advanced economies could also be in the mix. There is however one common risk for EMDEs: residents might come to primarily rely on off-shore providers of crypto-services. This dynamic may require us to place greater emphasis on effective cross-border regulatory cooperation. Without such coordination and cooperation, crypto service-providers may find it easier to evade local requirements. In this context, the FSB is doing further work to practically address the cross-border regulatory challenges of stablecoins for EMDEs.

Also central in our framework is the principle of 'same activity, same risk, same regulation'. This principle means that effective regulation should fit the financial stability risks that crypto-activities pose. Flashy marketing terms might muddy the waters for regulators. This makes it all the more important to find the actual underlying economic functions and risks.

Publishing a framework is only part of the job. The most important next step is making sure that our recommendations are consistently implemented across the globe. Because, without globally consistent implementation, certain crypto-service providers may continue to evade regulation.

The FSB aims to deliver effective and consistent implementation of its regulatory framework by working closely with other standard-setting bodies, such as IOSCO, the IMF, and FATF. Because crypto-asset activities are inherently cross-border, specific attention will go to promoting implementation beyond the FSB's membership. We will do this through our own channels, including our regional consultative groups. But we will also closely work on this with the IMF – given it's near global membership.

As implementation is ongoing, we are committed to learning new lessons and to keep responding to new developments in the crypto-ecosystem. The sector is moving fast, so there is no room for complacency.

Before moving to a conclusion, I would like to touch upon one of these developments: tokenization. Creating a digital representation of an asset and placing it on a distributed ledger could bring benefits to the financial system. This includes efficiency gains and potentially increased liquidity of certain assets. Of course, there may also be risks for financial stability. For example, tokenization could increase the linkages between the crypto-ecosystem and traditional finance. The FSB is assessing the financial stability implications of tokenization, although our work is still in the early stages. And we are not the only standard setter considering this topic.

To conclude, the crypto ecosystem is at a major cross-roads. We cannot presume that this innovation, and potentially more decentralization, will bring significant benefits to the global financial system. What I do know is that the full benefits of digital innovation stemming from crypto-assets can only be realised if there is durable trust in the sector. For this, we need to keep working on a strong and consistent regulatory system, to safeguard financial stability.

IMI International Monetary Review

Global Economy

The Fiscal and Financial Risks of a High-Debt, Slow-Growth World*

Higher long-term real interest rates, lower growth, and higher debt will put pressure on medium-term fiscal trends and financial stability(IMF)

By TOBIAS ADRIAN, VITOR GASPAR, PIERRE-OLIVIER GOURINCHAS*

Inflation-adjusted interest rates are well above post global financial crisis lows, while medium-term growth remains weak. Persistently higher interest rates raise the cost of servicing debt, adding to fiscal pressures and posing risks to financial stability. Decisive and credible fiscal action that gradually brings global debt levels to more sustainable levels can help mitigate these dynamics.

Public debt sustainability

Debt sustainability depends upon four key ingredients: primary balances, real growth, real interest rates, and debt levels. Higher primary balances—the excess of government revenues over expenditures excluding interest payments—and growth help to achieve debt sustainability, whereas higher interest rates and debt levels make it more challenging.

For a long time, debt dynamics remained very benign. That's because real interest rates were significantly below growth rates. This reduced the pressure for fiscal consolidation and allowed public deficits and public debt to drift upwards. Then, during the pandemic, debt increased even more as governments rolled out large emergency support packages.

As a result, public debt as a fraction of gross domestic product has increased significantly in recent decades, across advanced as well as emerging and middle-income economies. It is expected to reach 120 percent and 80 percent of output respectively by 2028.

At the same time as we confront higher debt levels, the macroeconomic environment has become less favorable. Medium-term growth rates are projected to continue declining on the back of mediocre productivity growth, weaker demographics, feeble investment and continued scarring from the pandemic.

Against this backdrop, elevated real long-term interest rates could pose significant challenges.

Short- and long-term rates

Public debate has focused on the short-term real interest rate, known as r*, defined as the equilibrium interest rate at which an economy is operating at its full potential while keeping inflation stable. This equilibrium real interest rate has declined dramatically in recent decades driven by slow-moving, structural variables such as demographics, demand for safe assets, productivity growth, or the income distribution. As long as these factors continue on similar trajectories as before the pandemic, equilibrium rates around the world will remain very low as shown in an analytical chapter of the April 2023 World Economic Outlook.

* This article first appeared on March 28, 2024.

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However, even if r* remains low, the real borrowing cost of government, household, and corporate sectors could be higher in the future. This is because they tend to borrow not for short periods, but longer term, and the associated long-term interest rates incorporate a risk premium—known as the term premium—that compensates lenders for providing funds for an extended period of time.

The dynamics of r* and long-term rates can be illustrated in the case of US Treasury bonds, which serve as global benchmark for fixed income markets. The dark blue bars show an estimate for the r* in the United States. This has risen slightly recently but remains at relatively low levels. By contrast, estimates of the term premium, the light blue bars, have risen more markedly over the past year. In fact, the United States Congressional Budget Office has recently warned of the rising debt burden, noting that it could put pressures on the cost of financing.

Longer-term real interest rates are therefore now comparable to their pre-global financial crisis levels in large part due to higher term premium, and there are reasons to believe that may persist:

First, the inflation fight continues. Even as central banks contemplate easing their policy stance, real rates will remain volatile for some time.

Second, the balance sheet normalization that major central banks have started, commonly referred to as quantitative tightening, may also contribute to higher real term premia by increasing the supply of longer dated securities that need to be absorbed by the market.

Third, the rise in interest rates also likely reflects expansionary fiscal policy and longer-term fiscal concerns, at least in some countries. Loose fiscal policy can contribute to higher interest rates, especially when inflation is high, by forcing central banks to tighten even more to achieve their objectives. Loose fiscal policy, if sustained, can also create investor doubts around long-term debt sustainability, leading to higher term premia.

The key point is that despite low equilibrium rates, borrowers in the United States and the rest of the world may face a new normal with significantly higher funding costs than in the past decade.

Financial stability

If improvements in governments' primary balance cannot be achieved to offset higher real rates and lower potential growth, sovereign debt will continue to grow. This will test the financial sector's health. First, the so-called "bank-sovereign nexus" could worsen. At high debt levels, governments have less capacity to provide support for ailing banks, and if they do, sovereign borrowing costs may rise further. At the same time, the more banks hold of their countries' sovereign debt, the more exposed their balance sheet is to the sovereign's fiscal fragility. Higher interest rates, higher levels of sovereign debt, and a higher share of that debt on the banking sector's balance sheet make the financial sector more vulnerable.

The bank-sovereign nexus is spreading beyond advanced economies to developing economies and a few vulnerable emerging markets. For example, the median banking system in low-income countries now holds about 13 percent of the country's sovereign debt, double the share 10 years prior.

What's more, in a context of limited fiscal space because of high debt, pressures on monetary authorities to tolerate departures from price stability to support public finances or the financial system may rise. This may be especially relevant in countries with high public debt If this were to happen to systemically important countries, financial market volatility could also rise, increasing the cost of financing for businesses and households globally. Debt concerns that spill over to benchmark interest rates could in turn distort asset prices and impair market functioning.

Finally, financial stability could become strained in emerging markets with relatively weaker economic fundamentals, as high debt burdens make them much more vulnerable to capital outflow pressures, exchange rate depreciation, and increased expectations of future inflation.

Policy implications

Some key policy implications follow from the above considerations.

First and foremost, countries should start to gradually and credibly rebuild fiscal buffers and ensure the long-term sustainability of their sovereign debt.

It is easier to rebuild fiscal buffers while financial conditions remain relatively accommodative and labor markets robust. It is harder to do so when forced by unfavorable market conditions. Durable fiscal consolidation will also allow policy rates to fall faster, which should reduce any adverse effects on the macroeconomy. While a substantial fiscal consolidation is necessary, this is not a call for austerity. Too sharp a tack towards fiscal consolidation could backfire by pushing economies into recession. What is needed is for a credible first installment, followed by subsequent, gradual steps in the same direction.

Second, to preserve financial stability, stress tests should adequately account for the impacts on banks and non-banks of higher sovereign interest rates and potential bouts of market illiquidity. Upgrading market infrastructures to improve trading, price discovery, and market depth is also a key policy priority, even in the most liquid sovereign debt markets.

Third, structural reforms should not be postponed. By enhancing future growth, they are the best way to help stabilize debt dynamics.

April 2024
Vol.11, No.2

Africa's Bold Bargain with Global Finance*

By UDAIBIR DAS*

Could a continental consensus work as Africa's ultimate bargaining chip?

In the heart of Africa's economic crucible, a seismic shift is underway. The continent's leaders, weary of a global public and private financial architecture that has long failed them, are now wielding their collective voice as a potent weapon. As the world grapples with crises – ranging from climate upheaval to geopolitical tensions–Africa stands at a crossroads of opportunity and urgency. The delicate dance of balancing social stability, development imperatives and sustainable debt levels has become untenable.

With unwavering resolve, Presidents Nana Akufo-Addo of Ghana, William Samoei Ruto of Kenya, and Hakainde Hichilema of Zambia have stepped onto the global stage, proposing a radical overhaul of financial norms and a reimagining of Africa's destiny.

To bridge gaps in the primary sector and keep pace with futuristic industries like renewables, green hydrogen, artificial intelligence, electric vehicles and semiconductors, Africa requires comprehensive – not selective – investment. The continent remains a promising destination for debt, equity and fund investments waiting for its turn. But a bold approach is needed to tap into the global financial landscape at large.

Africa's offer

The three presidents have joined forces to propose practical solutions to leverage global finance in Africa. In an article in The Economist, they underline the urgency for a collective response and publicly communicate Africa's commitment to global collaboration, outlining exactly what Africa strives to achieve.

They highlight five areas of engagement with global finance, from the overhaul of global financial architecture to the establishment of a robust institutional, legal and regulatory framework to manage the macro-financial risks of new global financial flows.

This global appeal, developed by elected officials, demonstrates Africa's preparedness to receive global capital inflows responsibly. While this should not only reassure investors, financiers, philanthropists, non-governmental organisations and rating agencies, it could also mark the beginning of reducing the 'perception premiums' that Africa has long paid to attract investment and international assistance.

Rather than debating whether enough has been done or whether the multilateral system is biased against Africa, the focus should be on comprehending its interests and why those have been neglected by the international markets. In addressing the underlying causes, solutions can be created to benefit the financier and the recipient. But a successful solution is one that benefits everyone in Africa, which requires a continental consensus.

With multiple multilateral initiatives in progress to enhance access to private capital, fund climate resilience and provide debt relief, there is no better time. Replenishments to the International Development Association and the review of International Monetary Fund quotas are also currently underway.

However, the global finance pool is not as buoyant as some regard it to be. More stringent and competing liquidity worldwide is impacting all cross-border investments. As a result, investment flows have become increasingly selective and cautious. Even large emerging markets like China and India are seeing a preference for portfolio equity flows over direct investment. Hopefully, the postwar and post-conflict reconstruction processes (Ukraine, Gaza, Somalia, Yemen, South Sudan and elsewhere) will begin – further charging significant global finance and private capital.

Regional initiatives

The days of nations tweaking their regulatory frameworks and market regulations to attract capital flows are fading. Fortunately, many African countries have eased capital account restrictions, thus promoting macroeconomic stability and greater financial accessibility. Yet, several studies show that Africa is the

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most disconnected region when measured by the continent's movement of goods, services, people and information.

While there is room for improvement, particularly in fiscal and monetary policies, Africa has made significant policy advancements for over a decade. The Regional Economic Communities, the African Continental Free Trade Area and the Program for Infrastructure Development in Africa are all examples of critical regional initiatives.

However, at the core of this continental vision must be more robust financial integration. The goal is to promote access to finance and capital market development within regional blocs. Organisations like the West African Monetary Institute and the East African Community Monetary Institute are working to harmonise monetary policies and enhance financial co-operation. But strategic, continent-wide initiatives stand to majorly improve Africa's voice in global finance.

Green growth and climate resilience is especially integral to regional co-operation. While these initiatives aim to tackle environmental challenges and attract green finance investments, more is needed – particularly in line with the African Union's Agenda 2063 for sustainable development and climate action.

A continental approach

Progress is being made, but immense potential remains to fully leverage continental mechanisms in the global financial landscape. A continental approach will allow Africa to pool resources, share infrastructure and collaborate on large-scale projects. By integrating markets and production across multiple borders, economies of scale and scope can be harnessed. As a unified bloc, Africa can negotiate better terms in international trade agreements, investment deals and financial arrangements. Collective bargaining will strengthen Africa compared to individual countries negotiating in isolation. A continental view will also provide an opportunity for safety net arrangements against crisis and spread risk across diverse economies – reducing vulnerability to localised shocks.

Further to this, Africa can implement homegrown solutions to help promote the flow of investments and finance in the continent. For instance, a larger, more integrated market for goods, services and investments will stimulate intra-African trade, develop regional transportation networks, energy grids and digital connectivity spanning multiple countries, thereby benefitting economies at scale. Not only will this attract financing from regional and international sources, but it will also promote global growth in the long run.

The challenges – political differences among member states, capacity constraints, infrastructure gaps, regulatory complexities and funding constraints – should not be underestimated. Yet, the efforts and commitments from African governments, regional organisations, development partners and the private sector could propel Africa's regional integration and collaboration agenda Adopting a continental view will allow Africa to overcome individual limitations and position itself strategically in the global economic landscape. Global finance could be more amenable and open to bring in risk capital into continental initiatives.

Despite economist Gunnar Myrdal's optimistic prediction in 1968 that Africa would surpass Asia in growth, the continent's economic prospects remain uncertain without a significant increase in capital inflow, retention and effective utilisation–or as the presidential troika puts it: more help to help itself.

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Unleashing Africa's Investment Potential*

By UDAIBIR DAS*

The role of a shared financial services architecture

Africa stands on the precipice of a financial renaissance, poised to redefine its influence in the global investment sphere. The continent's quest for additional financing is substantial, yet its capacity to emerge as a powerful magnet for domestic and international investment flows is unmistakable. The annual sustainable financing shortfall is projected to be around 7% of Africa's gross domestic product.

Despite strides made, including establishing continental financial institutions such as the African Central Bank, African Monetary Fund, African Investment Bank and Pan-African Stock Exchange, the journey towards providing efficient, inclusive and competitively priced financial services across the continent is far from complete. Political predicaments must be set aside and finance viewed as an essential public-private service. Otherwise, Africa risks being a narrative of an unfinished and incomplete financial and economic development renaissance.

The key to unlocking this potential lies in a unified, continental strategy and a swift progression towards a more comprehensive and legally established financial architecture of the African Economic Community instituted in 1991. Considering the region's distinctive circumstances, the enhancement of Africa's existing financial centres and Pan-African finance could serve as a pivotal force in advancing African finance and cultivating partnerships with the global financial community.

AU's NEPAD and nonprofit organisations such as South Africa's Cenfri and FSDAfrica (supported by UKAid) have supported this notion, suggesting methods to identify suitable locations that could become financial centres and see their role in a continental way.

Africa has financial location centres in Johannesburg, Cape Town, Nairobi, Mauritius, Casablanca, Lagos, Gaborone, Abidjan and Kigali. These centres serve as pivotal conduits, facilitating investment and Pan-African financial services. By leveraging these centres more effectively, Africa can enhance its investment attractiveness, unlock opportunities for inclusive growth, stimulate job creation and drive poverty reduction.

One of the options for Africa is to build an architecture based on the 'hubs and spokes' model. In this approach, a financial centre (hub) collaborates with institutions in other countries (spokes) on large funding projects, asset management, ratings, and financial advisory services. It helps implement long-term financial systems and capital market development programmes. This model could facilitate robust, collaborative financial services environments within Africa, networking opportunities for finance and technology professionals, provide access to pooled resources and synergise operating costs.

A modified approach could be to build them as shared financial services centres. These centres can provide high-quality payments, transfers, procurement data and information technology transactions to offices and other entities across the continent. These centres could consolidate and standardise processes, improve service delivery reduce the usage of state resources and lessen redundancies across countries on back-office type operations. Thanks to robotic process automation, artificial intelligence and cloud computing, such shared service centres can take on entire end-to-end processes continent-wide. These can expand beyond transactional tasks to provide policy makers with higher-level support across the continent and help maintain business continuity against global shocks.

For the hubs or shared services approach to work, apart from a solid political convergence and readiness to undertake necessary legal reforms, continental platforms for financial services in Africa would need to, streamline, and strengthen economic institutions to precede or parallel the anticipated influx of cross-border investment flows (including support from the multilateral development banks). Sound and professionally run financial and monetary institutions and regulatory agencies will be needed for necessary governance structures, market integrity and an enabling investment environment. The large numbers of financial oversight agencies could also be rationalised or integrated to ensure the effectiveness and adequacy of resources.

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In terms of human capital, investing in a workforce with the capabilities needed for emerging industries and technologies will be vital for a shared centre approach to work. Collaborative initiatives in skills development, education and labour mobility can facilitate the movement of finance and technology talent and expertise across the continent. Upgrading financial literacy across African businesses will also play a role. pivotal in Africa's financial and economic empowerment. It will build an informed base needed for structuring various funding and savings vehicles to support trade and economic hubs in Africa.

Moreover, regional co-operation frameworks for risk sharing, crisis management and financial stability mechanisms will be essential to enhance resilience to external shocks and promote macroeconomic and financial stability. More robust and collaborative efforts in monitoring and addressing financial risks, including currency volatility, debt sustainability and financial sector and capital markets stability, could strengthen regional financial systems.

Hubs or centres could also encourage and enable unbiased risk assessments, thus making available Africa-specific risk mitigation strategies unknown to investors. While much lip service is being given to evidence-based risk assessments, the acute shortage, gaps in data series and those needed to provide shared services will require innovative approaches and new methodologies of appraising risks in investable projects and African locations.

By addressing the barriers, leveraging strengths and coming together, Africa can better partner with global finance and unlock its full potential as a dynamic, competitive global investment destination. African-led partnerships can optimise the impacts of sustainable finance on development and better catalyse investments into local, sustainable activities. They could also see Africa attract and retain its wealthy individuals (African billionaires), pension and development funds, and other institutional investors who are primarily investing outside.

As hubs and service centres develop, they will become network aggregation points. Africa can see a faster confluence of trade lines, information and communication infrastructure as well as financial and data networks. A continental Africa could become more integrated into global value chains, and its economies of scale and attractiveness will become hard to ignore by international finance.

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Argentina's Libertarian Experiment: 'Mileinomics' Thrives, but 'Mileipolitics' Falters*

By HECTOR TORRES*

The president must learn to work with the legislature, not against it

Javier Milei, the president of Argentina, is living the reverse of Joe Biden's political fate. Both leaders are grappling with a notable disjunction between the actual state of their respective economies and the public's perception of it, yet these perceptions diverge sharply.

While Americans revel in the prosperity of an increasingly robust economy, they attribute little credit to Biden for this success. Conversely, Argentines are enduring increased economic hardships but credit their libertarian firebrand president for steering the nation clear of hyperinflation.

Milei assumed office on 10 December amid a dire economic landscape. He inherited a country in distress, a bankrupt government, an overvalued peso and a tangled web of 14 disparate exchange rates proliferating under the supervision of a central bank depleted of reserves (with approximately $15bn in negative reserves).

He clinched victory after brandishing a metaphorical and literal chainsaw and vowing to use his first year in office to slash the government's fiscal deficit (which stood at 5% of gross domestic product), dismantle price controls and untangle Argentina's excessively regulated economy.

He additionally pledged to shut down the central bank and adopt the dollar as Argentina's official currency. However, these two proposals are quietly evolving into a more pragmatic approach: cleaning up the central bank's balance sheet to eventually remove foreign exchange restrictions and, rather than 'dollarising' the economy, allowing the private sector to freely select the peso or any other currency for conducting business transactions.

And he is already making strides. Inflation is on a downward trend (from 25.5% down to 13.2% in February). January and February witnessed primary and financial surpluses, with the central bank bolstering reserves by $11bn (albeit still in negative territory). However, the sustainability of these achievements remains uncertain.

Government under pressure

Fiscal 'surpluses' don't stem from substantial structural spending reductions but rather from the inflationary 'liquefaction' effect on pensions and salaries, coupled with a sluggish execution of expenditures. This includes stalled public works projects, the suspension of financial aid to provinces and outstanding accrued payments – often referred to as 'floating' debt. As for the reserves accumulation, it is not due to an export boom but rather to a postponement of import payments and economic recession.

As expected, Milei's chainsaw approach to quenching fiscal deficit led to a profound recession and a surge in poverty rates. Yet, Milei's approval ratings remain steadfast, and financial markets exude optimism. While most market analysts anticipate that in 2024 the government will 'only' reach a primary fiscal balance (prior to factoring in interest payments), this achievement holds significant weight for a nation that has operated with deficits for the past 12 years.

However, the government finds itself under pressure from both the social situation and its political vulnerability, as it lacks control over any provincial government and holds only a minority of seats in Congress, comprising just 15% in the lower house and 10% in the Senate. Furthermore, the government's coalition lacks significant management experience and Milei, a political novice himself, has little willingness to compromise with the political establishment – the 'political caste' in his own words. He is showing a troubling proclivity for picking fights, even with his vice president and with the 'friendly' opposition (legislators aligned with Mauricio Macri, a former president).

Learning to compromise

* This article first appeared in OMFIF on 28 March 2024.

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Nevertheless, Milei seems to be learning – albeit slowly – to temper his abrasive demeanour, which often leads him to stigmatise those who oppose his views. Moreover, despite his proclaimed liberalism, he is reluctantly coming to terms with the legislative constraints inherent in liberal democracies. His 'learning by doing' approach remains precarious: errors made in office can carry significant consequences.

His next challenge lies in forging agreements with the opposition before reintroducing legislation that he previously hailed as 'the cornerstone and genesis of Argentine freedom'. In an initial attempt, his bill failed to garner sufficient legislative support, underscoring Milei's imperative to rein in his rhetorical excesses (characterised by labelling dissenters as 'traitors') and cultivate political consensus – an arena he vehemently disdains.

He has chosen to reintroduce a 'scaled-back' version of the original bill, while concurrently proposing a separate fiscal package (including reestablishing the income tax that, before taking office, Milei voted to eliminate, arguing that it was 'theft' and 'filthy'). The approval of such a fiscal package is indispensable to shore up the government's fiscal balance without resorting to the unsustainable 'tricks' employed to deliver fiscal surpluses during his first 100 days in office.

The success of Milei's libertarian experiment hinges not only on his ability to ensure that the real economy begins its recovery by the second half of 2024, without reigniting inflation, but also on his capacity to persuade investors that he can build the parliamentary majorities necessary to sustain his promising economic achievements.

Milei must learn that governing is also politics, stupid!

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International Monetary System

IMF Executive Board Discusses the Adequacy of the Fund's Precautionary Balances*

Washington, DC: The Executive Board of the International Monetary Fund (IMF) concluded the 2024 Review of the Adequacy of the Fund's Precautionary Balances.[1]The review took place somewhat ahead of the standard two-year cycle, in view of the imminent attainment of the current indicative medium-term target of SDR 25 billion.

The Fund's precautionary balances consist of the general and special reserves. They are a key element of the IMF's multi-layered framework for managing financial risks. Precautionary balances provide a buffer to protect the Fund against potential losses resulting from credit, income, and other financial risks. For this reason, they help protect the value of reserve assets represented by member countries' positions in the Fund and underpin the exchange of assets through which the Fund provides financial assistance to countries with balance of payments needs.

The review was based on the assessment framework established in 2010, which uses an indicative range for precautionary balances, linked to a forward-looking measure of total IMF non-concessional credit, to guide decisions on adjusting the medium-term target over time. It takes into account the macroeconomic environment, the characteristics of Fund lending, and the financial and operational risks faced by the Fund. The framework also allows for judgement in setting the target based on a broad range of factors that affect the adequacy of precautionary balances.

Executive Board Assessment[2]

Executive Directors welcomed the opportunity to review the adequacy of the Fund's precautionary balances, following the last review in December 2022. They stressed that maintaining an adequate level of precautionary balances remains a key element of the Fund's multilayered risk management framework to mitigate financial risks, safeguard the strength of its balance sheet, and protect the value of members' reserve positions in the Fund.

