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Pandemic-Related Audit of the German Banking System

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Abstract

The 2008/2009 financial crisis showed weaknesses in the stability of the global banking system. As a result, the financial supervisory authorities introduced stricter requirements and necessary measures in banking regulation. The effectiveness of these regulations and additional actions implemented in response to the present COVID-19 crisis are examined in this research. The focus lies in the analyzation of challenges arising from the current market environment for the German banking system as part of the European banking system. The financial industry has been preparing for a wave of defaulting loans as such loans were raised to fund operating losses rather than to support innovation. Already in 2019, prior to COVID-19, the German Financial Stability Committee recommended that the countercyclical capital buffer, set at a level of 0.25% of the total amount of claims for the next year, had to be activated for Germany due to a weakening economy. Another major risk to the economy is the development of an unexpected spike in inflation, as validated by the Fiscal Theory of the Price Level and other indicators.

Keywords: Fiscal & Monetary policy, Inflation, Bank lending, Loan default, German banking system, Financial innovation.

Pandemic-Related Audit of the German Banking System

The Coronavirus disease first discovered in 2019, commonly referred to as COVID-19, reached pandemic levels in 2020 through worldwide spread. By mid-May 2020, the United States, China, Japan, Germany, Great Britain, France, and Italy alone, which make up 60% of global economic activity—as measured by Gross Domestic Product—were affected by the pandemic (Baldwin & Weber di Mauro, 2020). Current data show that 185 countries and regions have been affected since then (Lee, 2020). Due to the pandemic's effect on supply and demand, the economic cuts were severe and had to be cushioned by government support around the world. Among EU countries, Germany's low debt ratio, and thus the possibility of using fiscal space, provided a great opportunity to face the crisis. In addition to fiscal and monetary policy measures, confidence in the banking system and financial markets had to be maintained. The following study investigates how financial markets—and the banking sector, specifically—reacted to the pandemic and how the crisis has changed and continues to change them.

Unlike previous financial crises, the severity of the economic burden and its period of convalescence in this specific health crisis are difficult to calculate. However, they become easier to estimate the further this pandemic progresses (Deutsche Bundesbank, 2018). It is the task of governments and central banks to assess both the psychological effects and the expectations of the public in order to maintain confidence in core economic activities, even if some businesses must file for bankruptcy. In Germany, for example, pass-through loans from the state-owned bank Kreditanstalt für Wiederaufbau (KfW) represent a reliable means of promoting individuals and companies. The KfW is currently providing operating loans with a credit volume of up to €200 million, with KfW assuming 80% risk from the principal bank, and instant loans with a volume of up to €800k for medium-sized enterprises. For these loans, banks are entirely released from their liability, which is instead assumed by the KfW and the German Government (KfW coronavirus aid: loans for companies, 2020).

Assuming that the proven tools of the central banks prior to COVID-19 might not be sufficient to prevent a depression, government interventions—such as a Keynesian helicopter drop[1] by the US Government in March 2020, or stock purchases by the German Government—were deemed necessary (Galí, March 2020). In Germany, cushioning the distributional effect of the crisis via social interventions, such as unemployment insurance, led to a less dramatic recession. As of July 30th, 2020, the highest recorded unemployment rate for Germany during the COVID-19 crisis was 6.3 percent in July, 1.3 percent higher than a year before. According to Daniel Terzenbach, CEO of the Federal Labor Office, the massive use of short-time work[2] prevented greater increases in unemployment and job losses (Arbeitslosenquote & Arbeitslosenzahlen 2020, 2020).

Because Germany is heavily involved in the global value chain as previous world export leader by account surplus in 2016 (Tost, 2017), the economic effects of the novel coronavirus will have a greater negative impact on Germany when its trading partners, especially EU-members, are in distress (Wagner, 2020). This is also due to the low inventory and the lean "just-in-time" production, which relies on the efficient functioning of supply chains. The target of the German government and the federalist-organized state governments within Germany must be to slow down the spread rate of the virus in such a way that production in essential economic sectors does not come to a standstill. Furthermore, since 57.7% of Germany's foreign trade turnover depends on the EU, the German government should attempt to stabilize both its own economy and the European economic market (Handelspartner, 2017). Economic output must then be ramped up again through the employees who have already recovered or were vaccinated while the economy

[1] When governments make use of a Keynesian helicopter drop, they implement expansionary fiscal or monetary policies by increasing the money supply.