Directors agreed that the current transparent and rules-based framework adopted in 2010 for assessing the adequacy of precautionary balances remains broadly appropriate. They recognized the important role of judgment and Board discretion in the framework. Directors highlighted that the framework's methodology has continuously evolved to strengthen its robustness, and that the framework has led to a strong increase in the Fund's reserves. Noting staff's review of the developments in the capital adequacy approaches of International Financial Institutions and of the Basel regulatory approach, Directors did not see a need for major adjustments. They welcomed the methodological enhancements to the framework to allow for judgmental consideration of commitments under precautionary arrangements and the development of a model based quantitative measurement of credit risks to inform the Board's judgement.

Directors welcomed that precautionary balances have continued to increase and are expected to reach the current medium–term target of SDR 25 billion by the end of FY2024, for the first time since the introduction of the framework. Noting the attainment of the target will be ahead of schedule, a number of Directors saw this as an opportunity to review policies related to the pace of accumulation of precautionary balances, including the surcharges policy. A number of Directors also saw merit in considering ways to utilize excess precautionary balances accumulated above the target, including to address the challenges faced by low-income countries. Directors welcomed that coverage metrics have continued to strengthen, despite Fund lending in response to multiple shocks remaining near historical peaks.

* This article first appeared on April 4, 2024.

Directors concurred that while financial risks remain high, they are broadly unchanged from the last review, taking into account the strengthening of some risk mitigants. Measures of credit risk in the lending portfolio have generally increased reflecting the more challenging economic and financial landscape, and the likelihood of arrears has somewhat risen, albeit remaining at considerably low levels. Notwithstanding, credit concentration risks and near-term bunching of repurchases have eased slightly from high levels, commitments under precautionary arrangements have declined, and the capacity of the burden sharing mechanism has increased. Medium term operational income remains strong, although subject to concentration risk, and while investment risks are elevated, the medium-term outlook for investment returns has improved.

Directors broadly agreed that the current target of precautionary balances, together with other elements of the financial risk management framework and the IFRS 9 provisioning approach, provides a robust level of financial protection for the Fund's balance sheet. Most Directors concurred with retaining the current medium-term target for precautionary balances of SDR 25 billion, with a few Directors in favor of raising the target. While noting the expected upward shift in the trajectory of Fund credit, Directors recognized that the target is expected to remain within the indicative range of the forward-looking credit measure, above its mid-point in the desk survey demand scenario, and closer to the lower bound in the adverse scenario. Notwithstanding, a few Directors were skeptical of the assumption of only a partial drawdown on precautionary arrangements under the adverse scenario.

Directors supported increasing the minimum floor for precautionary balances from SDR 15 billion to SDR 20 billion. They emphasized the need to maintain an adequate minimum level of reserves to protect against an unexpected rise in credit or deterioration in credit risks and ensure sufficient investment income. Directors agreed that higher and longer lasting credit peaks and higher and more volatile commitments, justifies a higher base level of precautionary balances. A higher floor would also help to reduce income risks, given the Fund's reliance on lending income. Investment income from precautionary balances is an important source of income diversification, helping to stabilize Fund reserves and income during periods of lower Fund credit.

Directors called for a continued close monitoring of the adequacy of precautionary balances to ensure that the Fund remains financially strong in the context of large global uncertainty. They supported maintaining the biennial review cycle, with earlier reviews if warranted by developments that could materially affect the adequacy of precautionary balances.

[1] This press release summarizes the views of the Executive Board as expressed during the March 20, 2024, Executive Board discussion based on the paper entitled "Review of the Adequacy of the Fund's Precautionary Balances."

[2] At the conclusion of the discussion, the Managing Director, as Chairman of the Board, summarizes the views of Executive Directors, and this summary is transmitted to the country's authorities. An explanation of any qualifiers used in summings up can be found here: http://www.IMF.org/external/np/sec/misc/qualifiers.htm.

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New Brics Members could Provide Much-Needed Vehicle Currency*

By HERBERT POENISCH*

Saudi Arabia and UAE most likely contenders

In January, five new members joined the Brics bloc: Saudi Arabia, the United Arab Emirates, Egypt, Iran and Ethiopia. This means that five new currencies are in the pot for payments and mutual holdings, joining those of Brazil, Russia, India, China and South Africa.

The Brics mechanism is lacking a vehicle currency like the one provided by the European Payments Union in 1950, where several currencies – weak ones as well as strong ones – were cleared. In the end the D-Mark emerged as the main vehicle currency after the dollar served in the interim.

While the renminbi will be the main currency for trade, payments and settlements within Brics, the role of a new prime holding currency offers fresh possibilities. Regarding trade, Saudi Arabia and the UAE will most likely trade with China in renminbi, independent of the denominator currency. This will significantly affect the global supply of renminbi and further internationalise the currency.

The transactions will be recorded by Swift and foreign exchange reserves by the International Monetary Fund. Conducting trade in local currencies will strengthen the Saudi riyal and the UAE dirham within the Brics bloc.

Which currency will emerge as the Brics vehicle currency in the short and medium term is still open. This currency will have to be strong and offer stable relations with the rest of the world – first and foremost the dollar – and be freely convertible. The renminbi has shown its limitations in playing this role due to depreciation and exchange rate volatility in addition to Chinese restrictions on financial accounts and a highly managed offshore renminbi market.

Only two real contenders

Among the new currencies the only ones that meet these criteria are the Saudi riyal and the UAE dirham. Both currencies have full capital account convertibility, for residents and foreigners, and have been pegged to the dollar since the mid-1990s. While the Saudi government might have some qualms about internationalising its currency, the UAE seems more market friendly, open to trading in all the other Brics currencies. As a market maker it could fulfil the role of vehicle currency in the short term.

The well-developed financial centre in the UAE would offer Brics partners cash deposits or dirham instruments, or freely convert Brics currencies into dollars. Offshore renminbi holdings were never free of restrictions and exchange rate risk. This will satisfy the need for dollars, which have been denied to them by China. Buying dirham cash or instruments poses no risk as they can be freely converted into dollars at a fixed exchange rate.

The UAE financial system would have to play the role of the EPU, accepting strong and weak currencies, such as rupees for remittances or renminbi for imports from China, and disposing of them or adding to their portfolio of reserves. These will be held by private financial institutions as well as the Central Bank of the United Arab Emirates. They would step in where political agreement has failed to provide a mechanism.

The only open question at the moment is in which direction the pressures for appreciation of the dirham or the depreciation of weak currencies within Brics will lead. The revaluation of the D-Mark in the European case is worth studying.

* This article first appeared on 29 February 2024.

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IMI International Monetary Review

Are We Asking the Right Questions about De-Dollarisation?*

By TAYLOR PEARCE*

Fiat currencies are not the only risk to the dollar's dominance in the global economy

The dollar's dominance in the global financial system is reflected in its use in currency denomination, international bank loans, debt securities, foreign exchange transactions and its role in official central bank reserves. A paper by Steven Kamin, senior fellow at the American Enterprise Institute, and Mark Sobel, OMFIF's US chair, highlights that international dollar usage across various measures has hovered around 60% or higher and is relatively unchanged since the 1990s.

At an OMFIF discussion with geoeconomic experts, Kamin and Sobel pointed out that there is no fiat currency that poses a serious threat to the dollar's dominance in the global economy for the foreseeable future. There may be factors that make the dollar less attractive as the key currency of the financial system, but it remains superior to both the euro and renminbi. They observed that the dollar retaining its top spot is by far the most likely scenario.

This view is consistent with the findings of OMFIF's annual Global Public Investor study of central bank reserve managers. The 2023 report, based on a survey of 75 central banks, showed that respondents anticipate the dollar's share of reserves will remain above 50% over the next decade.

The unparalleled size of the US economy, deep and open capital markets, sound economic policy-making, enforcement of the rule of law and full convertibility of the dollar are unmatched by other currencies. Correspondingly, the US's status as issuer of the world's most liquid, risk-free, safe asset (US treasuries) compounds the inertia of dollar dominance in the global balance sheet, as financial institutions look to match assets with existing liabilities. This provides a self-reinforcing 'network effect', said Elliot Hentov, head of macro policy research at State Street Global Advisors.

Is there no alternative?

While agreeing with most of the paper's premises, others have taken a slightly different view. 'Can the renminbi replace the dollar in the current financial system? No,' explained Geoffrey Yu, senior market strategist at BNY Mellon. 'But having said that, I think that is asking the wrong question.' The dollar's dominance in the current financial architecture 'doesn't mean China isn't going to try to create a new form of a financial system' over the next several years or decades. 'There is no guarantee that assets we transact in today will be the same as tomorrow,' noted Yu.

What would that system look like? It's too early to say what kind of role China and the People's Bank of China are looking to take in the global economy. But there are two ways that the US could potentially be left out of an alternative financial institutional arrangement.

In the more benign scenario, China will look to continue its regional and global economic influence, developing an alternative institutional arrangement parallel to the current financial and economic system, with the renminbi at the centre. If the institutional architecture were simply built without the US in mind, this could look like the post-war Bretton Woods system, created without consideration of the Soviet Union or Eastern bloc. In this case, the US would be more marginalised than outright excluded, and the dollar would most likely remain outside of the Chinese regional or geopolitical spere of influence.

In a more extreme case, an alternative system could be designed with an overt geoeconomic tilt that excludes the US. That scenario could seriously erode the dominance of the dollar, but it remains unlikely for now. The panellists agreed that the renminbi does not yet pose a real threat to dollar dominance, but the number of countries transacting and trade invoicing in the Chinese currency is growing.

Gerard DiPippo, senior geoeconomic analyst at Bloomberg, estimated that around 30% of China's trade with the world is settled in renminbi, up from around 15% prior to western sanctions against Russia following the invasion of Ukraine. However, the few countries transacting primarily in renminbi at present are those that have no alternative, like Russia or Sri Lanka, explained Rachel Ziemba, senior fellow at the Center for a New American Security.

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* This article first appeared on 8 March 2024.

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Geopolitics and digitalisation – a perfect storm?

The panellists noted that whether this group of countries transacting or trade invoicing in renminbi will grow largely depends on how the US imposes financial sanctions – unilaterally imposed sanctions pose more of a threat to the dollar than those imposed multilaterally.

This chimes with Sobel and Kamin's assertion that the US poses the biggest threat to dollar dominance if US policy-makers run unsustainably poor macroeconomic policies, abuse financial sanctions and undermine the trust of political allies.

For DiPippo, the question of whether the dollar can be replaced as the world-leading currency is also misguided. Pointing out the potential for a 'low threshold' alternative to the dollar, he asked: 'Is there an alternative that is good enough to have the robustness and rails to get around US sanctions?'

Advancements in fintech could potentially reduce the role of the dollar in global payments systems, and the digital renminbi is the most advanced central bank digital currency project, explained DiPippo. He said he will continue to track developments around the use of renminbi and is looking to see whether Project mBridge could offer a viable alternative to a dollar-based payments system once it goes live.

Project mBridge is the multi-CBDC platform developed by the Bank for International Settlements' Innovation Hub Hong Kong, Hong Kong Monetary Authority, Bank of Thailand, People's Bank of China and the Central Bank of the United Arab Emirates. It is the largest multi-CBDC project involving cross-border transactions.

Taken together, the two main threats to dollar dominance outside of the current financial framework appear to be the innovation of financial technology and geopolitical fragmentation.

As Kamin reflected, for now the global economy seems to need a dominant currency. But perhaps the real question is not whether the dollar will be usurped as king of the current global economic structure. Perhaps the question should be: what will the future structure of the global economy look like? If it looks quite different to today's system, there is certainly scope for erosion of the dollar's dominance.

Whether or not the introduction of CBDCs will impact central banks' reserve management strategies will be explored in OMFIF's forthcoming Global Public Investor 2024 report, along with other asset and currency allocation trends.

IMI International Monetary Review

Monetary Policy

Strengthen Central Bank Independence to Protect the World Economy*

By KRISTALINA GEORGIEVA*

Independence is critical to winning the fight against inflation and achieving stable long-term economic growth, but policymakers risk facing pressure amid a wave of elections this year

Central bankers today face many challenges to their independence. Calls are growing for interest-rate cuts, even if premature, and are likely to intensify as half the world's population votes this year. Risks of political interference in banks' decision making and personnel appointments are rising. Governments and central bankers must resist these pressures.

But why does this matter? Just consider what independent central banks have achieved in recent years. Central bankers steered effectively through the pandemic, unleashing aggressive monetary easing that helped prevent a global financial meltdown and speed recovery.

As the focus shifted to restoring price stability, central bankers appropriately tightened monetary policy—albeit on different timelines. Their response helped to keep inflation expectations anchored in most countries even as price increases reached multi-decade highs. Emerging markets were leaders in tightening early and forcefully, enhancing their credibility.

These central bank actions have brought inflation down to much more manageable levels and reduced the risks of a hard landing. While the battle isn't yet over, their success thus far has largely been because of the independence and credibility that many central banks have built up in recent decades.

The recent success in bringing down inflation contrasts sharply to the economic instability that prevailed during the high inflation period of the 1970s. Back then, central banks didn't have clear mandates to prioritize price stability, or clear laws protecting their autonomy. As a result, they were often pressured by politicians to lower interest rates when inflation was high.

Everyone was hurt by this high inflation, boom and bust era—especially people living on fixed incomes who saw their real incomes and savings eroded. Success in reducing inflation only came in the mid-1980s when central banks were given political support to aggressively fight inflation.

Measuring impact

Extensive research, including our own, demonstrates the critical importance of central bank independence.

One IMF study, looking at dozens of central banks from 2007 to 2021, shows that those with strong independence scores were more successful in keeping people's inflation expectations in check, which helps keep inflation low. Independence is critical, and has become more predominant among countries at every income level.

Another IMF study tracking 17 Latin American central banks over the past 100 years examines factors including: decision-making independence, clarity of mandate, and whether they could be forced to lend to the government. It also found that greater independence was associated with much better inflation outcomes.

The bottom line is clear: central bank independence matters for price stability—and price stability matters for consistent long-term growth.

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* Kristalina Georgieva, Managing Director of the International Monetary Fund (IMF)

But to wield enormous power in democratic societies, trust is key. Central banks must earn that trust every day—through strong governance, transparency, and accountability, and delivering on core responsibilities.

Strong governance helps ensure that monetary policy is predictable and based on achieving mandated long-term goals, rather than short-term political gains. It starts with a clear legislative mandate that sets price stability as the main objective.

Even if employment is put on the same pedestal—as with the US Federal Reserve's dual mandate—legislators have recognized that price stability aids macroeconomic stability, which ultimately supports employment.

Strong governance and independence mean central bankers should have control of their budgets and personnel, and not be subject to easy dismissal based on their policy views or actions taken within the legal mandate.

In exchange, they must be accountable, and they should be transparent.

They should regularly explain how their actions seek to advance their legislatively mandated goals, both in detailed reports and through testimony before lawmakers. Because central bank decisions profoundly affect everyone, central banks and governments should continue working to raise economic literacy so the people can be part of the policy conversation.

And trust ultimately depends on their success in delivering price stability, and ensuring the financial system remains stable.

Respecting independence

Other branches of government have clear responsibilities in helping central bankers achieve their mandated objectives and navigate hazards ahead. This includes not only laws proclaiming independence, but also following the letter and spirit of such laws.

It also means taking into account how other policy actions impact the job of central bankers.

Enacting prudent fiscal policies that keep debt sustainable helps to reduce the risk of "fiscal dominance"—pressure on the central bank to provide low-cost financing to the government, which ultimately stokes inflation. Fiscal prudence also provides more budget space to support the economy when needed, bolstering economic stability.

Another government responsibility that is often shared with central banks: maintaining a strong and well-regulated financial system.

Financial stability benefits the whole economy and reduces the risk that the central bank becomes reluctant to raise interest rates for fear of causing a financial meltdown. Actions to strengthen financial institutions since the global financial crisis, including in emerging markets, allowed central banks to raise rates sharply without undermining the financial system. This major achievement must be preserved.

When central banks and governments each play their roles, we have seen better control of inflation, better outcomes in growth and employment, and lower financial stability risks.

The IMF is here to help policymakers face these challenges. We strongly support central bank independence, providing tailored technical assistance to members working to improve governance and legal frameworks. We make independence an explicit pillar in some Fund-supported financing programs, agreeing with members on actions to measure and achieve it.

To strengthen this work, we introduced a new way to measure independence based on which aspects of it matter most, according to our recent survey of central banks.

And to increase accountability, we have developed a transparency code that helps central banks assess and improve their practices.

By working together—central bankers and government leaders, legislatures, and the people—we can preserve and strengthen central banks to win the fight against inflation today and foster economic stability and growth for years to come.

This will benefit everyone—the retiree living on a fixed income; the small entrepreneur trying to build her business; and every society that could face unrest when inflation gets out of control.

With such high stakes, we must preserve and strengthen central bank independence.

IMI International Monetary Review

Disinflation without a Rise in Unemployment? What Is Different This Time Around*

By GOVERNOR ADRIANA D. KUGLER*

My topic today is the Federal Reserve's dual mandate of maximum employment and stable prices—and, specifically, the tradeoffs that sometimes arise when pursuing these two objectives. I say "sometimes" because there have been times and certain economic conditions in which such tradeoffs did not arise—or at least were not apparent. This distinction is an important one, especially when considering the Federal Open Market Committee (FOMC)'s recent progress in reducing high inflation while the labor market has remained strong. Better understanding the tradeoffs, or lack thereof, in pursuing the dual mandate will help researchers and policymakers draw lessons from these welcome recent developments.

History of the Inflation–Unemployment Tradeoff

In 1977, Congress legislated the Federal Reserve's "dual mandate," under which the FOMC is required to pursue both maximum employment and stable prices, with both objectives on an equal footing. At the outset, it is worth stressing that these goals are generally complementary, and I will return to this point shortly. But when they are not complementary, one way to think of the policy problem is in terms of tradeoffs: Maximum employment is the highest level of employment that will not cause inflation to escalate significantly above levels consistent with price stability.

Before going into those tradeoffs, I want to emphasize that achieving the Committee's employment goal on an ongoing basis rests on achieving price stability. Price stability enables long-lasting economic expansions, which strengthen the labor market and expand employment opportunities. This process particularly benefits families and communities that all too often have been left behind.

But it is appropriate to recognize also that tradeoffs between the goals of maximum employment and price stability can occur in the short term. Indeed, the potential shorter-term tradeoff between unemployment and inflation has long featured prominently among the economic considerations of policymakers. Government action to boost employment through fiscal or monetary stimulus has historically tended to increase aggregate spending and inflation, too. On the contrary, actions to reduce inflation by shifting to contractionary fiscal or monetary policy have tended to slow economic activity and raise unemployment, or at least slow the pace of job creation.

The idea of a short-run tradeoff is reflected in the original specification of the "Phillips curve," named after New Zealand economist A.W. Phillips, who plotted historical values of the United Kingdom's unemployment rate and growth in nominal wages between 1861 and 1957, showing an often inverse relationship between the two. Although the Phillips curve was initially specified in terms of wages, later versions have more typically compared unemployment with price inflation.

Taken at face value, a tradeoff between keeping employment high and reducing inflation would seem to present policymakers with a dilemma. It suggests that when inflation is well above levels associated with price stability, policymakers must engineer a significant increase in unemployment to bring inflation down. Disinflation can be especially challenging when expectations of future inflation are high. We saw this in the 1970s and 1980s. Convincing households and businesses that the FOMC was committed to reducing inflation required accepting a protracted, though ultimately temporary, period of high unemployment, as then Fed Chair Paul Volcker came to believe. Volcker is widely credited with ending the "Great Inflation" experienced at the time through his willingness to induce a punishing recession. He lowered inflation and kept it down, in substantial part by convincing the public that the Fed would keep inflation in check whatever the cost, thereby lowering expectations of future inflation.

While long experience shows that there can be a tradeoff between policy actions to pursue maximum employment and stable prices, there are times and conditions when this is not the case, or at least when

* This article first appeared on March 01, 2024.
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there is little evidence of a tradeoff. For example, for most of the decade after the Great Recession, FOMC policy was, by some measures at least, highly accommodative, yet inflation ran consistently below the Committee's 2 percent target. So when inflation is below target and employment is below maximum sustainable levels, accommodative policy can be used to pursue both sides of the mandate.

Academic economists have debated for decades about the circumstances in which the tradeoff applies. One strand of the research literature proposes that a central bank can indeed achieve good economic outcomes by focusing on a single mandate, an inflation target, and that policies to promote stable prices can also secure low unemployment. In this view, stabilization of inflation ensures that the economy performs at its optimal level, with firms producing just the right amount such that no resources, including workers, are left on the sidelines. This theory fits in a world in which the economy is driven by demand—in such a case, shocks coming from the demand side of the economy can be offset by monetary policy, which works via aggregate demand.

But in the real world—which is not so simple—demand shocks are not the only forces that can drive economic fluctuations. Supply shocks not only exist, but they can also be large and persistent, as we have learned over the past several years. Adverse supply shocks, just like higher inflation expectations, make managing the tradeoff between inflation and unemployment more difficult and costly. While a sharp reduction in demand reduces both economic activity and inflation, a sharp reduction in supply, such as a sudden loss of global oil supply, increases inflation and reduces economic activity. Trying to combat inflation by raising interest rates would further reduce economic activity and employment, while reducing interest rates to boost economic activity and employment raises inflation even higher. Therefore, counteracting a persistent supply shock with monetary policy tools may help with one side of the mandate but create even larger deviations from the other side of the mandate.

Inflation and Unemployment in the Pandemic and Its Aftermath

Let me now turn to the pandemic experience. Inflation picked up in 2021, and by mid-2022, 12-month inflation, based on personal consumption expenditures (PCE), hit 7 percent, well above the FOMC's 2 percent target. It was the most significant surge in inflation since the 1970s, prompting fears that it could raise expectations of future inflation and make getting inflation down again require a steep tradeoff—that is, much higher unemployment.

One more specific concern was that a so-called wage–price spiral would emerge, as may have been the case for a time in the 1970s. In a tight labor market, expectations of continued high inflation can lead workers trying to maintain their living standards to demand higher raises. In a context of strong aggregate demand, firms will likely grant the wage increases to retain their workers—then pass through the resulting cost increase as higher prices. To avoid a continuing spiral, demand and supply in labor and product markets must be rebalanced—through lower aggregate demand, greater aggregate supply, or both. If achieving this balance requires a drastic reduction in aggregate demand, then sustainably taming inflation could require a high cost in terms of the employment mandate. Fortunately, we appear to have avoided a wage–price spiral this time, as I will discuss later.

As inflation rose and began to appear persistent, the FOMC rightly focused on restoring price stability, knowing that without price stability, the economy would not work for anyone and that high inflation would ultimately undermine the strength of the labor market. While interest rates rose rapidly, some feared that the cost of disinflation would be persistently elevated unemployment. But over the past year or so, that tradeoff has been much less evident than many feared. We have seen inflation cool significantly, falling more rapidly than at any time since the 1980s. Yet unemployment remains near the lowest levels seen only a few times since the 1960s.

How have we managed to avoid the familiar tradeoff during this period and see such welcome outcomes on both the inflation and employment fronts? I would propose a few possible reasons. These center on the fact that the pandemic inflation featured both supply and demand shocks. In the limited time that I have today, I don't propose to get into the debate about exactly how much of the recent inflation can be explained by supply as opposed to demand. But I will discuss how both demand and supply forces have been important in the rise and fall in the inflation rate.

The pandemic caused a significant reduction in supply in some areas of the economy. Limits on the supply of goods resulted from restricted output in many industries. Consider a key U.S. manufacturing industry, auto production. In 2019, the U.S. manufactured 10-1/2 million light vehicles. In 2020, production plunged to 8-1/2 million, with pandemic-related plant shutdowns followed by worldwide

shortages of computer chips and other parts. It has taken the industry a long time to recover—auto production was less than 9 million in 2021 and a bit under 10 million in 2022. Constrained vehicle supply played a big role in boosting auto prices. And it wasn't just motor vehicles; for example, you might recall reports of food processing plant shutdowns, and many other goods-producing industries also suffered from "lost output." U.S. industrial production dropped at the onset of the pandemic and then remained below its pre-pandemic level until early 2022 despite strong demand for physical goods; indeed, evidence shows that output was held down by insufficient supply of materials.

But supply problems were not limited to goods; indeed, insufficient supply of labor has also been widely cited by businesses as having held down output. Labor supply was suddenly and severely limited early in the pandemic as workers voluntarily and, in some cases, involuntarily stayed out of the workplace. The labor force did not recover to pre-pandemic levels until mid-2022. Older workers, in particular, left the labor market in large numbers. But even many prime-age workers—those between the ages of 25 and 54—withdrew because of school disruptions and health concerns, and prime-age labor force participation remained below its pre-pandemic level until early 2023. A slowdown in immigration, likewise, deprived the economy of a customary source of labor supply growth, as did elevated mortality due to COVID-19.

Fortunately, these supply shortages for both goods and labor have mostly dissipated. For example, auto production in 2023 nearly regained its 2019 level, and industrial production as well as various goods supply indicators have returned closer to their pre-pandemic levels. Congestion in logistics and transportation networks eased, and firms sometimes found alternative supply chain networks.

In the labor market, shortages directly related to the pandemic have eased, helping restore labor force participation, likely in part because of the reopening of schools, progress with the health situation, and help from childcare subsidies and other policies. Increased capabilities for remote work, allowing for a decoupling between firm and worker location, expanded the pool of available workers and jobs. More broadly, strong labor demand has enticed more workers into the labor market to the point that labor force participation among prime-age workers is now above pre-pandemic levels. And immigration has rebounded as well.

Another, more subtle source of labor market supply recovery has been improvements in the quality of matches between firms and workers. At any time, a crucial factor that affects labor supply is how well the skills of available workers fulfill the needs of employers. With labor in many sectors in short supply and very high numbers of job openings, many workers quit their jobs to move to new ones. Economists generally believe that increased labor turnover improves worker–firm matches—workers find jobs that make better use of their skills, typically with higher pay, and firms find workers that are better suited for their businesses and are more productive at their jobs. Economic expansions, such as the one that has continued since April 2020, present more opportunities for workers to find a good match.And it appears that workers and firms were pretty efficient at finding each other over the past couple of years, likely upgrading the average quality of a job match in the process. Higher-quality job–worker matches improve the productivity of workers, serving like a boost to labor supply.

If reductions in supply contributed to inflation, then recovery of that supply would help lower inflation, too. Supply improvements in the goods sector have helped ease inflation starting in early 2022; for example, in January, the 12-month growth of new motor vehicle prices was less than 1 percent, far slower than its peak pace above 13 percent in the spring of 2022. More broadly, the overall price level for core PCE goods, which excludes food and energy, was fairly flat last year and has actually declined in recent months.

On the labor side, supply recovery has likely contributed to disinflation by helping to ease the pace of wage growth—especially in the labor-intensive services industries. For private services as a whole, 12-month nominal wage growth, as measured by average hourly earnings, was 4.5 percent in January, down from its peak of 5.9 percent in early 2022. And, sure enough, price inflation in services has also slowed: In core PCE services—which accounts for roughly three-fourths of core PCE—12-month inflation was 4.1 percent in January, down from its peak of 5.8 percent early last year.

But supply is not the only factor behind the slowing of inflation. Policies affecting aggregate demand have played a role as well. On the fiscal side, measures of the impact of government spending on economic growth turned negative in 2021 after being strongly supportive in 2020. And in terms of monetary policy, the FOMC's actions in late 2021 indicated a sooner-than-previously-anticipated start to policy rate increases, with the FOMC beginning to raise the target range for the federal funds rate in March 2022. After that, the Committee tightened its stance of policy expeditiously. The result can be seen especially in

areas of the economy that are sensitive to financial conditions. The housing sector saw a significant slowdown, with residential investment declining more than 15 percent in 2022 and remaining flat in 2023. Growth of investment in equipment was tepid last year, likely due in part to restrictive financial conditions, even as we have seen growth in manufacturing construction for semiconductors and electric vehicle batteries that will help address remaining supply-side bottlenecks.

Aside from these examples of subdued spending in policy-sensitive sectors, we can also see the imprint of monetary policy in the anchoring of inflation expectations. Even amid high inflation, households, businesses, and financial markets believed that inflation would eventually return to its target pace. These beliefs were guided by the FOMC's actions: By raising policy rates expeditiously and communicating clearly, the Committee demonstrated its resolve to lower inflation to 2 percent and its commitment to the price-stability mandate. Anchored inflation expectations are apparent, for example, in the popular University of Michigan Surveys of Consumers. Expectations of inflation for the period covering the next 5 to 10 years have remained relatively stable over the pandemic and close to levels seen before the pandemic. And shorter-term expectations rose in 2021 but have come back down recently. Anchored inflation expectations likely matter for actual price setting. That is what modern theories of the Phillips curve suggest. And the relevance of that theoretical expectation has been suggested by surveys reported by Federal Reserve Bank of Richmond staff: The data show a close relationship between firms' expectations for overall inflation and those firms' own price-setting plans. Crucially, by keeping inflation expectations anchored, the FOMC has likely forestalled the development of wage–price spiral dynamics of the kind I mentioned earlier, while also creating conditions in which inflation has been able to peak at a lower rate than would have been the case if the FOMC had not acted with credibility and clear communication. Real wage growth—that is, growth of wages after accounting for inflation—has turned positive, which means workers' income is rising faster than the cost of living.

A Couple of Final Observations about the Pandemic and Its Aftermath

These developments help bring us back to the inflation–unemployment tradeoff that started my discussion. The pandemic experience has shown that the nature of that tradeoff changes with economic conditions, as does the steepness of the Phillips curve. I will close by making two more general observations about the changes that we have seen during the pandemic and its aftermath, with suggestions about open questions for researchers moving forward.

First, supply curves are, as economists say, "convex": Their slope increases sharply after quantity supplied reaches a certain point, such that prices rise quickly. The steep part of the supply curve can come into play when demand nears the limits of an industry's capacity. That could happen either because of an unusually large increase in demand or because of a temporary reduction in industry capacity—or both. Research has shown this is the case for individual industries, even in the pre-pandemic period. During the pandemic, many industries experienced large demand shocks or supply curtailment that contributed to inflation, as I have already discussed, and those same shocks also may have exacerbated the inflationary effects by pushing many industries up the steep part of their supply curves.

Early in the pandemic, the convexity or steepness of industry supply curves was quite costly in terms of our inflation mandate. But it has likely helped us more recently as we have apparently moved back down the steep part of the supply curve in many industries, which has allowed for rapid disinflation. An open question in the longer term is whether this process has helped firms learn more about supply chains and inventory management such that we might even be less likely to encounter the steep part of supply curves in the future.

Second, with regard to the Phillips curve specifically, I note that in a large class of economic models, the steepness of the Phillips curve is partly a function of how frequently firms adjust their prices, and that seems to be borne out by recent experience. Before the pandemic, the typical price tag lasted more than 10 months, and this figure was reasonably stable for many years. But the pandemic seems to have moved firms into a regime of more frequent price adjustment—that is, shorter price duration. By early 2022, the typical price was lasting less than five months. Price adjustment frequency has since slowed back down, with the latest data from the third quarter of last year suggesting prices were lasting nearly seven months. Continued slowing of price adjustment frequency is an indicator that firms' costs are rising less quickly and the economy is moving back down the Phillips curve. Interestingly, though, in the workhorse academic models used for studying the effects of monetary policy on the economy, the frequency of price adjustment is often assumed to be constant. Of course, economists have thought about this in the past; but a greater

understanding of the relationship between the price adjustment decisions of individual firms and overall inflation is an important area for further academic research.

For the reasons I have been discussing, I am cautiously optimistic that we will see continued progress on disinflation without significant deterioration of the labor market. With respect to the inflation and unemployment tradeoff, we have certainly learned a lot during the pandemic—but there is still much more to learn. In particular, I look forward to further research that can enrich the economics profession's understanding of the inflation–unemployment tradeoff and the Phillips curve and continue informing policymakers as well.

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Bank of Japan Rate Hike Signals End of Financial Socialism*

By JESPER KOLL*

Capitalism is coming back to Japan

Since February 1999, the Bank of Japan has provided de facto zero interest rate funding to Japan and the world. Now, Governor Kazuo Ueda has hiked rates. Twenty-five years of 'capitalism with a zero-cost rate anchor' is coming to an end. Sayonara financial socialism.

And welcome back inflation. In the days after ending negative and zero rates, Ueda stressed that a key reason for raising rates now was to avoid being accused of doing 'too little, too late'. Being too late raises risks of having to hike at a more aggressive pace in the future that does not allow due time for markets to adjust to Japan's new realities. Ueda prefers proactive gradualism to reactive radicalism.

Is a wage-price spiral on the cards?

It's painful to contemplate, but Japan's inflation risk profile may be changing faster than generally anticipated. What started two years ago with global supply- and terms of trade shock-induced price increases is now on the cusp of turning into a potentially dangerous domestic wage price-led, demand-pull inflation spiral (Figure 1).

What else are we to conclude from Japan's 'shuntō' base wage negotiation result? After almost 20 years of flatlined base wage hikes of around 1.5%, the shuntō went to 3.6% last year and has now jumped to 5.3% (well above the 4% expected by experts).

Over the past 20 years, inflation has been de facto zero (i.e. real base pay purchasing power rose by around 1.5% each year). Last year, inflation was 3.1% (real base pay wages rose 0.5%), but this year it will run at just above 2% according to the BoJ policy board forecast. The shuntō coming in at 5.3% means workers' real purchasing power should rise by 3%, more than double the 1.5% average growth over the past 20 years.

This obviously sounds great for domestic consumption. But the problem is that the BoJ has zero control over the labour market in general and wage inflation in particular. All indications are that Japan's labour market will tighten further.

The skills mismatch will intensify and most likely compound: the number of high school and university graduates is declining, but the demand for specialised workers is rising. Locally, the gap could be filled by the retiring 'Showa' baby boom generation, but unfortunately these are mostly generalists who will need significant re-skilling and greater pecuniary incentives to re-enter working life.

At the very least, the time has come to be open to a complete re-think of how to assess Japanese monetary policy priorities. After the 'lost decades' of increasingly bolder actions taken to get out of deflation, slowly but surely the pendulum will swing towards policy actions specifically designed to rein in inflation.

Fortunately for Ueda – unlike in the US or Europe – in Japan, 'demand destruction' policy levers can be pulled from both the monetary and the fiscal side. Specifically, Japan's next recession is more likely to be triggered by tax hikes than by Ueda hiking rates too fast and too aggressively.

Practically speaking, Ueda is poised to stay true to the macroeconomic legacy of his predecessor Governor Haruhiko Kuroda. Real policy rates are bound to stay negative for the foreseeable future. This is poised to be supportive for yen risk assets – equities, real estate and non-yen securities.

Searching for the new normal

Make no mistake: Ueda faces a heroic task. He must lead markets and the economy towards a new normal, away from decades of central bank-led 'emergency' actions that did more to suppress debt capital market price discovery than end deflation. And now that inflation is finally here, nobody has any idea where – or how – Japanese inflation expectations will be anchored next.

After the BoJ consistently missed its 2% inflation target on the downside for almost three decades, private sector actors may be forgiven for not trusting the bank will achieve it now that inflation has shot up to above the target. Yes, a first hike in rates will be presented as a vote of confidence that deflation has ended. But it does not follow that inflation will be contained.

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* This article first appeared on 25 March 2024.

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Fortunately, Ueda knows better than anyone that he must be humble and admit that, as he starts the journey of normalisation, he does not know what interest rate level is the optimal new-normal neutral. This does not mean he is starting completely without references: apply the Taylor rule to today's Japan and you get a Taylor rule neutral rate of slightly higher than 2% for the correct policy rate anchor.

No matter how theoretically sound, for all sorts of reasons there is no way for the BoJ to communicate and guide towards 2% when starting from zero – it's about four times above what market participants and forecasters expect. Even after the hike, most economists still expect a terminal policy rate anchor of around 0.5% in this cycle. My own forecast is for something closer to 2%-2.25% as I expect Japan's nominal gross domestic product growth to surprise very much on the upside over the next 12-18 months.

What about Japanese capital markets?

Japan's capital markets are now primarily driven by long-overdue corporate actions to put 'lazy balance sheets' to work. Last year's initiative by the Stock Exchange to hold its member companies' chief executive officers accountable for driving price-to-book ratios above one has become a catalyst for unprecedented corporate action: record business investment spending, record mergers and acquisitions and management by objectives activity, relentless increases in dividend hikes and share buybacks.

It is not an exaggeration to state that, finally, Japan's corporate leaders are becoming real-world capitalists. The Bank of Japan terminating its brand of financial socialism will not, in our view, negatively affect this positive capital markets momentum. On the contrary, as both labour costs and debt capital costs are poised to rise further, the less productive and inefficient companies will be forced to either fundamentally restructure or make way for the more efficient players.

More than anything, the BoJ's decision to end financial socialism and outright market intervention is not just a statement of confidence, but an official endorsement – capitalism is coming back to Japan.

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Thoughts on Quantitative Tightening, Including Remarks on the Paper "Quantitative Tightening around the Globe: What Have We Learned?"*

By GOVERNOR CHRISTOPHER J. WALLER*

I'm pleased to participate in this panel to discuss a policy action now being implemented by central banks around the globe: quantitative tightening (QT).1 I want to thank Kristin, Matt, and Wenxin for putting together a great paper that provides an overview of the effects of QT across seven central banks.

Often called "large-scale asset purchases" (LSAPs) by central bankers, the view of quantitative easing, or QE, as a tool to add monetary policy accommodation and QT to tighten policy has changed over time. When it was used during and after the Global Financial Crisis, QE was deemed an "unconventional" tool in central banks' arsenals. But QE has now been used numerous times in the past two decades for extended periods when the policy rate was at the effective lower bound, so I would say it is no longer unconventional.

Given the role of QE and QT in the policy toolkit, it is good to have researchers and policymakers examine how asset purchases work and talk about current issues associated with their implementation. This paper is very timely and thorough in looking across countries and their experiences with QE and QT. There is a lot packed into this work that makes it a little difficult to fully assess in the time we have today. So I will focus my comments on four points: (1) the evidence that the effects of QE are asymmetric to the effects of QT; (2) the execution of QE versus the execution of QT in the United States; (3) the role of announcement effects of QT; and, finally, (4) who has taken the Fed's place in buying assets when we withdraw from the market. I will then end with some thoughts about issues facing the Federal Reserve as we move forward with normalizing our balance sheet.

The Asymmetry of Quantitative Easing versus Quantitative Tightening

For me, one of the most interesting results of the paper is that the announcement effects of quantitative easing are much larger than the announcement effects of quantitative tightening. The authors find that announcements of QT have a small but statistically significant effect in increasing government bond yields—about 4 to 8 basis points. But this effect is much smaller, in absolute terms, than the prevailing estimates of the decrease in yields from announcements of QE. The conclusion is that the interest rate effects of QE and QT are asymmetric. For an economist, this result may seem puzzling—why would changing the sign on an action lead to asymmetric effects on prices and real variables?

Ever since central banks initiated QE in response to the Global Financial Crisis, academics have debated its effectiveness. One view is that it has a very limited effect in situations where a central bank is swapping zero interest-bearing reserves for zero interest-bearing shorter-term Treasury securities. Because the two assets would seem to be nearly perfect substitutes, there can be no price effects from altering the composition of the two assets. The central bank is simply swapping two $10 bills for a twenty. If this is true, then undoing the trade via QT has no effect either. It should be symmetrical.

The alternative view, based on market segmentation or preferred habitat theory, is that when a central bank uses reserves to pay for government securities, it is decreasing the supply of these securities to private investors, which will bid up the price and lower the interest rate on government securities.2 By lowering interest rates on longer-maturity assets, which pay a higher interest rate than reserves, the central bank can stimulate the economy in a manner similar to lowering the policy rate. But by this logic, when QT reverses QE, asset prices should fall and yields should rise in equal magnitude. Thus, any positive effects derived from QE would be reversed when QT occurs. This suggests that QE and QT may cancel each other out in welfare terms. But if there are no net benefits from the action, what is the point of doing it? To illustrate this point, suppose someone is given a weight-loss drug and they lose 80 pounds, but then

* This article first appeared on March 01, 2024.
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the drug is taken away and they regain the 80 pounds. What was the point of the exercise if there was no net welfare gain?

To me, for QE to be beneficial on net, there has to be asymmetry in the effects of QE relative to QT. My thinking on this has long been guided by the conclusions of a paper I wrote with Alex Berentsen about optimal stabilization policy, which is what QE and QT ultimately should be about.3 The gist of the argument is that when shocks and frictions to trading arise suddenly, the central bank can take actions such as injecting reserves to ease trading frictions or credit constraints and improve welfare. But by waiting until the frictions and shocks dissipate before undoing the injections, the positive effects are not reversed. As an example, when a house is on fire, pouring water on the fire will put it out, which has great benefits for all. But when the fire is out, draining the water away does not reignite the fire—the initial benefits are not undone. The punchline here is that QE is conducted under different market conditions than those that occur when QT is done, so it is not surprising that the effects will be different. The authors' findings that QE has asymmetric effects compared to QT is not a puzzle but an indication that central banks timed QE and QT in the right manner such that society was better off.

The Execution of Quantitative Easing versus Quantitative Tightening

Turning to the impact of QE and QT on interest rates, analysis often focuses on the term premium. There are three key elements of asset purchases that change the term premium: (1) the expected path of QE, which includes the amount and timing of purchases; (2) the length of time the central bank is expected to hold the additional securities; and (3) the expected path of QT, including the amount and timing of redemptions, which importantly depends on the desired ultimate size of securities holdings (and reserve balances) of the central bank. As soon as an asset purchase program is announced, these expectations are formed, resulting in the term premium effect, or TPE, on interest rates.

Over time, the TPE will change, based on both the passage of time and any updates to the public's expectations for the components I just mentioned. Let me talk about three factors that affect both the expected path of asset purchases and interest rates. These factors are things to keep in mind for future policy decisions.

First, there are two ways that QE can be implemented, and they have different impacts on interest rates. These are what I call closed- or open-ended QE programs. Closed-ended QE programs involve an announcement of a fixed stock of purchases over a fixed period of time. An example of this type of asset purchase program was initiated by the Fed in March 2009.4 Open-ended QE simply gives a purchase amount per month but no calendar endpoint, so the expected size of the program is unspecified. A set of economic conditions for reducing or ending purchases may be stipulated, but when they will occur is not perfectly predictable. Here, one can think of the Fed's most recent asset purchase program.

At the time of an asset purchase announcement, it will be easier for markets to fully price in a closed-ended program, since its purchase amount and end date are given, whereas the open-ended program's pricing will depend on market expectations for the evolution of the economy. So if one wants a particular impact on interest rates at the announcement date, one might lean toward a closed-ended program or be aware that additional guidance on the expected path of the open-ended program will be needed.

As time passes and the economy evolves, the two programs work differently. One might prefer an open-ended program over time because it dynamically responds to the evolution of economic conditions. The program could be halted or extended as conditions improve or worsen, unlike a closed-ended program. But, of course, the criteria set in the open-ended program must be carefully considered. As I said in a recent FEDS Note and in several speeches, the 2020 criteria for when to begin QT may have been too restrictive and did not allow the Committee to taper as soon and as gradually as desired.5 Setting the appropriate criteria ahead of time to create the flexibility needed to respond to changing economic and financial conditions is very hard to do.

The second factor affecting the path of asset purchases is that it is very important that QE be credibly followed by QT. If QE is viewed as nothing more than a permanent injection of money into the economy, it would likely create inflation. This was widely predicted back in 2009, but the inflation didn't happen. Why? In my view, it didn't happen because the Fed credibly committed to withdrawing the injected reserves at a later date. Pre-committing to QT is what allows the injection of reserves into the economy without inflation or other longer-run distortions of market pricing. So when starting asset purchases or

weighing how to approach asset runoff or sales, it is important that the central bank commit to normalizing its balance sheet.

The third factor is that it is important for a central bank to move carefully as it comes to the end of QT and the desired level of ample reserves. The endpoint should be related to the expectation of the banking system's demand for reserves. In the United States, we saw stresses in money markets in the fall of 2019, when the Fed reduced the level of reserves during balance sheet normalization through July and then there was heavy issuance of Treasury securities in September. The level of reserves likely went a bit too low.6 Learning from our experiences and trying to understand how the demand for reserves has changed over time suggests moving carefully toward the endpoint of QT.

For this reason, even if QE is an open-ended program, QT is more likely to resemble a closed-ended program. Central banks usually have an idea of how large they want their balance sheet to be when QT ends; therefore, once the pace of QT is announced, markets should be able to effectively price in the entire program at the announcement of the plan. After that, the actual execution of QT is simply validating the beliefs that market participants had at the announcement. This is why many refer to QT as merely draining unneeded reserves, which should be as interesting as watching paint dry.

Quantitative Tightening in the United States

Let me now turn more directly to the authors' paper and two of their findings. First, as I mentioned earlier, they find central banks' QT announcements have only a small effect on interest rates. To conduct this analysis, the authors do an event study around QT announcements, which requires them to identify "surprises" in the QT announcements. As the authors acknowledge, this is not a trivial exercise. My comment here is to point out why identifying a QT announcement surprise is challenging when considering examples in the United States.

Let me walk through the evolution of the Fed's QT communications in the spring of 2022 to consider how various communications affected the expected path of QT.7 Recall that QE ended in March 2022.8 Heading into April, it was likely that markets expected a redemption path somewhat like the Fed's 2017–2019 QT plan.9 That plan phased in redemptions over 12 months and ultimately allowed, at most, $30 billion of Treasury securities and $20 billion of agency mortgage-backed securities (MBS) to be redeemed each month. On April 5, 2022, then-Vice Chair Lael Brainard gave a speech that noted the balance sheet would shrink considerably more rapidly than in the previous case of QT; specifically, she said that "significantly larger caps and a much shorter period to phase in the maximum caps compared with 2017–2019."10 The next day, the Federal Open Market Committee (FOMC) minutes provided additional information on the expected maximum monthly caps and phase-in period, saying participants generally agreed to a three-month phase-in and caps of $60 billion and $35 billion for Treasury securities and agency MBS, respectively.

Over those two days in April, the markets likely updated their expected QT plans to have sooner and larger redemptions. This change would be associated with a less negative term premium effect, meaning a rise in Treasury yields. The 10-year Treasury yield rose 19 basis points over the two days of the Vice Chair's speech and the FOMC minutes—that is, 12 basis points on the day of her speech and another 7 basis points on the day of the FOMC minutes—and a total of 37 basis points over that week.

About a month later, on May 4, 2022, the FOMC communicated its "Plans for Reducing the Size of the Federal Reserve's Balance Sheet." The plan was consistent with the FOMC minutes from April, and there was little change in the 10-year Treasury yield that day and week (negative 4 basis points on the day of the announcement and 2 basis points over the five-day period). So, when doing event studies, it may be difficult to estimate the full impact of QT announcements by simply looking at the formal announcement of the QT plan.

Let me turn to a second point of the paper, about which types of investors have increased their securities holdings as the Fed has reduced its holdings. When a central bank steps away from asset purchases and begins to shrink its balance sheet, a common question is, who will step in and take the central bank's place in buying securities? I always respond by saying, "Why is this important?" If the government bond market is broad and deep, there will be plenty of buyers—there is no need to worry about who will buy the government debt. If the government bond market is not broad or deep, however, then the central bank's actions can have adverse and unwanted effects on prices and market functioning. This would then affect how fast the central bank can reduce its balance sheet and whether it can do so passively or actively.

One could also argue that it matters because knowing the buyers helps one understand the transmission of QT to asset prices and interest rates. Does it matter if it is banks or nonbank financial firms that are

doing the buying? Does it matter if it is hedge funds, pension funds, or actual households doing the buying? One needs to have a better understanding of why the question is being asked before one can fully understand the answers to the question.