[2] Short-time work is a social security system created by the federal government of Germany. Short-time work reduces the employees' working hours, while maintaining part of their salary so that employers are not forced to fire employees, thus keeping unemployment levels low. An employee initially receives 60% of their salary from the state for the hours the employee was supposed to work. The percentage of salary payment by the state increases with the length of short-time work. Due to the severity of COVID-19, the maximum length of short-time work was extended from 12 months to 24 months. A company can thus save on labor costs while keeping its employees. Furthermore, public income is protected, thus preventing a collapse in demand in the market (International Monetary Fund, 2020).

was in distress. A third complete lockdown of the system should be avoided, since the startup complexity of the entire economic system is less like turning the ignition of a car and more like rebooting a nuclear reactor.

Current Market Environment

A falling interest rate level and the flattening yield curve are drying up net interest income, the most important source of income for German credit institutions to date. This development meant that German banks, strongly geared towards the interest rate business model, were looking for new sources of income. Extreme demand for interest rate products in combination with the excess liquidity on the interbank market led to further declining yields on the capital market. This encouraged banks to take risks by providing capital investments and loans to companies and private individuals, particularly in the real estate business.

In its Financial Stability Review in November 2019, the Deutsche Bundesbank (German Central Bank) described an increase in the risks to the stability of the German financial system. In its review, the Deutsche Bundesbank gave an overview of cyclical systematic risks, which are based on an underestimation of risks by market participants, and stated that the economic slowdown in 2019 could unexpectedly turn into a recession. Should the impact of the economic slowdown be greater than expected, the number of credit defaults would potentially upsurge, and real estate prices would fall (Deutsche Bundesbank, 2019). As the Bundesbank Vice President Claudia Buch said, "An unexpected economic downturn and abrupt rise in risk premia could hit Germany's financial system hard" (Deutsche Bundesbank, 2019). This feared unexpected downturn occurred at the beginning of 2020 as COVID-19 forced a shutdown of the economy, with an historic economic low in April. Real Gross Domestic Product (GDP) in 2020 is expected to experience the sharpest decline since recording began in 1970 (Monthly Report - July 2020, 2020). Based on the current economic situation and events related to COVID-19, the next Financial Stability Report of the Bundesbank will show some fundamental changes in the assessment of the situation.

The Risk of Covid-Lending Default

The current COVID-19 crisis and the related economic downturn have had an impact on the lending business. In the wake of the lockdown, many businesses and companies found themselves taking out emergency loans from banks. The growth of new lending to enterprises and self-employed people accelerated noticeably. In the first quarter of 2020, banks were able to extend their loan business by 7.3% year on year. This is a noticeable change as compared to the 3.7% growth in the fourth quarter of 2019 (Schoenwald, 2020). The banks are currently benefiting from these additional loans and can record an increase in profits. However, these emergency loans are not flowing into investments with financial viability and thus do not hold a return on investment for most companies. Rather, they are mainly short-term credit transactions to compensate for the loss of income and keep the companies alive. Despite the extension of the registration period for company insolvencies, a large number of bankruptcies can be expected when companies have to file for insolvencies again (compare chapter "Unorthodox measures as an appropriate tool"), which means that repayment of loans is at risk to default (Die Bundesregierung, 2021).

Globally important banks, such as Deutsche Bank, have built provisions of €506 million to account for credit losses. According to the bank, 50% of these provisions were built due to COVID-19 and the associated customer rating migration (Deutsche Bank, 2020). Moreover, Bain & Company warns that a wave of loan defaults looms in the near future and might cause the credit provisions to rise up to 150%, which would mark a new all-time high. Credit defaults of these dimensions could directly affect the operating results and ultimately the equity of the banks' balance sheets. Furthermore, loan defaults would likely be more severe than in the 2008/2009 financial crisis.