The authors focus on the reduction in aggregate securities holdings of central banks and find that households and broker-dealers are the main investors absorbing the redeemed securities. For my discussion today, I decided to dig a bit deeper into the Financial Accounts of the United States in two ways. First, I decided to look at each type of security (Treasury securities and agency MBS) individually.11 For Treasury securities, I also find that since the 2022 start of QT, households have boosted their market share the most, and broker-dealers have also increased their share. For agency MBS, not only has the market shares of those two investor types increased, but so has the market shares of money market funds.

Second, I dug into the household category a bit more. As currently categorized, the Financial Accounts household category includes hedge funds. The Federal Reserve Board is working to segregate hedge funds in this data set. In the interim, the Board publishes separate data on the balance sheets of domestic hedge funds.12 Using this supplemental data, I find that it is not the hedge funds that are responsible for the increase in household market share. This means the increase is driven by the other household investors: actual households and nonprofit organizations.

What do I make of this finding? My interpretation is that it reinforces the view that the demand for U.S. Treasury securities is broad and deep—the buyers are not a narrow set of deep-pocketed, sophisticated investors but rather the American public. As a result, the pace of runoff is not a problem. As we have seen with the current phase of QT, runoff up to $95 billion a month is not causing substantial strains in financial markets—something that a few years ago would have surprised a lot of people, given the worries about QT that were common prior to 2022.

Normalization

Let me conclude with a few comments on where I believe the Fed should be heading as it continues to normalize its balance sheet. By "normalizing" I mean reducing the size of the balance sheet but retaining enough assets to manage monetary policy using an ample-reserves regime.

As the Federal Reserve continues its QT program, I support further thinking about how many more securities to redeem. We have an overnight reverse repurchase agreement facility with take-up of more than $500 billion, and I view these funds as excess liquidity that financial market participants do not want, so this tells me that we can continue to reduce our holdings for some time.

In addition, it is important to remember that we now have a standing repurchase agreement facility (SRF). The SRF serves as a backstop in money markets, since it takes in Treasury securities as well as agency MBS and puts reserves in the banking system. This facility may allow banks to lower the level of reserves below what reserves would be without the facility, and it may provide a signal for when reserves are getting close to ample.

Chair Powell has noted that the FOMC will begin to discuss slowing our redemptions at our FOMC meeting this month, which will help us transition into whatever definition of "ample" we deem appropriate. Changing our pace of redemptions will occur when the Committee makes a decision to do so, and the timing will be independent of any changes to the policy rate target. Balance sheet plans are about getting liquidity levels right and approaching "ample" at the correct speed. They do not imply anything about the stance of interest rate policy, which is focused on influencing the macroeconomy and achieving our dual mandate.

Thinking about longer-term issues related to the Fed's portfolio, I want to mention two things. First, I would like to see the Fed's agency MBS holdings go to zero. Agency MBS holdings have been slow to run off the portfolio, at a recent monthly average of about $15 billion, because the underlying mortgages have very low interest rates and prepayments are quite small. I believe it is important to see a continued reduction in these holdings.

Second, I would like to see a shift in Treasury holdings toward a larger share of shorter-dated Treasury securities. Prior to the Global Financial Crisis, we held approximately one-third of our portfolio in Treasury bills.13 Today, bills are less than 5 percent of our Treasury holdings and less than 3 percent of our total securities holdings. Moving toward more Treasury bills would shift the maturity structure more toward our policy rate—the overnight federal funds rate—and allow our income and expenses to rise and fall together as the FOMC increases and cuts the target range. This approach could also assist a future asset

purchase program because we could let the short-term securities roll off the portfolio and not increase the balance sheet.14 This is an issue the FOMC will need to decide in the next couple of years.

In conclusion, let me be clear that this is a great paper that will serve as a major reference for researchers and central banks. The authors' analysis will surely have a much longer shelf life than my discussion of it.

IMI International Monetary Review

Semiannual Monetary Policy Report to the Congress

By MR JEROME H POWELL*

Chairman McHenry, Ranking Member Waters, and other members of the Committee, I appreciate the opportunity to present the Federal Reserve's semiannual Monetary Policy Report.

The Federal Reserve remains squarely focused on our dual mandate to promote maximum employment and stable prices for the American people. The economy has made considerable progress toward these objectives over the past year.

While inflation remains above the Federal Open Market Committee's (FOMC) objective of 2 percent, it has eased substantially, and the slowing in inflation has occurred without a significant increase in unemployment. As labor market tightness has eased and progress on inflation has continued, the risks to achieving our employment and inflation goals have been moving into better balance.

Even so, the Committee remains highly attentive to inflation risks and is acutely aware that high inflation imposes significant hardship, especially on those least able to meet the higher costs of essentials, like food, housing, and transportation. The FOMC is strongly committed to returning inflation to its 2 percent objective. Restoring price stability is essential to achieve a sustained period of strong labor market conditions that benefit all.

I will review the current economic situation before turning to monetary policy.

Current Economic Situation and Outlook

Economic activity expanded at a strong pace over the past year. For 2023 as a whole, gross domestic product increased 3.1 percent, bolstered by solid consumer demand and improving supply conditions. Activity in the housing sector was subdued over the past year, largely reflecting high mortgage rates. High interest rates also appear to have been weighing on business fixed investment.

The labor market remains relatively tight, but supply and demand conditions have continued to come into better balance. Since the middle of last year, payroll job gains have averaged 239,000 jobs per month, and the unemployment rate has remained near historical lows, at 3.7 percent. Strong job creation has been accompanied by an increase in the supply of workers, particularly among individuals aged 25 to 54, and a continued strong pace of immigration. Job vacancies have declined, and nominal wage growth has been easing. Although the jobs-to-workers gap has narrowed, labor demand still exceeds the supply of available workers. The strong labor market over the past two years has also helped narrow long-standing disparities in employment and earnings across demographic groups.1

Inflation has eased notably over the past year but remains above the FOMC's longer-run goal of 2 percent. Total personal consumption expenditures (PCE) prices rose 2.4 percent over the 12 months ending in January. Excluding the volatile food and energy categories, core PCE prices rose 2.8 percent, a notable slowing from 2022 that was widespread across both goods and services prices. Longer-term inflation expectations appear to have remained well anchored, as reflected by a broad range of surveys of households, businesses, and forecasters, as well as measures from financial markets.

Monetary Policy

After significantly tightening the stance of monetary policy since early 2022, the FOMC has maintained the target range for the federal funds rate at 5-1/4 to 5-1/2 percent since its meeting last July. We have also continued to shrink our balance sheet at a brisk pace and in a predictable manner. Our restrictive stance of monetary policy is putting downward pressure on economic activity and inflation.

We believe that our policy rate is likely at its peak for this tightening cycle. If the economy evolves broadly as expected, it will likely be appropriate to begin dialing back policy restraint at some point this year. But the economic outlook is uncertain, and ongoing progress toward our 2 percent inflation objective is not assured. Reducing policy restraint too soon or too much could result in a reversal of progress we have seen in inflation and ultimately require even tighter policy to get inflation back to 2 percent. At the same time, reducing policy restraint too late or too little could unduly weaken economic activity and

* Mr Jerome H Powell, Chair of the Board of Governors of the Federal Reserve System, before the Committee on Financial Services, US House of Representatives, Washington DC, 6 March 2024.

employment. In considering any adjustments to the target range for the policy rate, we will carefully assess the incoming data, the evolving outlook, and the balance of risks. The Committee does not expect that it will be appropriate to reduce the target range until it has gained greater confidence that inflation is moving sustainably toward 2 percent.

We remain committed to bringing inflation back down to our 2 percent goal and to keeping longer-term inflation expectations well anchored. Restoring price stability is essential to set the stage for achieving maximum employment and stable prices over the longer run.

To conclude, we understand that our actions affect communities, families, and businesses across the country. Everything we do is in service to our public mission. We at the Federal Reserve will do everything we can to achieve our maximum employment and price stability goals.

Thank you. I am happy to take your questions.

IMI International Monetary Review

Risks and Uncertainty in Monetary Policy: Current and Past Considerations*

By GOVERNOR MICHELLE W. BOWMAN*

Thank you for the invitation to speak to the Shadow Open Market Committee (SOMC).1 The SOMC has a distinguished reputation for fostering substantive analysis and debate regarding independent, transparent, and systematic approaches to central bank policymaking. It's a pleasure to join you today and to discuss some of the current issues facing central banks and monetary policymakers.

In my remarks today, I will review some of the notable developments in the U.S. economy and financial system—as well as review key monetary policy actions and communications—since I joined the Board of Governors of the Federal Reserve System and became a permanent voting member of the Federal Open Market Committee (FOMC) in late November 2018. As I look back over these five-plus years, I will consider how a range of uncertainties and risks regarding the macroeconomy and its measurement have affected monetary policy decisions and communications. I will also highlight some considerations regarding financial stability risks and monetary policy. I will conclude with my own views on the near-term economic outlook, some of the prominent risks and uncertainties surrounding my outlook, and my views on the implications for monetary policy.

Setting Monetary Policy amid a Wide Range of Uncertainties and Risks

An omni-present challenge monetary policymakers face is how to account for uncertainties surrounding the current state of the economy and the economic outlook when setting monetary policy. Macroeconomic models that can help guide the setting of monetary policy often invoke unobservable concepts such as the natural rate of unemployment, potential output, or the neutral real interest rate. These unobservable concepts can be estimated but only with a considerable degree of uncertainty, and the estimates may vary over time—for example, because of structural changes in the economy. Macroeconomic models are also subject to uncertainty, since they must make simplifying assumptions regarding the complex set of relationships and interactions among households, businesses, governments, and the financial system that also evolve and change. Moreover, the data that are used to estimate model parameters and to formulate the economic outlook are inherently uncertain and are often revised as the statistical agencies refine their estimates or gather more information.

In addition to uncertainties surrounding macroeconomic models and measurement, there are a number of risks that, if realized, could shock the economy and financial system, making it more difficult for policymakers to confidently assess the economy and the economic outlook. Despite these challenges, monetary policymaking requires a forward-looking approach, since its actions affect the economy, labor markets, and inflation with a lag.2

The post–financial crisis economy and monetary policy at the zero lower bound

When I joined the FOMC in late 2018, despite nearly a decade of accommodative monetary policy following the financial crisis and subsequent recession, one of the primary concerns was that inflation had persistently been running slightly below the Committee's 2 percent inflation target. There was a recognition that the "natural rate of unemployment" may have been lower than many on the FOMC had estimated, and that inflation may have become less responsive to reductions in the unemployment rate.3 This recognition meant that preemptive increases in the federal funds rate based on expected reductions in the unemployment rate alone may not have been needed to keep inflation and inflation expectations aligned with the Committee's 2 percent target.

A central topic of FOMC meeting discussions throughout 2019 was how monetary policy strategies and tools could best achieve the Committee's dual mandate of price stability and maximum employment when structurally low interest rates and disinflationary forces kept inflation persistently under the Committee's inflation target. There was also a concern that the federal funds rate, the FOMC's key policy rate, was too close to the "zero lower bound." And that this proximity could limit the Committee's ability to respond

* This article first appeared on April 05, 2024.
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effectively to an adverse shock by using our primary monetary policy tool of lowering the target range for the federal funds rate. More broadly, many central banks around the world were grappling with the prospect of structurally lower interest rates due to a variety of factors, including demographic changes and higher savings rates, lower potential output and productivity growth, and greater investor demand for safe assets like Treasury securities.

At the time, the FOMC assessed that downward risks to both employment and inflation were likely to remain prominent due to the proximity of interest rates to the zero lower bound. In August 2020, the FOMC significantly revised its Statement on Longer-Run Goals and Monetary Policy Strategy to reflect this assessment.4 A notable change relative to the initial statement adopted in 2012 was a change in the language addressing how the FOMC would conduct monetary policy. The new statement noted that the Committee would seek "to mitigate shortfalls [emphasis added]"—rather than "deviations"—"of employment from the Committee's assessment of its maximum level and deviations of inflation from its longer-run goal."5 By replacing the word "deviations" with "shortfalls" when describing employment and the Committee's reaction to changes in employment relative to estimates of its maximum level, the Committee indicated that it would not act preemptively to curb inflation based only on the perception of labor market tightness.

Another notable change to the strategy statement was the adoption of what some refer to as "asymmetric flexible average inflation targeting" or "temporary price level targeting."6 Specifically, the new statement noted that "in order to anchor longer-term inflation expectations at [its 2 percent goal], the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time."7

The revisions to the FOMC's statement focused on monetary policy in a world of structurally low interest rates, disinflationary forces, and an apparent insensitivity of inflation to low levels of unemployment. Although the revised statement reaffirmed the commitment to the Committee's inflation target, it did not describe how the Committee would respond if inflation were to run persistently above its 2 percent goal.8

Given the timing of its implementation, the revised strategy guided how the FOMC responded to one of the largest shocks experienced by the U.S. economy in recent years—the COVID-19 pandemic. This shock—combined with the policy responses of governments and central banks around the world—disrupted many of the dynamics that had influenced the economy over the previous several decades and the post–2008 financial crisis approach to monetary policy. These impacts will affect how we think about monetary policy going forward, but let's first put the COVID-19 event and response into better context.

The COVID-19 shock and monetary policy response

Toward the latter part of the FOMC's monetary policy framework review, in March 2020, the COVID-19 pandemic created an unprecedented shock to the global economy and financial system. Widespread economic lockdowns and social distancing, combined with other pandemic effects, caused the swiftest and deepest contraction in employment and economic activity since the Great Depression. Many critical parts of the U.S. financial system experienced significant disruption or completely ceased to function. The Federal Reserve responded forcefully to mitigate the financial market turmoil and the economic effects of the rapid shutdown of the U.S. economy (and I'll have more to say on this topic later).

As a part of its response, the FOMC quickly lowered the target range for the federal funds rate back to 0 to 1/4 percent and began purchasing large amounts of Treasury and agency mortgage-backed securities. These purchases were initially designed to support the smooth functioning of securities markets and the flow of credit to businesses and households. Later, the purchases provided additional monetary policy accommodation to support economic activity and labor markets.9

Following the return to the zero lower bound, in addition to conducting asset purchases, the FOMC used forward guidance to provide additional monetary policy accommodation to keep both short- and longer-term interest rates low. In its March 15, 2020, statement, the FOMC noted that it expected to maintain the target range for the federal funds rate at 0 to 1/4 percent "until it [was] confident that the economy [had] weathered recent events and [was] on track to achieve its maximum employment and price stability goals."10 Following the release of the revised framework in August 2020, the FOMC revised the forward guidance in its September post-meeting statement to be more explicitly outcome-based to state that the target range would remain at 0 to 1/4 percent "until labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent

and is on track to moderately exceed 2 percent for some time."11 In its December 2020 post-meeting statement, the FOMC added forward guidance regarding its asset purchases by noting that it expected that the current pace of asset purchases would continue until "substantial further progress has been made toward the Committee's maximum employment and price stability goals."12

This explicit outcome-based forward guidance, like the revised monetary policy framework, was very focused on supporting the economy following the COVID-19 shock amid the risks of persistently low inflation and disinflationary forces with structurally low interest rates. The guidance was also quite restrictive in the criteria for slowing the pace of asset purchases, especially since the FOMC would stop asset purchases before it would raise the federal funds rate.13

One could argue the December forward guidance made it much more difficult for the FOMC to react to new information suggesting that risks and uncertainties had evolved in response to pandemic-related changes in the economy. Other uncertainties such as the accuracy of real-time economic measurements also presented challenges, as did significant supply-side disruptions and the uncertainty about the timing of progress toward their resolution, which I will discuss next.

The post-pandemic economy, the resurgence of inflation, and the rapid tightening in monetary policy

In the early phases of the pandemic, fiscal authorities around the world implemented support programs for labor markets and households and businesses.14 These generous policies, combined with very accommodative monetary policies, bolstered private-sector and state and local government balance sheets. In particular, they led to what has come to be known as "excess savings"—above-normal household savings from extraordinary levels of fiscal support and a limited ability to freely spend it due to economic lockdowns, supply chain disruptions, and other pandemic- and recession-related factors.

In 2021, novel medical treatments, reduced social distancing, and innovative business approaches in adapting to the restrictive pandemic environment led to a sharp economic rebound. Strong demand (supported by stimulative fiscal and monetary policies), a reduced labor supply (due in part to early retirements, childcare responsibilities, and concerns about COVID-19), and a mismatch between available jobs and workers all contributed to a very tight labor market. The unusually rapid rebound in economic activity, pandemic-driven shift to consumer goods spending, supply chain fragilities, and manufacturing component shortages led to crippling bottlenecks for a number of industries. These supply and demand imbalances, likely amplified by fiscal and monetary policies, led to a sharp rise in inflation over a period of just a few months.

By the second half of 2021, inflationary pressures intensified and became more broad- based. Labor markets were extremely tight, though it was difficult to assess the true extent of tightness, given the decrease in labor force participation and mixed data signals at the time, which all were later revised. Of the many difficult issues the Committee faced, one of the most important was whether inflation would persist or would resolve as supply-side issues eventually eased.

The September 2021 Summary of Economic Projections (SEP) showed the median FOMC expectation for personal consumption expenditures (PCE) inflation of 4.2 percent at the end of 2021, largely reflecting high inflation readings in the first half of 2021. But for year-end 2022, the median expectation was for PCE inflation to decline to 2.2 percent.15 Private-sector forecasters expected higher inflation of 5.1 percent at year-end 2021 but also projected a slowing to just over 2 percent by the end of 2022.16 With the benefit of hindsight, we now know that most forecasters, ourselves included, vastly misjudged the persistence of inflation at that time, with 5.9 percent PCE inflation for both 2021 and 2022. This example underscores the challenge we faced in identifying which factors were driving inflation and how long those forces would persist.

In the second half of 2021, it became clear that the FOMC's monetary policy stance was too accommodative in the presence of growing inflationary pressures and that the Committee needed to move toward a tighter policy stance. It seems likely to me that the experience of the years leading up to the pandemic, when inflation was persistently low, made it hard for many to foresee how quickly that situation could change. Of course, the inflation and labor data did not accurately reflect the economic conditions prevailing at the time and were subsequently substantially revised.17 Together, these factors, combined with the FOMC's forward guidance discussed earlier, contributed to a delay in the removal of monetary policy accommodation in 2021.

The shift in the Committee's forward guidance toward the end of 2021 and in early 2022 was effective in moving longer-dated interest rates higher and in tightening financial conditions, even before the FOMC raised the federal funds rate.18 At our November 2021 meeting, we announced that we would begin to

slow the pace of purchases later that month. At the December 2021 meeting, we doubled the pace of tapering, which accelerated the end of purchases to the following March. At the March 2022 FOMC meeting, the FOMC raised the target range for the federal funds rate by 25 basis points. And in May, the FOMC announced its plan to reduce the size of the Federal Reserve's securities holdings—which then stood at around $8.5 trillion—starting in June and at a pace much faster than in the previous episode of balance sheet reduction.19 The FOMC also continued to increase the target range for the federal funds rate over the course of 2022 at a pace much faster than in previous tightening cycles, as it became clear that inflation was higher and more persistent than many forecasters had expected. By July 2023, the FOMC had increased the federal funds rate to 5-1/4 percentage points, and into restrictive territory, where it has remained. And we have continued to reduce the size of our securities holdings.

The monetary policy experience during the pandemic highlights how difficult it can be to assess the current state of the economy and to predict how it will evolve in the presence of major supply- and demand-side shocks, possible structural changes in the economy, and real-time data and measurement uncertainty. An important question I will be thinking about going forward is how to make monetary policy decisions and communications more robust to these types of risks.

Separate tools for monetary policy and financial stability

We know that monetary policy transmission is most effective during periods of stable financial conditions, and that financial stability risks, if realized, can affect the economic outlook. While monetary policy and financial stability are connected, financial stability vulnerabilities and risks are most appropriately addressed using macro- and micro-prudential regulation and bank supervision. During periods of extreme financial stress, well-calibrated lending and liquidity programs can be used to address such conditions. Of course, where risks impact the outlook for economic activity, employment, and inflation, a monetary policy response may also be required.

The Federal Reserve's use of liquidity and lending programs during the early stages of the pandemic demonstrated the effectiveness of emergency lending tools as backstops to support market functioning and the flow of credit in times of stress.20 Lending programs are most effective as backstops when loans are offered at a penalty rate and are of short duration. When appropriately calibrated, they can help promote market functioning and the effective transmission of monetary policy but limit the Federal Reserve's overall footprint in financial markets in the longer term. This experience also highlights the importance of clearly distinguishing monetary policy actions from temporary central bank asset purchase programs used to promote core financial market functioning, like those created to support Treasury markets in the spring of 2020.21

More recently, the bank failures last spring highlight that responsive, efficient, and effective bank supervision is a strong mitigant for financial system risks and vulnerabilities. The failures revealed that shortcomings in bank supervision can heighten financial stability risks. The primary focus of supervision should be to address a bank's critical shortcomings in a timely way.22 To effectively support financial stability, bank supervision cannot simply rely on pinpointing compliance issues, failed processes, or rule violations. It must go further to examine a bank's risk exposures, including anticipating how the evolving economic environment may influence a bank's financial condition and its assessment of risks. If the supervisory process fails to identify and escalate critical risks, or to hold management accountable for known deficiencies, like excess interest rate risk and disproportionately large levels of uninsured deposits, this raises the potential for safety and soundness concerns.

Last year's bank stress also revealed that the Fed's bank liquidity and payments tools—including the Fed's discount window operations and FedWire®—should be available for extended operating hours and prepared to provide support during times of stress. We should also consider what further steps may be needed to ensure that banks have access to liquidity support. In addition, we should encourage, but not mandate, the exercise of contingency funding plans and testing capabilities, requiring bank management to ensure adequate plans are in place.23 But there is a fine line between bank supervision and interfering in the decisions of bank management. Some measure of risk is inherent and necessary in the business of banking.

While some changes to the regulatory framework may be appropriate to promote financial stability, we should be cautious that these changes do not impair the long-term viability of banks, especially mid-sized and smaller banks.24 In my view, regulatory reform can pose significant financial stability risks, particularly if those regulatory changes fail to take sufficient account of the incentive effects and potential consequences, like pushing activity into the more opaque nonbank financial sector.25 Poorly calibrated regulatory actions can also negatively affect economic activity and reduce the availability of credit by

limiting the offering of other financial products or services. These concerns are most acute when the reforms may be inefficient or poorly targeted. As an example, policymakers should carefully consider whether the significant capital increases included in the U.S. Basel III proposal meet this standard of being efficient and appropriately targeted.26

What's Next for the Economy and Monetary Policy?

Looking ahead, the FOMC will continue to face a number of risks and uncertainties as it seeks to return inflation to its 2 percent goal. It will be important to evaluate how these uncertainties and risks affect our monetary policy decisions going forward. As this audience knows, members of the FOMC consult a range of models that consider several scenarios and their potential economic outcomes using different benchmark monetary policy rules.27 This type of analysis can provide helpful input in informing my own views on the appropriate path of monetary policy. Given the importance of transparency, it is also necessary that our communications explain not only how the economic outlook affects our monetary policy decisions, often referred to as the FOMC's "reaction function," but also how the risks and uncertainties surrounding the economic outlook matter for those decisions.

With that in mind, I will conclude my remarks with my own views on the near-term economic outlook, including some prominent risks and uncertainties, and the implications for monetary policy.

At our most recent FOMC meeting, I supported keeping the target range for the federal funds rate at 5-1/4 to 5-1/2 percent and continuing to reduce our securities holdings. At its current setting, our monetary policy stance is restrictive and appears to be appropriately calibrated to reduce inflationary pressures. We have seen significant progress on lowering inflation over the past year while economic activity and the labor market have remained strong. Consumer services spending has shown continued strength through February, and payroll employment increased at a very strong pace in the first quarter.

However, most employment gains over the past year have been in part-time employment, and some of the recent strength in job gains may reflect stronger labor supply due to increased immigration. The 12-month readings of total and core PCE inflation through February printed at 2.5 and 2.8 percent, respectively, much lower than a year ago. However, with the annualized 3-month PCE inflation readings moving well-above the 12-month measures in February, I expect further progress in bringing inflation down to 2 percent will be slower this year.

Still, my baseline outlook continues to be that inflation will decline further with the policy rate held steady at its current level, and that the labor market will remain strong but with labor demand and supply gradually rebalancing as the number of job openings relative to unemployed workers declines. And should the incoming data continue to indicate that inflation is moving sustainably toward our 2 percent goal, it will eventually become appropriate to gradually lower the federal funds rate to prevent monetary policy from becoming overly restrictive. However, we are still not yet at the point where it is appropriate to lower the policy rate, and I continue to see a number of upside risks to inflation.

First, much of the progress on inflation last year was due to supply-side improvements, including easing of supply chain constraints; increases in the number of available workers, due in part to immigration; and lower energy prices. It is unclear whether further supply-side improvements will continue to lower inflation. For example, the rebound in labor productivity last year may have reflected an unwinding of temporary pandemic-related labor market dynamics, such as a slowing in the high levels of employee turnover during that time. Therefore, if wage gains remain elevated going forward, these effects may no longer contribute to lower price inflation in the future.

Geopolitical developments could also pose upside risks to inflation, including the risk of spillovers from geopolitical conflicts and the extent to which food and energy markets and supply chains remain exposed to these influences.

Another upside inflation risk I see is from additional fiscal stimulus or a higher spend-out rate from existing and new appropriations. Although some of the recent policies may increase productive capacity in the medium term, they may add to inflationary pressures by boosting aggregate demand.

I also see upside risks to housing services inflation. Given the current low inventory of available and affordable housing, the inflow of new immigrants to certain regions could result in upward pressure on rents, as additional housing supply may take time to materialize. There is also a risk that continued labor market tightness and continued strong services demand could lead to persistently higher core services inflation. Inflation readings over the past two months suggest progress may be uneven or slower going forward, especially for core services.

Finally, there is uncertainty regarding whether the federal funds rate will need to remain at a higher level than before the pandemic in order to effectively foster low and stable inflation and support full employment. In my view, given potential structural changes in the economy, like higher investment demand relative to available savings, it is quite possible that the level of the federal funds rate consistent with low and stable inflation will be higher than before the pandemic. If that is the case, fewer rate cuts will eventually be appropriate to return our monetary policy stance to a neutral level. In the most recent SEP, some FOMC participants indicated that they now see fewer rate cuts over 2024 and over the next two years than in December. Some also included a higher longer-run level of the federal funds rate than in the past.28

While it is not my baseline outlook, I continue to see the risk that at a future meeting we may need to increase the policy rate further should progress on inflation stall or even reverse. Given the risks and uncertainties regarding my economic outlook, I will continue to watch the data closely as I assess the appropriate path of monetary policy, and I will remain cautious in my approach to considering future changes in the stance of policy. Reducing our policy rate too soon or too quickly could result in a rebound in inflation, requiring further future policy rate increases to return inflation to 2 percent over the longer run.

Closing Thoughts

To conclude, the experience over the past five years highlights the enduring challenge of setting forward-looking monetary policy amid a wide and evolving range of risks and uncertainties. Taking into account this experience and the lessons I have learned over my tenure on the FOMC, an important question I will be considering is how to make monetary policy strategy and its related communications durable to a wide range of possible shocks and changes in the macroeconomy. We will continue to learn about the post-pandemic economy, and, if history is any guide, new shocks to and changes in the economy will eventually and inevitably occur. While the future is full of risks and uncertainties, the FOMC's mandate of fostering price stability and maximum employment remains very clear. Restoring price stability is essential for achieving maximum employment over the longer run.

1. The views expressed here are my own and are not necessarily those of my colleagues on the Federal Reserve Board or the Federal Open Market Committee.

2. Greenspan (2004), Bernanke (2007), and Powell (2018) offer discussions of how risk and uncertainty may influence monetary policy in practice. See Alan Greenspan (2004), "Risk and Uncertainty in Monetary Policy," American Economic Review, vol. 94 (May), pp. 33–40; Ben S. Bernanke (2007), "Monetary Policy under Uncertainty," speech delivered at the 32nd Annual Economic Policy Conference, Federal Reserve Bank of St. Louis, St. Louis (via videoconference), October 19; and Jerome H. Powell (2018), "Monetary Policy in a Changing Economy," speech delivered at "Changing Market Structure and Implications for Monetary Policy," a symposium sponsored by the Federal Reserve Bank of Kansas City, held in Jackson Hole, Wyo., August 24.

3. For example, the range of estimates of the longer-run level of the unemployment rate in the Summary of Economic Projections (SEP) in March 2013 was 5.0 to 6.0 percent. This range shifted lower over time. In the most recent (March 2024) SEP, the range of estimates of the longer-run unemployment rate was 3.7 to 4.3 percent. The March 2013 and March 2024 SEPs are available on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

4. For an overview of these revisions and their rationale, see Jerome H. Powell (2020), "New Economic Challenges and the Fed's Monetary Policy Review," speech delivered at "Navigating the Decade Ahead: Implications for Monetary Policy," a symposium sponsored by the Federal Reserve Bank of Kansas City, held in Jackson Hole, Wyo. (via webcast), August 27; and Richard H. Clarida (2020), "The Federal Reserve's New Monetary Policy Framework: A Robust Evolution," speech delivered at the Peterson Institute for International Economics, Washington, August, 31.

5. See the most recent Statement on Longer-Run Goals and Monetary Policy Strategy, available on the Board's website at https://www.federalreserve.gov/monetarypolicy/files/FOMC_LongerRunGoals.pdf (quoted text in paragraph 5). Previous versions of the statement had noted that the Committee would seek to mitigate "deviations of inflation from its longer-run goal and deviations [emphasis added] of employment from the Committee's assessments of its maximum level" (paragraph 5). For a more detailed look at the changes in the 2020 strategy statement relative to the earlier statement first adopted in 2012, see Board of Governors

of the Federal Reserve System (2021), "Review of Monetary Policy Strategy, Tools, and Communications," webpage.

6. See Richard H. Clarida, "The Federal Reserve's New Framework and Outcome-Based Forward Guidance," speech delivered at "SOMC: The Federal Reserve's New Policy Framework," a forum sponsored by the Manhattan Institute's Shadow Open Market Committee, New York, New York (via webcast), April 14, 2021.

7. See the latest Statement on Longer-Run Goals and Monetary Policy Strategy, in note [5] (quoted text in paragraph 4).

8. The statement did note that if the Committee's employment and inflation objectives were no longer complementary, the Committee would take into account both employment shortfalls and inflation deviations as well as the time horizons over which employment and inflation were projected to return to levels judged consistent with its mandate.

9. The Federal Reserve implemented 13 emergency lending and liquidity facilities under its emergency lending authorities and undertook supervisory and regulatory actions to support the flow of credit to households, businesses, and local governments. See Board of Governors of the Federal Reserve System (2023), "Coronavirus Disease 2019 (COVID-19): Funding, Credit, Liquidity, and Loan Facilities," webpage; and Board of Governors of the Federal Reserve System (2023), "Coronavirus Disease 2019 (COVID-19): Supervisory and Regulatory Actions in Response to COVID-19," webpage.

10. The March 15, 2020, FOMC statement is available on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm (quoted text in paragraph 2).

11. The September 2020 FOMC statement is available on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm (quoted text in paragraph 4).

12. The December 2020 FOMC statement is available on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm (quoted text in paragraph 4).

13. See, for example, the discussion of policy normalization principles in the December 2021 FOMC minutes, which can be found on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

14. In the U.S., fiscal programs and policies included stimulus checks, expanded unemployment insurance, the Paycheck Protection Program, and other CARES Act (Coronavirus Aid, Relief, and Economic Security Act) and ARP Act (American Rescue Plan Act) programs designed to support businesses, households, and state and local governments.

15. See the SEP released following the September 2021 FOMC meeting, which is available on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

16. Private-sector forecasts reflect the consensus estimate in the Blue Chip survey of business forecasters in June 2021.

17. For example, both the August and September 2021 employment reports suggested much lower job growth than did consensus forecasts, and these initial estimates were subsequently sizably increased. Similarly, total PCE inflation for nearly all quarters in 2021 has been revised higher than initially reported. See the real-time data on the Federal Reserve Bank of St. Louis's ALFRED website at https://alfred.stlouisfed.org/series/downloaddata?seid=PAYEMS (job growth) and https://alfred.stlouisfed.org/series/downloaddata?seid=PCECTPI (PCE inflation).

18. See the November 2021 FOMC statement, available on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

19. See the May 2023 FOMC statement, available on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

20. For details on these programs, see Board of Governors, "Coronavirus Disease 2019 (COVID-19): Funding, Credit, Liquidity, and Loan Facilities," in note [9]. The Federal Reserve also took a number of other actions, including easing terms on discount window lending and supervisory and regulatory actions, to encourage banks to lend and act as market intermediaries.

21. See Michelle W. Bowman (2023), "Panel on 'Design Issues for Central Bank Facilities in the Future," speech delivered at the Chicago Booth Initiative on Global Markets Workshop on Market Dysfunction, Chicago, March 3.

22. See Michelle W. Bowman (2023), "Remarks on the Economy and Prioritization of Bank Supervision and Regulation," speech delivered at the New York Bankers Association's Financial Services Forum, Palm Beach, Fla., November 9.

23. See Michelle W. Bowman (2023), "Financial Stability in Uncertain Times," speech delivered at the Reinventing Bretton Woods Committee and Policy Center for the New South Marrakech Economic Festival, Marrakech, Morocco, October 11.

24. See Michelle W. Bowman (2024), "The Future of Banking," speech delivered at the 157th Assembly for Bank Directors, Southwestern Graduate School of Banking, Maui, Hawaii, February 2. Return to text

25. See Bowman, "Financial Stability in Uncertain Times," in note [23].

26. See Michelle W. Bowman (2024), "The Path Forward for Bank Capital Reform," speech delivered at Protect Main Street, sponsored by the Center for Capital Markets at the U.S. Chamber of Commerce, Washington (virtual), January 17.

27. See, for example, the box "Monetary Policy Rules in the Current Environment" in Board of Governors of the Federal Reserve System (2024), Monetary Policy Report (PDF) (Washington: Board of Governors, March), pp. 41–43; and Federal Reserve Bank of Cleveland (2024), "Simple Monetary Policy Rules," webpage.

28. See the March 2024 and December 2023 SEPs, available on the Board's website at

IMI International Monetary Review

Lessons from the Recent Episode of High Inflation*

By PIERRE WUNSCH*

Tonight, I would like to talk to you about the lessons I have drawn from the recent episode of high inflation. I am aware that I stand between you and your dinner, so I promise to be brief.

Central bankers need to look back with humility at their failure to contain inflation over the past two years. Inflation had not been as high for decades, and it stayed above the target rate for much longer than initially thought. While it's true that inflation first began increasing due to rising energy prices, core inflation quickly followed. Central banks were slow to react to these new dynamics. And, yes, headline inflation and core inflation do seem to have reached a turning point, but we might not be completely out of the woods yet.

There are four key lessons I would draw from this experience so far. The first is on forward guidance, the second on model-based forecasts, the third concerns the mechanisms of expectations formation, and the fourth and final one relates to fiscal policy

Lesson one: forward guidance

First, the role of forward guidance will have to be revisited.

Forward guidance proved useful at the effective lower bound. Short-term rates could hardly get any lower, and indications that they were going to stay "low for long" weighed on medium-term rates.

That said, there is scant evidence that forward guidance helped support inflation during the lower bound period. What is clear, is that it took a long time for inflation to get back to 2%, and that it stayed there only briefly before rising to over 10%.

Moreover, forward guidance can tie the hands of policymakers. The policy of continuing PEPP reinvestment is a recent example. With the pandemic essentially over, reinvestment is being continued effectively to honour an old promise. Fortunately, the impact of an additional year of reinvestment is limited. Another example relates to the conditions set by the ECB prior to raising rates during the post-pandemic recovery.1 These conditions were very much inspired by the strategy review, with the dominant view that inflation would converge smoothly to 2% from below. But with contingency-based forward guidance, central banks can get into trouble when things turn out differently than expected. In line with its forward guidance, the ECB started raising rates in July 2022 which, in hindsight, could be considered late.

Lesson two: model-based forecasts

The prevailing idea that inflation would smoothly converge to 2% from below largely emerged from model-based forecasts. This brings me to the second lesson: models are full of shortcomings, and they can sometimes be very wrong about future inflation.

Virtually all the models that underpin inflation forecasts assume a long-term mean that is more or less "hard-coded" around 2%. They are likely to miss regime shifts or the consequences of tail events. And since the last significant inflation surge was in the 1970s, models estimated on the most recent data probably underestimate the persistence of inflation when it starts to climb.

I read that the Bank of England and the Bank of Canada want to revamp their modelling infrastructure. This is a good idea and involves central banks continuously learning and adapting. Central banks thrive when they integrate the latest modelling techniques and data science methods. Aiming to improve forecast accuracy should be a continuous pursuit. In particular, it should be possible to reduce repeated under- or over-estimation of inflation, i.e. the issue that negative (or positive) forecast errors tend to remain negative (or positive).

But let's pause here for a second. What are we really after? Are central banks aiming to perfectly predict the future? Can you imagine a world that is almost entirely predictable? What a strange place that would be! One where whatever we did, whatever shock occurred, the inflation rate would almost certainly end up within a narrow forecasting range. Plus, if we were able to perfectly predict the future state of the real

* Keynote speech by Mr Pierre Wunsch at the Eurofi High Level Seminar, Ghent, 22 February 2024.

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economy, there would be huge "free-lunch" investments. A world without uncertainty is not within the realm of possibility.

The discussion that we need to have about model-based forecasts in fact goes beyond simply improving their accuracy: it is about weighing them correctly in policymaking. A basic principle to follow could be to grant a lower weight to model-based forecasts when forecast uncertainty is higher. This idea pushed the ECB to adopt a "data-dependent" approach to setting interest rates over the past two years. Conversely, the more accurate the model forecasts, the greater the weight that should be given to them. But model-based forecasts will never be entirely accurate, meaning the weight assigned to them should always remain well below 100%.

Lesson three: mechanisms of expectations formation

One reason economists were misled by model-based forecasts during the post-pandemic recovery probably relates to the fact that many models are based on the paradigm of rational expectations. This paradigm most likely under-estimates the complexity with which expectations are formed, which leads me to my third lesson.

In 2021-2022, unexpected rises in inflation probably woke up rationally inattentive households. If households start forming expectations in line with recent inflation prints, inflation becomes more persistent, and a stronger monetary policy response is required.

Presently, monetary policy is not that restrictive, and yet we seem to have reached a turning point in inflation dynamics. This can only happen when agents are forward-looking, at least to some extent, and expect low, stable inflation.

So, further analysis of how and why economic agents shift back and forth from a forward- to a backward-looking approach to form inflation expectations appears to be required. These shifts determine the optimal degree of monetary policy tightening necessary for a timely return of inflation to target, while limiting economic costs.

Lesson four: fiscal policy

The last lesson I would like to mention is that, in some countries, it might be difficult for the fiscal authority to return, after a crisis, to its role of ensuring debt sustainability.

If governments do not make more efforts to reduce public deficits, central banks could come under pressure. In the euro area, we seem to be in a situation of weak fiscal dominance. In many Member States, public deficits are well above 3% and are expected to stay at high levels in several countries. In Belgium, the latest projections of the National Bank indicate that the public deficit will remain at around 5% until 2026.

Better fiscal rules are probably needed to guarantee monetary dominance, which is why I welcome the recent reform of the EU fiscal rules. But the EU needs to make sure that these fiscal rules are properly enforced. At the same time, the reform did not extend to the coordination of fiscal policies across the euro area, which would have facilitated the work of monetary policy.

Conclusion

I would like to conclude with some pragmatic observations about monetary policy.

Substantial uncertainty remains: Ukraine, Gaza, the Red Sea, the fiscal stance, etc. It therefore seems opportune to remain data dependent. That being said, models have been doing better recently: inflation forecast errors are much smaller (and actually turned negative). In fact, it might be time to think about returning to "business as usual", with more weight placed on the inflation outlook rather than on underlying inflation and the strength of monetary policy transmission.

Much will depend on the labour market. Wage growth, corporate profit margins and potential continued labour hoarding will, in particular, need to be closely monitored.

If inflation gets back to 2% by 2025, as forecasts suggest, rate cuts will have to be considered at some point this year. These would help to avoid inflation undershooting its target and weighing too heavily on economic growth.

The Governing Council may well be able to get inflation down while implementing rate cuts this year. In that case, a soft landing for the economy is in sight. This stands in sharp contrast to the 1970s-1980s when inflation also reached 10%, and is a good sign for the ECB's credibility.

IMI International Monetary Review

Regulation and Macro-Prudential Policy

Reflections on the Economy and Bank Regulation *

By GOVERNOR MICHELLE W. BOWMAN *

I would like to thank the New Jersey Bankers Association for the invitation to share my thoughts with you today.1 While I welcome the opportunity to share my thoughts about monetary policy, the economy, and the path of regulatory reform, I find it even more valuable to hear your views on local banking and economic conditions in the communities you serve, and your perspectives on trends in bank regulation and supervision. These conversations provide valuable insights to inform my work at the Federal Reserve—both for my understanding of the economy and the banking environment.

Before discussing bank regulation, I would like to briefly touch on the economy and monetary policy.

Monetary Policy

Over the past two years, the Federal Open Market Committee (FOMC) has significantly tightened the stance of monetary policy to address high inflation. At our most recent meeting in January, we voted to continue to hold the federal funds rate target range at 5-1/4 to 5-1/2 percent and to continue to reduce the Federal Reserve's securities holdings.

We have seen continued progress on inflation over the past year, with the 12-month readings through January of total and core personal consumption expenditures (PCE) inflation moving down to 2.4 percent and 2.8 percent, respectively, both at the lowest rates we have seen since early 2021. Although inflation declined over the second half of 2023, the January inflation data suggest that progress in bringing inflation down further may be slower going forward. Throughout this time, economic activity has remained strong with ongoing strength in consumer spending. We had also seen signs of the labor market coming into better balance, but recent strong jobs reports—including upward revisions to employment growth—show a continued tight labor market. Last year, the average pace of job gains slowed and the labor force participation rate rose through November, with the unemployment rate edging up to 3.7 percent. In recent months, however, job growth has rebounded, and the labor force participation rate declined, retracing some of its earlier gains.

At its current setting, our monetary policy stance is restrictive and appears to be appropriately calibrated to reduce inflationary pressures. As I've noted recently, my baseline outlook continues to be that inflation will decline further with the policy rate held steady, but I still see a number of upside inflation risks that affect my outlook. These include risks from geopolitical developments, including the risk of spillovers from geopolitical conflicts and the extent to which food and energy markets and supply chains remain exposed to these influences. There is also the risk that a loosening in financial conditions and additional fiscal stimulus could add momentum to demand, stalling any further progress or even causing inflation to reaccelerate. Finally, there is a risk that continued labor market tightness could lead to persistently high core services inflation. Recent labor market data suggest ongoing elevated wage growth as some businesses continue to report above-average wage increases to compensate for elevated prices and high inflation.

Given these risks, and the general uncertainty regarding the economic outlook, I will continue to watch the data closely as I assess the appropriate path of monetary policy. The frequency and extent of data revisions over the past few years, as seen in the most recent employment report, make the task of assessing the current state of the economy as well as predicting how the economy will evolve even more challenging,

* This article first appeared on March 07, 2024.
* Michelle W. Bowman, member of the Board of Governors of the Federal Reserve System.

and I will remain cautious in my approach to considering future changes in the stance of policy. Should the incoming data continue to indicate that inflation is moving sustainably toward our 2 percent goal, it will eventually become appropriate to gradually lower our policy rate to prevent monetary policy from becoming overly restrictive. In my view, we are not yet at that point. Reducing our policy rate too soon could result in requiring further future policy rate increases to return inflation to 2 percent over the longer run.

It is important to note that monetary policy is not on a preset course. My colleagues and I will make our decisions at each FOMC meeting based on the incoming data and the implications for the outlook. While the current stance of monetary policy appears to be at a restrictive level that will bring inflation down to 2 percent over time, I remain willing to raise the federal funds rate at a future meeting should the incoming data indicate that progress on inflation has stalled or reversed. Restoring price stability is essential for achieving maximum employment and stable prices over the longer run.

Notable Developments in Bank Regulation and Supervision

As I look at the bank regulatory agenda, I am struck by the sheer volume of matters that have recently been completed, that have been proposed, and that are in the pipeline. These reforms touch on a wide range of topics that directly or indirectly impact banks of all sizes. This work shows no signs of slowing down. The large number of finalized, proposed, and potential changes suggest insufficient prioritization in furthering the primary goal of prudential bank regulation and supervision—promoting a safe and sound banking system. In fulfilling this statutory objective, we must also focus on efficiency and effectiveness and always consider how regulatory reforms affect the banking market, the economy, and those who use banking services. We should also ensure, in our pursuit of reform, that our efforts result in a bank framework that is appropriately tailored and calibrated.

I have spoken at length over the past few months about some recent notable developments in bank regulation, touching on capital reform, the Community Reinvestment Act, the cap on debit card interchange fees, and climate-related financial risk guidance.2 Today, I want to recap my views on some of these developments, particularly around bank mergers and acquisitions (M&A), liquidity regulation, and trends in bank supervision.

Bank mergers and acquisitions

Bank mergers and acquisitions continue to be an important part of the banking ecosystem. In this process, timing is key. However, this is another policy area where I expect to see ongoing focus from federal regulators, the Department of Justice, and others. As policymakers engage on this topic, a key consideration should be whether the application process is fair, transparent, and consistent with the applicable statutory requirements.3 And yet, policy reforms may make bank M&A transactions more difficult for regulators to approve and slow the application processing timeline.

As all bankers know, application processing delays can be quite harmful, resulting in greater operational risk, increased expenses due in part to contract delays, reputational risk, and staff attrition due to the prolonged uncertainty. In the broader context, reducing the efficiency of bank mergers and acquisitions may also act as a deterrent to a healthy evolution of the banking system. Taken together, reducing merger or acquisition activity could have the consequence of prohibiting transactions that may preserve the presence of banks in rural or underserved areas, transactions that may further prudent growth strategies, or transactions that may result in increased competition with larger peers.

Regulatory reforms in this area should prioritize speed and timeliness. Stakeholders who are concerned about current bank M&A procedures and policies should consider direct engagement with regulators.4

Liquidity

Following the bank failures last spring, significant attention has been paid to the alleged "lessons learned" creating a path for regulatory reform efforts. This has generated discussion among both policymakers and the public on how to think about liquidity regulation: Should these requirements be expanded to a broader range of institutions? Should the calibration or operation of liquidity requirements like the Liquidity Coverage Ratio and Net Stable Funding Ratio be modified? Should we consider new liquidity requirements, and if so, what form should they take?

I have significant concerns about the path ahead as it comes to regulatory reforms involving liquidity requirements. All banks must manage their liquidity but should have flexibility based on a range of factors, including risk, business model, size, complexity, funding needs, vulnerability to deposit runs, and other

considerations. Liquidity requirements, if not appropriately designed and calibrated, could trap resources that would otherwise be put to better use, like lending to bank customers. Before moving forward, we need to identify gaps in the current framework and build a foundation for any proposed changes that is based on research, evidence, and data.

Liquidity regulation also has the potential to impose significant costs and limit the lending capacity and business operations of banks, which we must recognize and take into account before imposing any new requirements.

We must think about liquidity broadly, including the sources and uses of liquidity that institutions use today, including the Federal Reserve's discount window and its role as lender of last resort, advances from the Federal Home Loan Banks, and other sources that may be available in the market. In this context, we must be honest about the capability and capacity of these resources, and the challenges and limits of these tools.

Revisions to the liquidity framework must also be coordinated to ensure that reform efforts are complementary and can support the banking system's liquidity needs. When considering new liquidity requirements, we must think about not only calibration and scope, but also the unintended consequences of any such requirements and whether these measures will be effective during stressed conditions.

Trends in supervision

During 2023 and into 2024, many banks reported very material shifts in bank examinations and ongoing intensification in supervisory expectations. Many of these examination-related shifts have received little public acknowledgement or attention in large part because the rules designed to protect confidential supervisory information frustrate visibility into structural shifts in the supervisory process. As you all know well, changes in supervisory expectations frequently come without the benefit of guidance, advance notice, or published rulemaking, and in the worst-case scenario these shifts, cloaked by the veil of supervisory opacity, can have significant financial and reputational impacts or can disrupt the management and operations of affected banks.