Dr. Christian Graf, partner of Bain & Company, emphasized the risk of eroding profits in the European corporate-banking segment, which were already under pressure before COVID-19. As early as 2019, the weakening economy resulted in increasing risk provisions putting pressure on the profits of corporate banking. In 2019, the return on equity was below the cost of equity for the first time in 10 years, at just 6 percent. The Bain-Corporate-Index[3] fell to its lowest level since 2009 (Bain & Company, 2020). New conditions under COVID-19 further depress the return on equity in corporate banking, and the effects on credit defaults will be

[3] This index evaluates the income and profit opportunities that can be generated in corporate banking in Germany (Sinn, Dr. Huber, & Dr. Graf, 2013).

even more severe. To counter the effects of an economic crisis, banks must lower their costs and make more profit as quickly as possible to increase their cash reserves.

Downsizing and Consolidation

One of the weaknesses of German banks lies in their high cost structure, which is typically exacerbated when interest rates are low. In 2018, German banks had a cost-to-income ratio[4] of 80% and lay far behind international competitors[5] (Moody's, 2019). Maturing loans are replaced by new loans with lower interest rates so that net interest income continues to shrink. Developments for smaller, purely deposit-funded banks are particularly burdensome. For reasons of competition, banks are currently offering positive interest rates on retail deposits, despite the negative deposit facility rate at the German central bank. Research announced in 2019 by one of the leading rating agencies in the world states that increasingly more German retail banks deliberate charging large retail depositors with negative interest rates as banks are facing continued ultra-low rates (Moody's, 2019). The aforementioned research also articulates that the outlook for the German financial sector had changed from stable to negative well before COVID-19 due to cost-structures, low or negative interest rates, and the economic outlook. Now, German banks are downsizing to reduce their cost. Many German banks have already announced programs which would close certain branches and reduce the labor force. Branches that had to be closed during the COVID-19 crisis may not reopen in order to reduce the high costs of the branch structure.

The reason for the problematic German cost model lies in the three-pillar-structure of the banking system, which consists of private commercial banks, public-law credit institutions, and cooperative banks. The three pillars differ in terms of cost and customer structure. Originally, Germany only had private banks. Then, in order to meet the needs of the less affluent segment of the population for smaller financial transactions, the authorities created public-law credit institutions. As the financial needs grew during industrialization and increasing global trade, cooperative banks were created (Deutscher Bundestag, 2009).

Private commercial banks include large banks such as Deutsche Bank and Commerzbank. Banks that belong to public-law credit institutions are organized according to public commercial law. This includes the Sparkassen,[6] Landesbanken, and other banks in the legal form of public commercial law. Sparkassen act according to three principles: public mandate, business restrictions, and regional principle. They are linked to one region, usually a few villages or a bigger city, and serve them as their credit institutions. Cooperative banks are mainly organized according to cooperative law and have the legal structure of a business association, which is an organized self-help group. These include the Volksbanken and Raiffeisenbanken, the West German cooperative central bank, and the German cooperative central bank (Deutscher Bundestag, 2009).

The Sparkassen and Volksbanken have particularly high costs because they are limited to the regional level and have many branches in order to be on site for their clients. Sparkassen, within their combined organization, have a real economy market share of 31.1% and an accumulated balance sheet total of €1.3 trillion. When including the Landesbanken and cooperative banks, real economy market share is 61.9% (Janßen, 2020). Likewise, Sparkassen and Landesbanken have a market share of 40% in the lending business with commercial and corporate customers. In the lending business with private households, Sparkassen and Landesbanken account for one third of the market share (Janßen, 2020). These banks, which according to Paragraph 2 of the Sparkassen Act, provide loans to small- and medium-sized companies and thus most of the German economy. These companies also happen to be the ones most at risk of financial failure (Ministerium des Innern des Landes Nordrhein-Westfalen, 2008). Currently, Sparkassen—which are decentrally organized within the Association of German Saving Banks—and Landesbanken (DSGV) are experiencing increased pressure to merge.

[4] Referred to as Efficiency Ratio in banking literacy.

[5] To draw a comparison: In 2017, American banks had a cost-to-income ratio of 57.42% and Chinese banks were at 32.20% (The World Bank Group, 2019).

[6] "The Sparkassen are a group of savings banks that have been operating across Germany since [...] 1778. They were born of the need to invest in the country and in German society, and they maintain close ties to local communities. Banks are located all around the country and they are managed by an umbrella organisation Deutscher Sparkassen- & Giroverband (DSGV). They are established by law with a mandate of public service and regional development, and their success is measured based on their impact on local communities rather than on traditional economic requirements" (Irigoyen, 2017). Volksbanken and Raiffeisenbanken are cooperative banks but have a similar structure.