These changes largely occurred after the bank failures in the spring of 2023 and the ensuing banking stress. In part, the changes in supervisory practices may be attributable to flawed post-mortem reviews conducted in the immediate aftermath of these failures. Many of these reviews suffered from serious shortcomings, including compressed timeframes for completion and the significantly limited matters that were within the scope of review. Nevertheless, these reviews were, and continue to be, singularly relied upon as a basis for resetting regulatory and supervisory priorities. These trends in supervision are concerning and add to the already significant burdens placed on regulated institutions from an aggressive regulatory reform agenda. I worry that the mere fact of bank failures and the material banking stress we experienced last year has been interpreted as a "blank check" to remake supervision as a blunt instrument, one that ignores the unique characteristics of each firm and the benefits of an approach that prioritizes engagement and communication between banks and examiners.

Of course, the banking agencies cannot regulate our way to better or more effective supervision; in the aftermath of the banking stress, it is appropriate to look carefully at what is working, and what isn't, in the realm of bank supervision. But in doing so, we must appropriately manage our supervisory programs and teams to ensure that effective and consistent supervision is implemented within each firm, and that it is effective and consistent across our regulated entities. Conducting supervision in a manner that respects due process and provides transparency around supervisory expectations can help us accomplish these goals.

Closing Thoughts

Thank you again for the opportunity to speak with you today. We are experiencing significant changes in the banking industry, not least of which are those coming from the regulators. It is imperative that you continue engaging on all matters involving regulatory reform. Policymakers cannot fulfill the responsibility of promoting a safe and sound banking system if we ignore efficiency, tailoring, and appropriate calibration of requirements in the reform agenda. These tenets should be central to the reform process. I welcome your insight on what is working, what is not, and the real-world consequences of regulations and regulatory reform efforts. Your input helps us ensure that the bank regulatory framework supports safety and soundness in an efficient and fair way.

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Working Paper

Reserve Holding and Bank Lending*

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Abstract

Banks' ability to convert liquidity into lending depends crucially on the various regulatory constraints they face. This paper investigates the differential lending responses of banks with varying levels of reserves, and their impact on the real economy. The distribution of reserves within the banking system became significantly more dispersed during the quantitative easing (QE) periods. Loan growth for those more liquidity-constrained does not vary meaningfully with liquidity changes, despite abundance at the aggregate level. Consequently, our findings imply that the uneven bank reserve distribution may exacerbate the spatial disparities in bank lending and regional economic development through differential lending responses of banks in different parts of the reserve distribution.

JEL Classification: G20, G21
Keywords: reserve holding, bank lending, quantitative easing, reserve distribution

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1. Introduction

High levels of reserve holdings have become the new norm in the U.S. banking sector due to the implementation of quantitative easing (QE) policies after the financial crisis. The Federal Reserve Board eliminated reserve requirements in March 2020 under the current "ample reserves regime." The collapse of Silicon Valley Bank serves as a reminder of the importance of liquidity management in an era marked by excess liquidity. In addition to the dramatic increase in the aggregate reserve level, the distribution of reserves within the banking sector has also become significantly more dispersed. While all banks have increased their cash and reserve holdings during this period, the increase was much larger for banks at the upper end of the distribution, with the interquartile range more than doubling during this period. In this paper, we examine the differential lending responses of banks with varying levels of reserves, and the distributional impact on the real economy.

Prior to the QE period, all reserves were held on banks' balance sheets solely to satisfy the reserve requirements, rendering them effectively "unloanable". A combination of scarce lending opportunities post crisis, stringent regulatory requirements, and interests paid on reserves by the Fed, has reshaped the trade-off concerning reserve holding for banks. Moreover, asymmetric adjustment costs could have also contributed to the high levels of reserve holdings post crisis, as adjustment costs associated with divestment during economic downturns are usually larger. These large amounts of reserves held by banks, in theory, could allow them to respond more promptly to changes in local economic conditions. This, however, only holds true under the assumption that other liquidity demands and relevant regulatory requirements, are met.

Intrigued by the increased dispersion in reserve holdings across banks, we examine the dynamics of loan growth in response to liquidity changes for banks with varying levels of reserves, and the impact of such differential loan growth on the real economy across space. We find that loan growth for those more liquidity-constrained (i.e., with lower levels of reserves) does not vary meaningfully with liquidity changes, despite abundance in the aggregate level. Only when banks are working with ample reserves, does loan growth become more sensitive to changes in banks' overall liquidity levels. This set of results highlights the significance of the increased dispersion in reserve distribution across banks, as the uneven loan growth across banks could translate into greater spatial disparity in regional recovery and development.

To demonstrate the robustness of our finding, we adapt the demand control method proposed by Degryse et al. (2019), and estimate our model at the loan level using DealScan data with borrower fixed effects, loan type fixed effects, and industry‐location‐year fixed effects. We also construct novel measures of liquidity constraint using individual bank's exposure to the hardest-hit housing markets in the financial crisis using HMDA data, and show that our results are robust to alternative definitions of liquidity constraint as well as sample restrictions. Liquidity-constrained banks appear less responsive in their lending increase to positive liquidity shocks during the QE episodes, as there is a multitude of reasons for banks to hold liquidity without increasing lending during the financial crisis. We summarize the evolution of reserve distribution in the banking sector in Section 2, in the hope of better understanding its potential impact on lending for banks in different parts of the reserve distribution.

Importantly, we find that the uneven distribution of reserves within the banking sector as a result of the QE policy has rather diverse effects on regional development across space. Counties with a higher market share of reserve-rich banks experience more local business growth. Additionally, industries that are more dependent on external financing benefit more from the local presence of these high-reserve banks, as they are more active in converting excess liquidity increases into new lending. We find no such association between local business growth and the market share of large banks in the county, suggesting that the relation we uncover is distinct from a bank-size effect or some unobservable differences in markets dominated by large banks.

Our study adds to the growing literature on banks' reserve holding after the 2008 financial crisis. Stulz et al. (2022) investigate the determinants of excess reserve holding of commercial banks and find that large banks tend to hold more liquidity compared to smaller banks due to regulatory changes, including the more stringent liquidity and capital requirements after the financial crisis. Acharya and Rajan (2022) and Diamond et al. (2022) both look at the unintended consequence of excess reserve holding as a result of the QE policies. Acharya and Rajan (2022) find that reserve hoarding may exacerbate liquidity shortage in the banking system and therefore dampen the effectiveness of QE policy in increasing bank lending. By estimating a structural model, Diamond et al. (2022) propose a "reserve supply channel" of QE and show

that excess reserve holding may crowd out bank lending due to balance sheet costs. We show that the unequal reserve distribution across banks documented in the literature could potentially translate into uneven loan growth across space due to differential lending responses between high- versus low-reserve banks.

The general question we address is also related to the transmission of unconventional monetary policy. Our study is related to the literature on the credit channel of unconventional monetary policies, especially those with micro-level evidence. Rodnyansky and Darmouni (2017) and Chakraborty et al. (2019) emphasize the net-worth channel of QE, which focuses on the changes in the value of mortgage-back securities (MBS) held on banks' balance sheets.[1] Using a difference-in-differences approach where "treated banks" are those with relatively larger amount of MBS or Treasuries prior to the QE period, Rodnyansky and Darmouni (2017) find that treated banks increase their lending more in response to the Fed's large-scale asset purchases (LSAPs). Our research differs from but complements the work of Rodnyansky and Darmouni (2017) and Chakraborty et al. (2019), as we focus on the banks with different levels of reserve holdings and study the distributional impact on the real economy. While only a limited number of primary dealers held large amounts of MBS prior to the crisis, a larger number of banks were hoarding liquidity during the QE period. Therefore, our empirical sample is likely more representative of the U.S. banking sector.

There have also been some studies on the unintended consequences of QE policies using detailed micro-level data. Kandrac and Schlusche (2021) find that banks increased their level of risk-taking during the QE period as they observe an increase in the growth rate of certain types of high-risk loans. Using a sample of mortgage data, Maggio et al. (2016) study the refinancing channel of QE and find a significant increase in refinancing activities during the QE period when interest rates were relatively low. Acharya et al. (2019) document inefficient lending behavior by banks (i.e., "zombie lending") during the period of the European Central Bank's unconventional monetary policy program. Their results show that such monetary policy does not support the real economy or facilitate economic growth, as firms turn bank loans into cash reserves instead of making real investments. We complement this strand of literature by documenting the consequence of uneven spatial distribution of excess reserves on the growth of business establishments across different regions.

2. Hypothesis Development

We highlight in this section a few key features of the QE period, which significantly altered the trade-off concerning reserve holding for banks during the financial crisis. This discussion is an attempt to briefly summarize the evolution of reserve distribution in the banking sector, in order to better understand its potential impact on lending for banks in different parts of the reserve distribution.

There are two main ways of reserves introduction by the Fed: loans and LSAP programs. Before the implementation of QE, reserves were mainly introduced through loans from the Fed. Under QE, banks began accumulating reserves through LSAP programs. While loans are available to nearly all banks in the system, LSAP programs only involve a small number of primary dealers. This difference could have contributed to the uneven distribution of reserves across banks at the beginning of the QE period.

Theoretically speaking, banks determine their optimal levels of reserve holdings (and liquid assets in general) by equating the marginal benefits and the marginal costs in question. During the financial crisis, out of concerns about liquidity shortage, banks' demand for reserves increased. Interests on reserves have turned them into a safe liquid asset that generated risk-free returns, increasing the marginal benefits of holding reserves. Meanwhile, the federal funds rate and treasury bill rate (three-month) are very similar to the interest rate on reserves. Given banks' demand for risk-free assets, holding reserves became a viable alternative to engaging in inter-bank lending. Banks also tend to hold liquid assets out of precautionary motives, which are of particular importance during periods of market turmoil. This is because banks with higher levels of reserve holdings are usually perceived as safer by depositors (Acharya and Rajan, 2022). The need to hold more reserves to satisfy regulatory requirements might also be higher during the crisis period. In the meantime, the marginal costs of holding reserves likely decreased as investment opportunities were rare during the crisis, especially after adjusting for risks. As a result, these incentives to hoard liquidity further exacerbated the already uneven distribution of reserves in the banking system.

[1] The net-worth channel of monetary policy transmission has also been documented in earlier studies such as Bemanke and Gertler (1989) and Kiyotaki and Moore (1997).

Under certain conditions, holding large amounts of reserves may have an impact on the effectiveness of monetary policy (Ennis and Wolman, 2010). This line of thinking is related to the bank lending view of monetary transmission `a la Kashyap and Stein (1994). Discussions in the literature are usually based on several assumptions that underpin the ability of a reserve-abundant banking system to increase lending quickly as economic conditions change. First, not only do banks prefer to fund loans with deposits, but it is also costly and time-consuming to expand their deposit base. At the same time, banks are reluctant to reduce their asset sizes as divestment costs could be high. Therefore, banks tend to invest more in liquid assets when good lending opportunities are scarce. Second, as far as borrowers are concerned, substitutes for bank loans are difficult to find, especially in the short run. As Ennis and Wolman (2015) put it, reserve holding can be viewed as a way for banks to "store" deposits that could be used to fund lending in the future. Under these assumptions, a banking system with a large amount of "stored deposits" can expand lending more quickly than one with a lower level of reserves.

Admittedly, the rise in reserve holding across banks does not necessarily translate into more lending, as loans have much higher risk weights than reserves. Diamond et al. (2022) argue that holding reserves could depress lending due to bank balance sheet costs, when regulatory constraints are binding. Even reserve-rich banks may not have the flexibility to expand their lending portfolio, if regulatory requirements, such as capital constraints, are binding. However, banks with higher levels of reserve holdings are perceived as safer by depositors, and therefore, are likely to enjoy lower levels of withdrawal and more stable sources of deposit funding during the crisis, making them more able to comply with regulatory requirements.

We believe that banks' ability to convert liquidity to lending depends crucially on the various regulatory constraints they face, and hypothesize that banks in different parts of the reserve distribution might respond differently to liquidity changes in terms of lending increase. Cash and reserves, being the most liquid of all assets, could strengthen banks' ability to respond to changes in economic conditions as their levels of liquidity holdings increase. Specifically, we hypothesize that lending responses of banks with high reserve holdings are more sensitive to liquidity changes, while lending of banks with lower reserves might not vary meaningfully with liquidity increases, as liquidity shortage is more of a concern for them.

Furthermore, we hypothesize that the differential responses of bank lending growth to liquidity increases for banks in different parts of the reserve distribution imply vastly unequal impacts on the regional recovery and development across regions. In other words, the uneven distribution of reserves within the banking system across banks during QE could contribute to greater inequality in regional recovery and development across space.

3. Data and Sample

3.1 Data source

Given the uneven distribution of reserves across banks, we first examine the differential responses in loan growth in response to liquidity changes for those with higher versus lower levels of reserve holdings. Data on bank balance sheets are available quarterly from the FDIC Consolidated Reports of Condition and Income (i.e., Call Report) for all chartered U.S. banks or bank holding companies. Due to changes in accounting practice, our Call Report sample only includes observations after 2002, totaling 445,069 bank-quarters from 2002Q1 to 2017Q4. Observations with zero reported total assets or equity are dropped. To eliminate the effect of merger and acquisition (M&A) on our key variables, especially growth measures, we exclude bank-quarter observations during which a merger took place.[2] Other data on the Federal Reserve's balance sheet are retrieved from FRED database, which is maintained by the Federal Reserve Bank of St. Louis. We also collect data on the transactions of agency MBS and the U.S. Treasury securities from the Federal Reserve Bank of New York to quantify Fed security purchases during different rounds of QE. To limit the potential impact of outliers, all bank-level financials are winsorized at the 0.5th and 99.5th percentiles of their empirical distributions. In the Robustness Checks section, we obtain syndicated loan data from DealScan and mortgage origination data made public by the Home Mortgage Disclosure Act (HMDA).

[2] Information on bank mergers and acquisitions is obtained from the National Information Center, which is maintained by the Federal Reserve System. In addition to excluding M&A observations, we also screen our sample in a process similar to those described by Kashyap and Stein (2000), Campello (2002) and Cetorelli and Goldberg (2012).

Table 1: Bank-Level Summary Statistics

	All Banks				High-Reserve Banks				Low-Reserve Banks			
	Mean	p(25)	p(50)	p(75)	Mean	p(25)	p(50)	p(75)	Mean	p(25)	p(50)	p(75)
$(Cash + Reserves)/Assets_{it}$	7.317	2.738	4.572	8.790	11.595	5.531	8.775	14.125	3.014	1.998	2.731	3.740
$Liquidity/Assets_{it}$	32.488	19.934	29.542	42.230	35.354	22.584	32.490	45.240	29.603	17.593	26.618	38.783
$dlnNetLoan_{it}$	0.016	-0.012	0.011	0.038	0.012	-0.017	0.007	0.036	0.020	-0.007	0.014	0.039
$dlnC\&ILoan_{it}$	0.013	-0.046	0.003	0.066	0.009	-0.053	0.000	0.064	0.017	-0.040	0.008	0.068
$dlnRELoan_{it}$	0.018	-0.012	0.011	0.038	0.016	-0.016	0.007	0.037	0.021	-0.007	0.013	0.039
$lnAssets_{it}$	18.878	18.012	18.751	19.579	18.591	17.765	18.486	19.276	19.167	18.306	19.019	19.852
$NPL/Assets_{it}$	0.985	0.139	0.504	1.203	1.014	0.109	0.480	1.225	0.957	0.170	0.528	1.185
$Tier1CapitalRatio_{it}$	18.932	11.497	14.180	18.697	20.850	11.966	15.040	20.080	16.987	11.151	13.453	17.300
$NetIncome/Assets_{it}$	0.208	0.119	0.226	0.334	0.192	0.100	0.213	0.327	0.225	0.138	0.237	0.340
Number of bank-quarters	445,069				223,005				221,306			
Number of banks	10,165				9,067				8,719			

Notes: Data are from quarterly FFIEC Call Report forms for all U.S. commercial banks from 2002Q1 to 2017Q4. The same filters are used as in the baseline regressions. A bank is defined as a high-reserve (low-reserve) if its cash and balances due from depository institutions (Schedule RC-A of the Call Report) to total assets ratio is at or above (below) the median in each quarter. Liquidity is calculated as the sum of banks' cash & reserves, and liquid asset

To quantify the real effect of the uneven distribution of reserves on the real economy, we test the relation between local business growth and the market share of banks with high reserve holdings at the county level. We collect business establishment information from the County Business Patterns (CBP), and measure local business growth at both the county-year and the county-industry-year levels. In calculating the market share of different types of banks in each county, we use branch-level deposit information from the FDIC Summary of Deposits (SOD). We also collect relevant county-level socioeconomic characteristics such as unemployment rate, population, and median household income. County-level unemployment rates are from the Local Area Unemployment Statistics (LAUS) program by the U.S. Bureau of Labor Statistics. County-level population and median household income data are obtained from the U.S. Census Bureau's intercensal estimates and Small Area Income and Poverty Estimates (SAIPE) programs, respectively. Panel A and B of Table A1 in the Appendix summarize the county-year and county-industry-year level information used in the analysis of the real effect on the economy, respectively. In these analyses, we exclude finance, insurance, and real estate (FIRE), as well as construction industries due to lack of comparability in their levels of external financing dependence with the rest. Oil and gas industries are also excluded as sectoral employment and growth depend crucially on resource discoveries.

3.2 Summary Statistics

Table 1 shows balance sheet information for all banks in the estimation sample as well as subgroups of banks with varying levels of cash & reserve holdings. In general, banks that hold more cash and reserves are slightly smaller on average. Real estate loans tend to grow at a much faster rate than C&I loans over the entire sample period. All sub-groups have tier 1 capital ratios that are greater than 10% on average.

Table 2 presents the balance sheet details for two time periods, before and after the 2007-2008 financial crisis for high- and low-reserve banks, separately.[3] Following the implementation of the QE policies, banks with both high and low liquidity levels increased their cash and reserve holdings. We do not see a clear trend for the total liquid assets after 2007. Furthermore, we do not see significant changes in the capital positions of the two types of banks following the crisis. This could be attributed in part to the implementation of Basel III capital standards, as well as its annual stress tests and capital planning processes. Moreover, even with QE, average bank loan growth was much lower for both types of banks and all types of loans (i.e., total loans, C&I loans, and real estate loans) in the post-crisis period. This confirms the significant change in the overall economic environment following the crisis. Indeed,

[3] Table A2 in the Appendix presents the mean comparisons of all bank characteristics between the high- and low-reserve banks for (i) the full sample period, (ii) the pre-crisis period of 2002-2006, and (iii) the crisis and QE period of 2007-2017, separately in each panel. Banks with high- versus low-levels of reserve holdings appear rather different even along the observable dimensions such as size and capital adequacy level, therefore, we focus on split-sample analyses where high- and low-reserve banks are modeled separately.

nonperforming loans (NPLs) were much higher in the post-crisis period for both high- and low-reserve banks, while net income was much lower.

Table 2: Bank-Level Summary Statistics by Reserve Holding Levels

	High-Reserve Banks								Low-Reserve Banks							
	Pre-Crisis: 2002-2006				Crisis & QE: 2007-2017				Pre-Crisis: 2002-2006				Crisis & QE: 2007-2017			
	Mean	p(25)	p(50)	p(75)	Mean	p(25)	p(50)	p(75)	Mean	p(25)	p(50)	p(75)	Mean	p(25)	p(50)	p(75)
$(Cash + Reserves)/Assets_{it}$	7.534	4.450	5.634	8.122	13.671	7.546	10.834	16.660	2.525	1.995	2.570	3.102	3.260	1.998	2.880	4.417
$Liquidity/Assets_{it}$	34.820	22.851	32.449	44.460	35.639	22.477	32.530	45.668	30.087	18.379	27.360	39.316	29.360	17.212	26.234	38.485
$dlnNetLoan_{it}$	0.021	-0.011	0.016	0.046	0.007	-0.020	0.003	0.030	0.028	-0.002	0.021	0.049	0.015	-0.009	0.011	0.034
$dlnC\&ILoan_{it}$	0.018	-0.047	0.009	0.076	0.004	-0.055	0.000	0.057	0.024	-0.037	0.015	0.079	0.013	-0.041	0.005	0.063
$dlnRELoan_{it}$	0.027	-0.010	0.018	0.053	0.010	-0.018	0.003	0.030	0.032	-0.002	0.022	0.053	0.016	-0.009	0.010	0.033
$lnAssets_{it}$	18.352	17.548	18.239	19.004	18.711	17.891	18.610	19.382	18.910	18.059	18.744	19.574	19.297	18.442	19.148	19.975
$NPL/Assets_{it}$	0.617	0.080	0.333	0.814	1.214	0.133	0.595	1.498	0.589	0.099	0.337	0.778	1.142	0.231	0.663	1.427
$Tier1CapitalRatio_{it}$	17.975	11.270	14.150	19.050	22.320	12.370	15.464	20.610	16.105	10.558	12.790	17.001	17.432	11.490	13.732	17.426
$NetIncome/Assets_{it}$	0.263	0.165	0.263	0.370	0.156	0.072	0.185	0.300	0.279	0.185	0.274	0.371	0.198	0.115	0.217	0.320
Number of bank-quarters	75,033				147,668				73,952				147,138			
Number of banks	7,381				7,602				7,114				7,419			

Notes: Data are from quarterly FFIEC Call Report forms for all U.S. commercial banks from 2002Q1 to 2017Q4. The same filters are used as in the baseline regressions. A bank is defined as a high-reserve (low-reserve) bank if its cash and balances due from depository institutions to total assets ratio is at or above (below) the median in each quarter.

To provide a more complete understanding of banks' liquidity holdings, Figure 1 plots the time series of (1) all liquid assets, as well as (2) cash and reserves, (3) MBS, and (4) Treasury bonds, for the average bank over the 2003-2017 sample period.[4] Given that banks' reserve holdings are likely correlated with their asset sizes, all liquidity measures are normalized by total assets. The shaded areas indicate different rounds of QE. Both the cash and reserve ratio and the overall liquid asset ratio experienced dramatic increases during the QE period, especially during QE1 and QE2.[5] In comparison, the average bank's MBS holding and Treasury holding as a fraction of its total assets stayed relatively stable during the QE period. The shares of MBS and Treasury bond holding were both around 7.5% in the quarter before QE1, and fluctuated around that level during the QE period. In contrast, the cash and reserve ratio had more than doubled by the start of QE3 compared to the pre-QE period, rising from below 5% to above 10%. The overall liquid asset ratio rose from approximately 22.5% at the start of QE1 to 25% by the end of QE3.

We focus on banks' cash and reserve holdings since they are the most directly affected by the Fed's policies. The liquidity crisis that led to Silicon Valley Bank's collapse also highlights the difference between reserves and other liquid asset holdings such as securities, owing to disparities in their interest rate sensitivities. To understand how the massive increase in reserves is distributed across banks, we look at changes in reserve holdings in different parts of the

distribution within the banking system. Figure 2 depicts the time series of banks' cash and reserve holdings during our sample period, with the 10th, 25th, 50th, 75th, and 90th percentiles plotted separately. The gaps in cash & reserve ratios between the 10th and 90th percentiles, as well as the 25th and 75th percentiles, give us a sense of the dispersion of reserve holdings across

banks. A few generalizations emerge. First, with the implementation of QE, banks' cash and reserve holdings entered a new regime and have yet to return to pre-QE levels. Second, while there has always been a larger gap at the top of the distribution, dispersion in banks' cash and reserve holdings has widened significantly, with the interquartile range more than doubling during this period. Banks at the top of the reserve distribution are becoming increasingly liquidity-rich, while those at the bottom are experiencing a modest increase in liquidity. Figure A1 in the Appendix plots the distribution of cash and reserve holdings separately for large and smaller banks. It shows that such dramatic increase in dispersion of cash and

[4] Cash and reserves data is from RCFD0010 in the Schedule RC-A of the Call Report. Missing values of RCFD0010 are filled using RCFD0071 and RCFD0081 in the Schedule RC—Balance Sheet.

[5] Ennis and Wolman (2015) also find that, instead of substituting reserves for other liquid assets, banks simply increased their overall level of liquidity holding during their study period of QE1 and QE2.

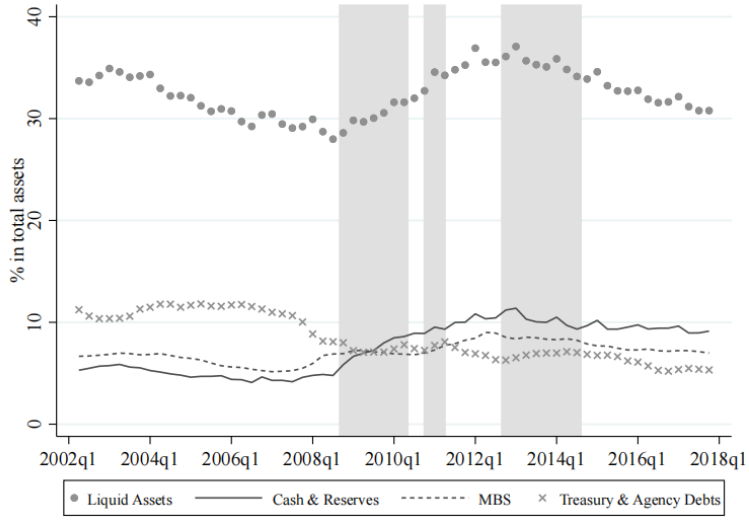
reserve holdings is not a large or small bank phenomenon, but rather a common trend shared by both ends of the size distribution.[6]

4.1 Empirical Specifications

We categorize banks as high- and low-reserve banks based on their cash & reserve ratios (as a share of total assets) based on the quarterly median level cash & reserve holdings of our estimation period.[7] Figure 1 shows that overall liquidity levels rose and fell with the cash & reserves ratio throughout the QE period, consistent with the fact that reserves are most directly affected by Fed policies and interventions. Empirically, we adopt the following model with bank and time fixed-effects, and estimate the model using both OLS and IV methods, separately for high- and low-reserve banks:

$$\Delta lnLoan_{i,t} = \beta * lnLiquidity_{i,t-1} + \sum_{k=1}^{\hat{}} \rho_k * QE_{k,t-1} * lnLiquidity_{i,t-1} + \lambda * X_{i,t-1} + \mu_i + \gamma_t + \epsilon_{i,t} \quad (1)$$

Figure 1: Changes in Liquidity Levels during QE

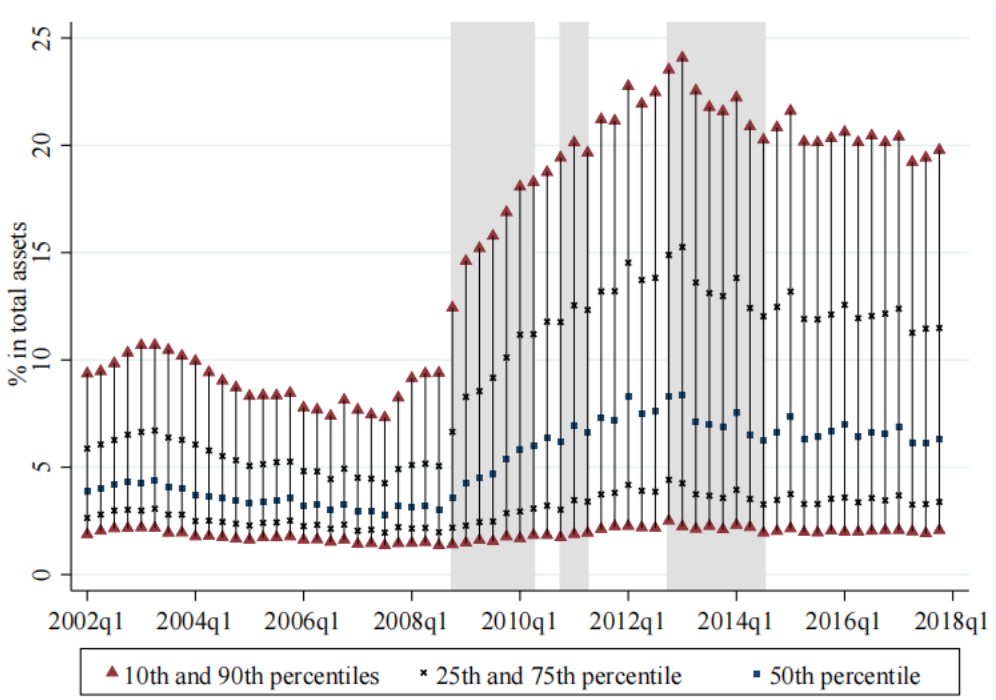


Notes: Data are from quarterly FFIEC Call Report forms for all U.S. commercial banks from 2002Q1 to 2017Q4. Filters used in the baseline regressions are applied. The mean of each variable is plotted for each quarter. Shaded areas indicate the three rounds of QEs starting from 2008Q4. Liquid assets are the outstanding amount of federal funds sold, securities purchased under agreements to resell, held-to-maturity securities, available-for-sale securities, and trading assets, plus cash & reserve holdings. Cash & reserves are defined as cash and balances due from depository institutions (Schedule RC-A in Call Report). MBS is the outstanding amount of mortgage-backed securities. Treasury is the outstanding amount of U.S. Treasury securities, and U.S. government agency obligations excluding MBS.

Figure 2: Distribution of Cash & Reserves during QE

[6] Figure A1 in the Appendix shows that smaller banks have higher levels of cash and reserve holdings (as a fraction of their assets) than large banks both pre-crisis and during the QE episodes, consistent with the precautionary motives of reserve holding being stronger for smaller banks. In addition, the marginal cost of reserve holding during crisis might be even lower for smaller banks as lending opportunities were scarce.

[7] We find similar results with alternative criteria for reserve-constrained banks (i.e., below the 25th percentile) and reserve-rich banks (i.e., above the 75th percentile). Similar results are also obtained using banks' total liquid asset holdings instead of their cash & reserve holdings.



Notes: Data are from quarterly FFIEC Call Report forms for all U.S. commercial banks from 2002Q1 to 2017Q4. Same filters are used as in the baseline regressions. Shaded areas indicate the three rounds of QEs starting from 2008Q4. Cash & reserves are defined as cash and balances due from depository institutions (Schedule RC-A in Call Report).

where ΔlnLoani,t is defined as the growth rate of total lending of bank i in year t, lnLiquidityi,t is a measure of bank i's overall balance sheet liquidity level, defined as the logarithm of a bank's liquid asset ratio, μi is a vector of bank fixed effects, and γt represents year-quarter fixed effects. Lagged values of banks' asset size, NPL ratio, Tier 1 capital ratio, and net income are included as controls (Xi,t−1). Bank fixed effects are included to strip away any time-constant bank-specific characteristics associated with their lending behavior. For example, Berger and Roman (2015) find that banks that are beneficiaries of the Troubled Asset Relief Program (TARP) enjoyed competitive advantages and gained market share over non-recipients. The inclusion of bank fixed effects suggests that the identifying variations in our model come from within banks rather than across banks (e.g., TARP recipients vs. non-recipients). We also include a vector of year-quarter fixed effects to remove any economy-wide factors that may affect all banks' lending decisions similarly in each quarter.

To address the potential endogeneity caused by banks' liquidity holdings being correlated with loan cyclicality, we also estimate the model using 2SLS techniques with a quasi-instrument for the liquidity measure following Kashyap and Stein (2000) and Cetorelli and Goldberg (2012). This quasi-instrument is the residual from a regression of the liquidity ratio on the C&I loan ratio and the NPL ratio (both as percentages of total lending). All interactions between the QE indicators and the endogenous liquidity measure are instrumented with their corresponding products.

4.2 Empirical Findings

Table 3 presents the results of equation (1) estimated using both OLS and 2SLS.[8] The left panel (columns (1) - (4)) displays full sample (2003-2017) estimates using various methods. The right panel (columns (5) - (8) presents results from the crisis and QE period sample (2007-2017), which we believe is a more appropriate time frame for assessing the differential lending response of banks with varying levels of reserves. We find that loan growth of high-reserve banks are more responsive to the liquidity changes than their low-reserve counterparts (e.g., columns (3) versus (4), and columns (7) versus (8)). Given a 1%

[8] Figure A2 in the Appendix presents the year-by-year coefficient on liquidity in the baseline regression for high- and low-reserve banks separately. The diverging pattern between the high- and low-reserve banks in their lending-liquidity relationship during the QE periods is consistent with the possibility that low-reserve banks tend to increase their liquidity holding during the QE periods out of precautionary motives, including the need to satisfy regulatory requirements.

increase in liquid asset ratio, the associated additional changes in loan growth for high-reserve banks are about 0.005%, 0.009%, and 0.005% for the three rounds of QE, respectively, compared to the non-QE period (column (3)). Lending responses due to liquidity changes for the low-reserve banks are found to be significantly smaller in magnitude than their high-reserve counterparts. Results for the high-reserve banks are largely similar in the post-2007 sub-sample, while lending growth for the low-reserve banks appear even less responsive than the full sample estimates.

To quantify the economic significance of our findings, we calculate the percentage change in loan growth relative to its sample mean for banks in the two sub-samples. During QE1, a 1% increase in liquidity ratio is associated with a 0.032% increase in loan growth for banks with higher levels of cash and reserve holdings, while only 0.020% for their lower-reserve counterparts.[9] Considering that the full sample mean of loan growth is 1.6%, a 0.032% increase is about 2% of the sample average.

In Table 4, we perform tests similar to the baseline regressions, but replacing the QE indicators with two continuous measures that capture the scale of the Fed's LSAPs. For brevity, we only report results using the post-2007 period sample and only report results estimated with 2SLS for the remainder of the paper. The first measure is based on the actual net purchase amount of agency MBS and Treasury securities, while the second is the size of the Fed's balance sheet. Estimation results for the two measures are reported in columns (1)-(2) and (3)-(4), respectively.We are most interested in the interaction between the net purchase amount and the liquidity ratio. The same pattern holds in that banks with higher levels of reserve holdings are more responsive in their lending to liquidity injections from the Fed's asset purchase than banks with lower levels of reserve holdings.

5. Robustness Checks

In this section, we begin with a robustness test using DealScan data to address concerns about potential confounding factors such as loan demand. As the differential lending responses are rooted in banks' post-crisis liquidity constraints, we also develop a new measure of liquidity constraint based on Home Mortgage Disclosure Act (HMDA) data to show that our findings are robust to alternative measures of liquidity constraint and sample restrictions.

Table 3: Bank Reserve Holding and Lending

	Full Sample: 2002-2017				Crisis & QE: 2007-2017			
	OLS		IV = residual liquidity		OLS		IV = residual liquidity	
	High-Reserve	Low-Reserve	High-Reserve	Low-Reserve	High-Reserve	Low-Reserve	High-Reserve	Low-Reserve
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$lnLiquidity_{t-1}$	0.0255***	0.0170***	0.0269***	0.0183***	0.0304***	0.0218***	0.0309***	0.0226***
	(0.0012)	(0.0013)	(0.0012)	(0.0014)	(0.0013)	(0.0016)	(0.0014)	(0.0016)
$lnLiquidity_{t-1}$ × QE1	0.0068***	0.0029***	0.0053***	0.0020**	0.0039***	0.0012	0.0030***	0.0010
	(0.0011)	(0.0009)	(0.0012)	(0.0010)	(0.0011)	(0.0009)	(0.0011)	(0.0009)
$lnLiquidity_{t-1}$ × QE2	0.0080***	-0.0011	0.0087***	-0.0012	0.0073***	-0.0002	0.0078***	-0.0001
	(0.0015)	(0.0011)	(0.0016)	(0.0012)	(0.0014)	(0.0011)	(0.0015)	(0.0013)
$lnLiquidity_{t-1}$ × QE3	0.0054***	0.0021***	0.0054***	0.0023***	0.0055***	0.0028***	0.0056***	0.0031***
	(0.0010)	(0.0008)	(0.0011)	(0.0008)	(0.0010)	(0.0007)	(0.0010)	(0.0007)
$lnAssets_{t-1}$	-0.0263***	-0.0310***	-0.0265***	-0.0309***	-0.0247***	-0.0349***	-0.0251***	-0.0348***
	(0.0017)	(0.0029)	(0.0018)	(0.0029)	(0.0021)	(0.0021)	(0.0021)	(0.0021)
NPL_{t-1}	-0.0100***	-0.0106***	-0.0100***	-0.0106***	-0.0084***	-0.0087***	-0.0084***	-0.0087***
	(0.0002)	(0.0003)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
$Tier1Capital_{t-1}$	0.0008***	0.0008***	0.0008***	0.0008***	0.0006***	0.0009***	0.0006***	0.0009***
	(0.0001)	(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$NetIncome_{t-1}$	-0.0111***	-0.0132***	-0.0108***	-0.0131***	-0.0073***	-0.0071***	-0.0071***	-0.0070***
	(0.0010)	(0.0013)	(0.0009)	(0.0013)	(0.0009)	(0.0011)	(0.0009)	(0.0011)
Observations	223,005	221,306	222,309	220,723	147,668	147,138	146,971	146,555
Bank FE	YES	YES	YES	YES	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES
Anderson-Rubin F Stat	-	-	162.5	58.84	-	-	157.8	63.63
R^2	0.2683	0.3106	0.1578	0.1703	0.2738	0.3191	0.1381	0.1627

Notes: Bank-level data are from quarterly Call Report forms for all U.S. banks from 2002Q1 to 2017Q4. The dependent variable is the first difference of logarithm total loan (ΔlnLoan). Focal independent variables are the interaction terms between the lagged logarithm liquid asset ratio and the lagged QE indicators. Cash and reserve holding is included in the total liquid assets (lnLiquidity). QE1 is from

[9] 0.032%=0.027%+0.005%, as shown in column (5) for high-reserve banks, while 0.020%=0.018%+0.002%, as shown in column (6) for low-reserve banks.

2008Q4 to 2010Q2. QE2 is from 2010Q4 to 2011Q2. QE3 is from 2012Q4 to 2014Q3. A bank is defined as a high-reserve (low-reserve) bank if its cash and balances due from depository institutions (Schedule RC-A of the Call Report) to total assets ratio is above (below) the median in each quarter. IV results are estimated using 2SLS where liquidity level is instrumented by a residual orthogonal to loan cyclicality following Kashyap and Stein (2000). Bank-level controls include total assets (lnAssets), non-performing loans as a percentage of total assets (NPL), Tier 1 capital ratio (Tier1Capital), and net income to total assets ratio (NetIncome). Robust standard errors are clustered at the bank level.

5.1 Controlling for Loan Demand

Endogeneity associated with unobservable demand-side factors of bank loans is a classic concern in empirical studies of bank lending. Banks' lending may vary due to changes in loan demand rather than their own balance sheet constraints. The underlying logic is that the observed decrease in bank lending could simply be due to decreased loan demand from their customers during economic downturns. To guard against this possibility, we employ the demand control method proposed in Degryse et al. (2019), and estimate our model at the loan level with borrower fixed effects, loan type fixed effects, quarter fixed effects, and industry–location–year fixed effects. In particular, industry-location-year fixed effects are introduced to strip away any cyclicalities that are specific to any industry-market groups.[10] For instance, IT firms in Illinois and California could follow different cycles in their business development and financing needs.

Our loan-level data is constructed using a sample of syndicated loans from the Thomson- Reuters' DealScan, which provides comprehensive historical information on syndicated loan contract details. The data in DealScan are organized by "Package" (or "Deal") and by "Facility". A "Deal" is a contract signed at a specific time between a borrower and one or more lenders. Each syndicated loan deal may include one or more "facilities" (i.e., term loans, bridge loans, lines of credit, leases, etc.), and each "facility" may have one or more lenders. Following existing literature, we treat facilities in each deal as separate loans and conduct our analysis at the syndicated loan level (Qian and Strahan, 2007; Santos, 2011; Ferreira and Matos, 2012). Lenders in the DealScan sample are matched with banks in the Call Report sample using an identifier crosswalk produced by Keil (2018).

Table 4: Robustness Check: Fed Security Purchase and Balance Sheet Size

[10] Industry and location are identified by mergeing DealScan with Compustat using unique identifiers for firms. The crosswalk between DealScan and Compustat firm identifiers are generously shared by Chava and Roberts (2008) online. Due to data availability constraints, we use state to proxy for firm location. The original measure takes into consideration differences in firm size as well. Unfortunately, asset information is only sparsely available in our sample.

	High-Reserve (1)	Low-Reserve (2)	High-Reserve (3)	Low-Reserve (4)
$lnLiquidity_{t-1}$	0.0265***	0.0214***	-0.0380**	-0.0009
	(0.0015)	(0.0018)	(0.0149)	(0.0155)
$lnLiquidity_{t-1} \times lnFedPurchase_{t-1}$	0.0008***	0.0002**		
	(0.0001)	(0.0001)		
$lnLiquidity_{t-1} \times lnFedBalanceSheet_{t-1}$			0.0048***	0.0016
			(0.0010)	(0.0010)
$lnAssets_{t-1}$	-0.0252***	-0.0348***	-0.0247***	-0.0346***
	(0.0021)	(0.0021)	(0.0021)	(0.0022)
NPL_{t-1}	-0.0083***	-0.0087***	-0.0084***	-0.0087***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
$Tier1Capital_{t-1}$	0.0006***	0.0009***	0.0006***	0.0009***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
$NetIncome_{t-1}$	-0.0070***	-0.0071***	-0.0069***	-0.0070***
	(0.0009)	(0.0011)	(0.0009)	(0.0011)
Observations	146,971	146,555	146,971	146,555
Bank FE	YES	YES	YES	YES
Year-Quarter FE	YES	YES	YES	YES
Anderson-Rubin F Stat	315.4	116.4	325.1	128.0
R^2	0.1383	0.1626	0.1382	0.1627

Notes: Bank-level data are from quarterly Call Report forms for all U.S. banks from 2007Q1 to 2017Q4. The dependent variable is the first difference of logarithm total loan (ΔlnLoan). Focal independent variables are the interaction terms between the lagged logarithm liquid assets and the lagged QE policy measures. FedPurchase is defined as the actual quarterly purchase amount of the agency MBS and treasury securities by the Fed. FedBalanceSheeet is defined as the quarterly balance sheet size of the Fed. Cash and reserves are included in the liquid assets. A bank is defined as a high-reserve (low-reserve) bank if its cash and balances due from depository institutions (Schedule RC-A of the Call Report) to total assets ratio is above (below) the median in each quarter. Results are estimated using 2SLS where liquidity level is instrumented by a residual orthogonal to loan cyclicality following Kashyap and Stein (2000). Bank-level controls include total assets (lnAssets), non-performing loans as a percentage of total assets (NPL), Tier 1 capital ratio (Tier1Capital), and net income to total assets ratio (NetIncome). Robust standard errors are clustered at the bank level.

Since each facility (i.e., syndicated loan) usually has multiple lenders, we need to compute the precise amount for each lender in each facility. The DealScan data only provide information on the exact loan breakdown for a subset of the facilities. Following De Haas and Van Horen (2012), we divide each facility amount among its lenders using two different rules. First, we employ a straightforward rule that distributes the loan amount evenly among all of its lenders (i.e., "the equal-share rule"). In other words, we assume that all lenders contributed the same amount of money, regardless of their roles in the loan syndication. Alternatively, for the second rule, we attribute half of the loan amount to loan arrangers and the remaining half to loan participants (i.e., "the arranger-half rule").[11] We use loan amounts computed using both rules in all of our estimations to minimize the impact of measurement errors in the dependent variables. The facility amount in all currencies other than the US dollar is converted to the US dollar using the exchange rate information in DealScan. We also identify each facility's unique borrower. The empirical specification is similar to equation (1), where the computed lender-specific loan amount is the dependent variable.

Table 5 presents results obtained using DealScan data along with lender-level controls and various fixed effects. Columns (1)-(2) show the results for loan amounts allocated using the arranger-half rule, and columns (3)-(4) those allocated using the equal-share rule. The coefficients for the interactions between the liquidity measure and the QE indicators are positive and significant only for the high-reserve group. Banks

[11] Following Cai et al. (2011), we use the "Lender Role" variable in the DealScan database to identify the role of each lender.

with higher reserve and cash holdings are found to be more responsive in their lending to liquidity injection even after controlling for unobservable time-varying demand-side factors.[12]

5.2 Alternative Measures for Liquidity Constraint

As the differential lending responses are a result of variations in banks' post-crisis liquidity constraints, we develop a novel proxy for individual bank's liquidity constraints based on its mortgage lending exposure in the hardest-hit housing markets in the subprime mortgage crisis. We exploit cross-bank differences in real estate lending and demonstrate that our findings are robust to alternative measures of liquidity constraint and sample restrictions.

Table 5: Robustness Check: Controlling for Loan Demand

	lnLoan by arranger-half rule		lnLoan by equal-share rule	
	High-reserve	Low-reserve	High-reserve	Low-reserve
	(1)	(2)	(3)	(4)
$lnLiquidity_{t-1}$	−0.0169	0.0002	−0.0085	0.0115
	(0.0255)	(0.0319)	(0.0262)	(0.0281)
$lnLiquidity_{t-1}$ × QE1	0.0729**	−0.0845***	0.0618**	−0.1005***
	(0.0324)	(0.0237)	(0.0266)	(0.0235)
$lnLiquidity_{t-1}$ × QE2	0.0194***	0.0214	0.0269***	0.0094
	(0.0053)	(0.0489)	(0.0024)	(0.0453)
$lnLiquidity_{t-1}$ × QE3	−0.0458	0.0047	0.0441	−0.0180
	(0.1128)	(0.0467)	(0.0866)	(0.0373)
$lnAssets_{t-1}$	0.0705***	0.1112***	0.0541***	0.0977***
	(0.0094)	(0.0109)	(0.0081)	(0.0127)
NPL_{t-1}	0.0204	0.0339***	0.0268	0.0390***
	(0.0248)	(0.0099)	(0.0214)	(0.0091)
$Tier1Capital_{t-1}$	0.0012**	0.0032***	0.0012**	0.0032***
	(0.0005)	(0.0006)	(0.0005)	(0.0006)
$NetIncome_{t-1}$	−0.0873**	−0.1184***	−0.1114***	−0.0628**
	(0.0398)	(0.0286)	(0.0376)	(0.0243)
Observations	10,233	17,115	10,233	17,115
Borrower FE	Yes	Yes	Yes	Yes
Loan Type FE	Yes	Yes	Yes	Yes
Industry–state–year FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
R^2	0.8767	0.7678	0.8826	0.7699

Notes: Bank-level data are from the Call Report and the DealScan from 2007Q1 to 2017Q4. The dependent variable is the logarithm syndicated loan amount reported in the DealScan. Focal independent variables are the interaction terms between the lagged logarithm liquid assets and the QE indicators. Arranger-Half Rule and Equal-Share Rule are two different rules used to calculate each bank's actual loan amount in each facility when the share information is not available in the DealScan. Cash and reserves are included in the liquid assets. The definitions of QE1, QE2 and QE3 are the same as in the previous tables. A bank is defined as a high-reserve (low-reserve) bank if its cash and balances due from depository institutions to total assets ratio is above (below) the median in each quarter. Borrower fixed effects, loan type fixed effects, industry-state-year fixed effects, and quarter fixed effects are included in all regressions. Bank-level controls include total assets (lnAssets), non-performing loans as a percentage of total assets (NPL), Tier 1 capital ratio (Tier1Capital), and net income to total assets ratio (NetIncome). Robust standard errors are clustered at the loan type and industry-state-year levels.

The idea is to compare real estate lending responses to liquidity changes for banks that are (1) similarly active in the real estate market, but (2) have different exposure to the hardest-hit markets. Housing markets are intensely local, and there is considerable variation between local housing markets throughout both

[12] The estimated coefficients differ slightly from those obtained using bank-level data for the following reasons. First, our estimation sample is limited to banks that have done syndicated lending during this time period, which may be a subset of banks. Second, syndicated lending includes some cross-border and foreign loans that may be affected by QE via different channels than domestic loans (e.g., push and pull factors of cross-border banking capital flows). For more information on this topic, see, for example, De Haas and Van Horen (2012) and Giannetti and Laeven (2012).

boom and bust. The geographical coverage of banks in local housing markets is substantially pre-determined by the existence of physical branches. Banks with inadequate liquidity likely cannot respond to new lending possibilities if they have pre- existing positions that may increase the demand for liquidity. By looking at banks' concentration in the hardest-hit markets, we are able to differentiate banks with similar lending composition (i.e., C&I versus real estate loans) and likely comparable along other dimensions, but differ in their ability to react to new lending opportunities due to their liquidity constraints from differential exposure to the hardest-hit markets.

Another advantage of comparing the lending behavior of active real estate lenders is the increased comparability of banks in the sample. Omitted variables, whether observable or not, that are correlated with both banks' liquidity level and lending response pose a potential concern for the comparison of the lending responses of high- and low-reserve banks. For example, banks that differ in their risk preferences might behave differently in their liquidity holdings (including cash, reserves, and other liquid assets). At the same time, banks' attitude towards risks also influences their lending decision as well as their lending responses to liquidity shocks. Since risk preference is difficult to measure or observe, the observed differential lending sensitivity during the QE period between high- and low-reserve banks could be attributable to differences in risk preferences. By restricting the comparison to active real estate lenders, we look at banks that are more comparable with regard to risk-taking and other unobservable characteristics. The main difference that drives banks' liquidity constraint is their differential exposure in the hardest-hit markets, which is, to a large extent, pre-determined.

Table 6: Robustness Check: Alternative Measure of Liquidity Constraint

	Dependent Variable = ΔlnLoan(Real Estate)		
	Sample = High Real Estate Lending Banks		
	All	Exposure Low	Exposure High
	(1)	(2)	(3)
$lnLiquidity_{t-1}$	0.0058***	0.0049***	0.0163***
	(0.0011)	(0.0012)	(0.0041)
$lnLiquidity_{t-1}$ × QE1	0.0020*	0.0024**	-0.0024
	(0.0012)	(0.0012)	(0.0049)
$lnLiquidity_{t-1}$ × QE2	0.0010	0.0009	0.0041
	(0.0015)	(0.0015)	(0.0078)
$lnLiquidity_{t-1}$ × QE3	0.0035***	0.0039***	-0.0028
	(0.0010)	(0.0010)	(0.0059)
$lnAssets_{t-1}$	-0.0193***	-0.0195***	-0.0192***
	(0.0018)	(0.0019)	(0.0062)
NPL_{t-1}	-0.0074***	-0.0074***	-0.0069***
	(0.0002)	(0.0002)	(0.0007)
$Tier1Capital_{t-1}$	0.0015***	0.0014***	0.0022***
	(0.0002)	(0.0002)	(0.0006)
$NetIncome_{t-1}$	-0.0011	-0.0008	-0.0026
	(0.0008)	(0.0009)	(0.0021)
Observations	85,983	79,555	6,427
Bank FE	YES	YES	YES
Year-Quarter FE	YES	YES	YES
Anderson-Rubin F Stat	12.95	10.87	4.767
R^2	0.1822	0.1732	0.2338

Notes: Bank-level data are from quarterly Call Report forms for all U.S. banks from 2007Q1 to 2017Q4. Mortgage lending information is from the Home Mortgage Disclosure Act (HMDA) data. The dependent variable is the first difference of logarithm total loan (loan growth). Focal independent variables are the interaction terms between the lagged logarithm liquid assets and the QE indicators. Cash and reserves are included in the liquid assets. Banks with high real estate lending are those with above-median share of real estate lending in total lending during the period before QE1 (i.e. 2006-2007). "Exposure Low" are those with lower than 50% of loan originated in the hardest hit markets during 2007-2009, while "Exposure High" are those with at least 50% from the hardest hit markets. The definitions of QE1, QE2 and QE3 are the same as in the previous tables. Results are estimated using 2SLS where the liquidity level is instrumented by a residual orthogonal to loan cyclicality. Bank-level controls include total assets (lnAssets),

non-performing loans as a percentage of total assets (NPL), Tier 1 capital ratio (Tier1Capital), and net income to total assets ratio (NetIncome). Robust standard errors are clustered at the bank level.

We first identify the hardest-hit housing markets during the subprime mortgage crisis by examining changes in the county-level HPI between 2007 and 2009.[13] We rank counties according to changes in the HPI and designate the bottom 5% as the hardest-hit markets. In order to measure mortgage origination for each lender, we aggregate mortgage applications to the lender-county-year level.[14] We apply the conventional sample restriction and include in our sample single-family first lien loans for purchase or refinance.

As the goal is to identify banks that are most severely affected by the collapse of the housing market during the subprime mortgage crisis, we quantify banks' housing market activity based on their real estate lending during the boom era preceding the collapse. Specifically, we first categorize banks as active real estate lenders if the proportion of real estate to total lending during the period preceding QE1 (i.e., 2006-2007) is above the sample median. We then calculate for each bank the share of mortgage originated in most adversely affected counties over their total origination for the year. High-exposure banks are defined as those that have originated more than 50% of their mortgages in the bottom 5% of counties in terms of HPI changes.

Table 6 presents the results for net real estate loan growth for all active real estate lenders (column (1)), and separately for those with high- and low-exposure in the hardest-hit markets (columns (2) and (3)). First, these results validate the comparability of the sample, which consists of banks that are actively involved in the real estate market and whose real estate lending is highly sensitive to changes in their liquidity levels. Less affected banks increased their real estate lending in response to liquidity increase as a result of the QE policies, while those with a high share of mortgages originated in the hardest-hit markets were not able to do so.

6. Real Effects on the Economy

To understand the broader implication of such uneven distribution of bank reserves, we assess the real effects of differential lending responses using data from the County Business Patterns. We hypothesize that the differential responses of bank lending growth to liquidity increases for banks in different parts of the reserve distribution could result in vastly unequal impacts on the regional recovery and development across locations. To test this hypothesis, we first measure the market share of high-reserve banks for each county-year using deposit information at the branch level reported in SOD, and estimate the following model of local business growth for county c in year t:

$$\%\Delta Establishments_{ct} = \beta * I(\%HighReserveBanks^{High})_{c,t-1} + \rho * lnDeposits_{c,t-1} + \lambda * X_{c,t-1} + \mu_c + \gamma_t + \epsilon_{ct}, \quad (2)$$

where %ΔEstablishmentsct is the growth rate of number of establishments in county c year t, I(%HighReserveBanksHigh)c,t−1 is an indicator for an above-median market share held by high-reserve banks for county c in year t − 1, lnDepositsc,t−1 is the logarithm of total deposits in county c year t − 1. We also control for relevant county-level socioeconomic characteristics such as unemployment rate, population, and median household income (Xc,t−1). County and year fixed effects are included to control for any time-invariant heterogeneities in local business growth across counties and any year-to-year variations in the macro environment common to all.

To examine more closely any industry-market level heterogeneities in local business growth patterns, we also estimate a model similar to equation (2) at the county-industry-year level. The dependent variable is %ΔEstablishmentscjt - the growth rate of number of establishments in county c industry j year t - and the vectors of county fixed effects (μc) and year fixed effects (γt) are replaced with county-industry pair fixed effects (μcj) and industry-year fixed effects (γjt). These two sets of fixed effects should account for any time-constant heterogeneities specific to a industry-market pair, and any industry-specific national trends in local business growth.

[13] Alternative time windows such as 2007-2008 and 2008-2009 yield similar results.

[14] Lender information in the Call Report and the mortgage lending information in HMDA are matched using the crosswalk developed and generously shared by Robert Avery of the Federal Housing Finance Agency (FHFA).

Table 7 presents the real effects of the uneven distribution of bank reserves on local business growth. Column (1) of Panel A reports results at the county-year level, while columns (2) to (4) report the county-industry-year level results. Counties with a larger market share captured by high-reserve banks appear to enjoy a higher rate of local business growth. Specifically, the coefficients of interest are 0.115 and 0.143 for the county-year and county-industry-year models, respectively. In counties with an above-median share of high-reserve banks, the growth rate of number of establishments is approximately 0.115 percentage points higher. To put this magnitude into context, the average county-level annual growth rate in the number of establishments in our estimation sample is 0.045%, and the interquartile range is 3.342%. We further differentiate between industries with varying levels of external financing dependence following Duygan-Bump et al. (2015) and Gilje (2019). Results are reported in columns (3) and (4) of Panel A in Table 7. The estimated coefficient of interest is only statistically significant for industries that are more dependent on external financing, suggesting that firms in these industries benefit more from the local presence of high-liquidity banks.

We also conduct a falsification test using large banks, rather than high-reserve banks, as one might be concerned that the result is reflective of a mere size effect, since large banks may hold more reserves. We define a large bank as banks whose assets are at or above the 95th percentile in a given quarter of the sample period, following Kashyap and Stein (2000), Campello (2002) and Cetorelli and Goldberg (2012). We then calculate the market share of large banks in each county- year. In the empirical specification, the indicator I(%HighReserveBanksHigh)c,t−1 in equation (2) is replaced by I(%LargeBanksHigh)c,t−1, which is an indicator for an above-median market share held by large banks for county c in year t − 1. Results are reported in Panel B of Table 7. We do not find any statistically significant association between local business growth and the market share of large banks at the county level, indicating that the banks' reserve-holding effect on the local economy is different from the size effect.

7. Conclusion

This paper examines the differential lending responses of banks with varying levels of reserves, and their impact on the real economy. We start by documenting the uneven distribution of reserves in the U.S. banking system as a result of the Federal Reserve's unconventional monetary policies. Not only has the overall reserve level increased as a result of the Fed's intervention, but the dispersion in reserve holdings across banks has also grown with the three rounds of QE. Reserve hoarding by banks during the financial crisis has further widened the liquidity gap between high- and low-reserve banks. We believe that banks' ability to convert liquidity to lending depends crucially on the various regulatory constraints they face, and hypothesize that banks in different parts of the reserve distribution might respond differently to liquidity changes in their lending increase.

Table 7: Effects of Bank Reserve Holding on Business Establishments

	Dependent Variable = %Δ(*Establishments*)			
	County-Year	County-Industry-Year		
		All Sectors	External Finance Dependence High	External Finance Dependence Low
	(1)	(2)	(3)	(4)
		Panel A: Establishment Results		
$I(\%HighReserve^{High})_{t-1}$	0.1152***	0.1434**	0.1578*	0.1261
	(0.0372)	(0.0586)	(0.0809)	(0.0848)
$lnDeposits_{t-1}$	-0.0452	0.2000	-0.0058	0.4389*
	(0.1223)	(0.1817)	(0.2431)	(0.2550)
$Unemployment_{t-1}$	-0.2134***	-0.1782***	-0.2282***	-0.1198***
	(0.0178)	(0.0250)	(0.0349)	(0.0311)
$lnPopulation_{t-1}$	-8.3399***	-7.8116***	-9.5783***	-5.7581***
	(0.6009)	(0.8082)	(1.0989)	(1.1202)
$lnHouseholdIncome_{t-1}$	-1.5048***	-2.9972***	-5.1849***	-0.4176
	(0.3960)	(0.5811)	(0.7496)	(0.8253)
Observations	36,059	513,404	276,191	237,213
R^2	0.2312	0.0757	0.0771	0.0740
		Panel B: Falsification Results		
$I(\%Large^{High})_{t-1}$	0.0254	-0.0232	-0.0187	-0.0289
	(0.0605)	(0.1018)	(0.1319)	(0.1521)
$lnDeposits_{t-1}$	0.0033	0.2665	0.1660	0.3818
	(0.1226)	(0.1851)	(0.2389)	(0.2679)
$Unemployment_{t-1}$	-0.1898***	-0.1455***	-0.1752***	-0.1108***
	(0.0167)	(0.0247)	(0.0339)	(0.0325)
$lnPopulation_{t-1}$	-8.4342***	-8.1100***	-9.4710***	-6.5367***
	(0.5989)	(0.8191)	(1.0928)	(1.1898)
$lnHouseholdIncome_{t-1}$	-1.6066***	-2.3444***	-3.8143***	-0.6269
	(0.3794)	(0.6150)	(0.7492)	(0.8915)
Observations	31,621	456,317	244,892	211,425
R^2	0.2648	0.0684	0.0700	0.0667
County FE	YES			
Year FE	YES			
Industry-year FE		YES	YES	YES
County-industry FE		YES	YES	YES

Notes: Data are from the County Business Patterns and the FDIC Summary of Deposits (SoD). The dependent variable %ΔEstablishments is the growth rate of the number of establishments at the county-year level in column (1), and at the county-industry-year level in columns (2)-(4). In Panel A, I(%HighReserveHigh) is an indicator for an above-median market share held by high-reserve banks. lnDeposits is the logarithm of total deposits. County-level controls include the unemployment rate, the logarithm of the total population, and the logarithm of median household income. In Panel B, I(%LargeHigh) is an indicator for an above-median market share held by large banks, where large banks are those whose assets are at or above the 95th percentile in a given quarter of the sample period. County and year fixed effects are included in column (1). County-industry and industry-year fixed effects are included in columns (2)-(4). Robust standard errors are clustered at the county level.

We find that loan growth for the more liquidity-constrained banks does not vary meaningfully with liquidity changes, despite excess liquidity in the aggregate level. Only high-reserve banks are found to be responsive in their lending to changes in banks' overall liquidity levels. Using DealScan data, we demonstrate the robustness of our results by controlling for time-varying industry-market-specific demand factors at the loan level. We also construct novel measures of liquidity constraint using individual bank's exposure to the hardest-hit housing markets using HMDA data, and find our main results to be unchanged. In addition, we find that the differential responses of bank lending growth to liquidity increases for banks with different levels of reserves could translate into unequal regional development at the county level. Counties with a larger market share captured by high-reserve banks experienced higher local business growth, with this finding being more pronounced for the more external-financing-dependent industries. Our results highlight a potential consequence of the increased dispersion in reserve distribution across banks as a result of the QE policies, as the significant difference in loan growth across banks could lead to greater spatial disparity in regional development.

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Appendix

Table A1: County-Level Summary Statistics

County-level summary statistics.

	N	Mean	p(25)	p(50)	p(75)
	Panel A: County–year				
$\%\Delta(Establishments)_{ct}$	36,059	0.045	−1.695	0	1.647
$I(\%HighReserveBanks^{High})_{ct}$	36,059	0.504	0	1	1
$lnDeposits_{ct}$	36,059	13.096	12.138	12.927	13.842
$Unemployment_{ct}$	36,059	6.594	4.500	6.000	8.100
$lnPopulation_{ct}$	36,059	10.434	9.516	10.312	11.256
$lnHouseholdIncome_{ct}$	36,059	10.658	10.492	10.641	10.806
$\%\Delta(Establishments)_{cjt}$	Panel B: County–industry–year				
– All sectors	513,404	0.060	−1.639	0	1.622
– External finance dependence high	276,191	0.06	−1.648	0	1.628
– External finance dependence low	237,213	0.061	−1.630	0	1.617

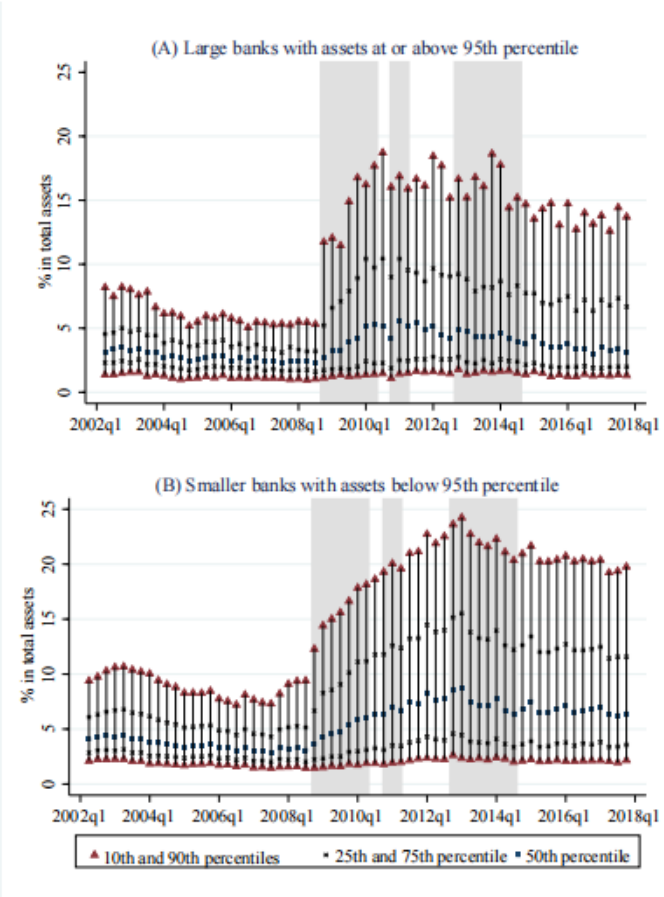
Notes: Panel A and B summarize the county-year and county-industry-year level information used in the analysis of the real effect on the economy, respectively. Business establishment data are from the County Business Patterns (CBP). Branch-level deposit information is from the FDIC Summary of Deposits (SOD). %ΔEstablishmentsct is the growth rate of number of establishments in county c year t, I(%HighReserveBanksHigh)ct is an indicator for having an above-median market share held by high-reserve banks in terms of deposits for county c in year t. lnDepositsct is the logarithm of total deposits in county c year t. County-level unemployment rates are from the Local Area Unemployment Statistics (LAUS) program by the U.S. Bureau of Labor Statistics. County-level population and median household income data are obtained from the U.S. Census Bureau's intercensal estimates and Small Area Income and Poverty Estimates (SAIPE) programs, respectively. In Panel B, industries are categorized into two groups based on their levels of external financing dependence following Duygan-Bump et al. (2015) and Gilje (2019).

Table A2: Mean Comparison of Bank Characteristics

	High-Reserve Banks		Low-Reserve Banks		T-Test	
	Mean	Std Dev	Mean	Std Dev	Diff	t-value
			Panel A: Full Sample			
$(Cash + Reserves)/Assets_{it}$	11.586	9.132	3.015	1.467	-8.571***	(-437.940)
$Liquidity/Assets_{it}$	35.345	17.015	29.608	16.327	-5.737***	(-114.770)
$dlnNetLoan_{it}$	0.012	0.063	0.020	0.057	0.008***	(43.479)
$dlnC\&ILoan_{it}$	0.009	0.162	0.017	0.147	0.008***	(17.991)
$dlnRELoan_{it}$	0.016	0.073	0.021	0.065	0.006***	(26.699)
$lnAssets_{it}$	18.592	1.271	19.166	1.316	0.573***	(147.827)
$NPL/Assets_{it}$	1.013	1.551	0.957	1.343	-0.056***	(-12.800)
$Tier1Capital Ratio_{it}$	20.851	31.659	16.998	20.667	-3.853***	(-48.117)
$NetIncome/Assets_{it}$	0.192	0.404	0.225	0.340	0.033***	(29.309)
Number of bank-quarters	223,408		221,661			
			Panel B: Pre-Crisis: 2002-2006			
$(Cash + Reserves)/Assets_{it}$	7.508	5.929	2.528	0.807	-4.980***	(-228.166)
$Liquidity/Assets_{it}$	34.769	16.165	30.086	16.063	-4.683***	(-56.144)
$dlnNetLoan_{it}$	0.021	0.069	0.028	0.063	0.007***	(19.676)
$dlnC\&ILoan_{it}$	0.018	0.165	0.024	0.157	0.006***	(6.674)
$dlnRELoan_{it}$	0.027	0.081	0.032	0.073	0.004***	(10.839)
$lnAssets_{it}$	18.355	1.228	18.910	1.292	0.554***	(84.965)
$NPL/Assets_{it}$	0.617	0.878	0.589	0.809	-0.028***	(-6.472)
$Tier1Capital Ratio_{it}$	17.813	19.261	16.039	17.260	-1.774***	(-18.745)
$NetIncome/Assets_{it}$	0.262	0.297	0.279	0.261	0.017***	(11.469)
Number of bank-quarters	75,186		74,085			
			Panel C: Crisis & QE: 2007-2017			
$(Cash + Reserves)/Assets_{it}$	13.649	9.741	3.261	1.651	-10.388***	(-404.613)
$Liquidity/Assets_{it}$	35.622	17.404	29.362	16.441	-6.260***	(-100.517)
$dlnNetLoan_{it}$	0.007	0.059	0.015	0.052	0.008***	(40.786)
$dlnC\&ILoan_{it}$	0.004	0.160	0.014	0.141	0.010***	(17.543)
$dlnRELoan_{it}$	0.010	0.067	0.016	0.060	0.006***	(26.354)
$lnAssets_{it}$	18.713	1.275	19.295	1.309	0.582***	(122.378)
$NPL/Assets_{it}$	1.215	1.765	1.142	1.509	-0.072***	(-11.920)
$Tier1Capital Ratio_{it}$	22.308	35.992	17.437	21.959	-4.871***	(-44.432)
$NetIncome/Assets_{it}$	0.156	0.443	0.197	0.370	0.042***	(27.701)
Number of bank-quarters	148,100		147,471			

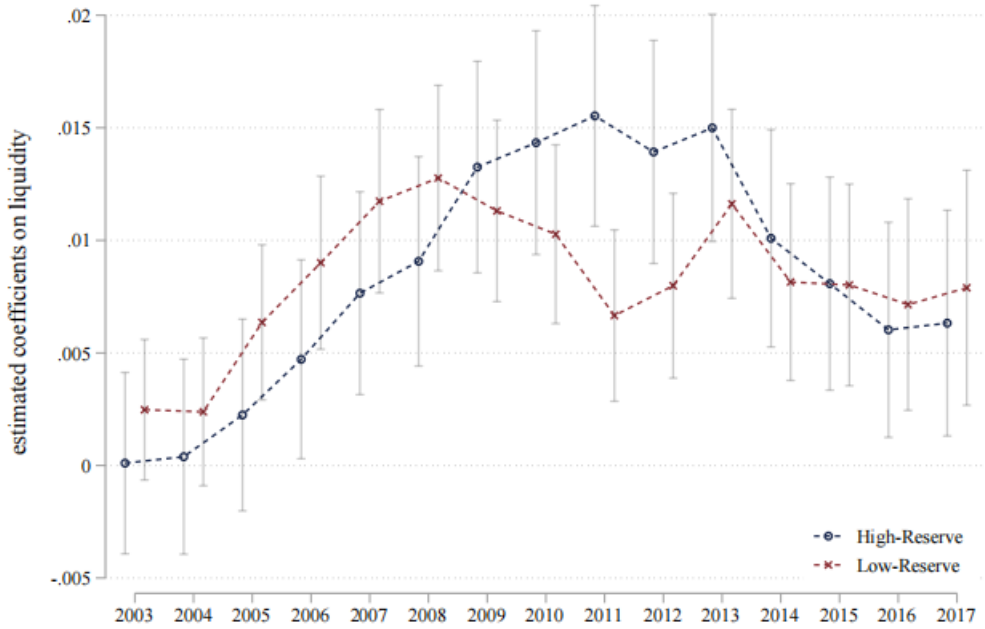
Notes: Data are from quarterly FFIEC Call Report forms for all U.S. commercial banks from 2002Q1 to 2017Q4. Same filters are used as in the baseline regressions. A bank is defined as a high (low)-reserve if its cash and balances due from depository institutions (Schedule RC-A of the Call Report) to total assets ratio is above (below) the median in each quarter. Liquidity is calculated as the sum of banks' cash & reserves, and liquid assets. Slight discrepancies in the numbers of observations between this table and Table 3 are due to singleton groups being omitted from fixed effect regressions.

Figure A1: Distribution of Cash & Reserves during QE: Large versus Smaller Banks



Notes: This figure plots the within group distribution of cash & reserve holdings (as a fraction of total assets) for our sample period of 2002Q1 to 2017Q4, separately for large and smaller banks, similar to Figure 2. Large (smaller) banks are defined as those at or above (below) the 95th percentile in bank assets in a given quarter. Similar patterns are obtained using constant thresholds such as 300 millions in assets.

Figure A2: Year-by-Year Coefficient Plot of the Lending-Liquidity Regressions



Notes: The year-by-year coefficients on liquidity are estimated in a version of the baseline regression where the interaction terms between QE indicators and liquidity are replaced with the interaction terms between a series of year indicators and liquidity, separately for high- and low-reserve banks with year 2002 as the reference point.

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