This association consists of many small independent Sparkassen. BaFin, the German Federal Financial Supervisory Authority, treats this conglomerate of smaller banks as a single large institution to counter future/possible allegations of the ECB and thus assesses it as relevant to the system. This increases the supervision costs of small financial institutions, which causes the pressure for mergers to surge. Implementation of the principle of proportionality[7] by banking supervision has therefore failed and is causing the number of Sparkassen to shrink, resulting in larger balance sheets, which in turn leads to higher relevance to the system. A wave of mergers in the Sparkassen sector would also lead to risk concentrations within the banking sector (Burghof, 2020). So far, banks have coped well with the crisis, but this may change in the foreseeable future. With high cost ratios and low levels of profitability, banks will require political aid in the form of state subsidies in order to cope with the expected upcoming wave of loan defaults.

Unorthodox measures as an appropriate tool

In a crisis, politicians and state banks are initially required to prevent depression and to counter the predicted upcoming recession with appropriate measures. In contrast to a financial crisis, the COVID-19 crisis affected both aggregate supply and demand simultaneously as not only corporations stopped the production, but also as society was forced to limit its consumption due to numerous lockdowns. The measures typically practiced in a financial crisis, such as short-time work or promotional loans, will not be sufficient to achieve stabilization. It can be assumed that state banks and governments will have to include further economic policy measures in their portfolio to prevent an economic depression. For example, in Germany, the duration of the short-time work payment has been increased from 6 to 24 months, and the registration period for company insolvencies has been significantly extended (International Monetary Fund, 2020).

Ultimately, because of its nature, the COVID-19 crisis remains a temporary problem, yet it will have long-term effects. In order to avoid a depression, the spread of the virus must be slowed enough to prevent a third lockdown as severe as the first. The debt options individual countries still have and the foresight with which political decisions are made will affect the course of countries during the crisis. However, there will only be an inflection point when an effective vaccine is available to the broad society.

During this crisis, the state-guaranteed deposit protection in Germany should be able to prevent a bank run. However, the ECB's leeway in interest rate policy has been exhausted. Further interest rate cuts are likely to continue to burden the system, banks especially. In view of this situation, the ECB is now resorting to appropriate means in the open market business. In the past, the ECB under Mario Draghi flooded the market with longer-term refinancing operations (LTRO) 3-year tenders to combat the credit crunch. However, it was found that many of these refinancing funds had seeped into the balance sheets of commercial banks and were misused to improve maturity transformations[8] or to buy higher-interest government bonds (Sky, 2014). Now, the ECB uses Targeted LTRO (TLTRO) to answer this problem. The ECB aims to use the targeting feature to ensure that the banks actually increase the commercial and customer loan portfolio. These multi-year tenders are usually issued over a certain period and are limited to a maximum of 30% of the eligible loan portfolio of the respective commercial bank. Some of these TLTROs are supplemented by a premium component that the bank receives when it has expanded its lending business. The second series, the TLTRO-II, was launched as a 4-year tender in 2016/2017 and is set to be repaid by the banks in 2020/2021. In February 2019 there were still 720 billion euros to be recovered, which now represents an additional burden in the COVID-19 crisis (Reuters, 2019).

In the current *Pandemic Emergency Purchase Program*, the ECB is buying government and private bonds worth €750 billion. This new emergency program is designed to help not only banks but also corporations. Furthermore, the ECB wants to reduce the refinancing interest rates to prevent a credit crunch as seen in the financial crisis of 2008/2009. This measure corresponds to the EU's €750 billion development fund under the Next Generation EU agreement and reinforces the effect of the spreads of the 10-year government bonds of the euro countries (European Central Bank, 2020).

[7] The principle of proportionality is practiced worldwide. The proportionality considers the business model of the bank and its size as well as the associated risk for the economy. The intensity of supervision adapts to the risk of the bank's profile (Hakkarainen, 2019). However, the approaches are considerably different, and decisions are based on criteria and regulations that vary widely across jurisdictions.

[8] Maturity transformation is the practice of using short-term funds (i.e. client deposits) and lending it long-term.

Another unorthodox measure would be direct stock purchases by the central banks of EU member countries or the ECB itself. Based on experiences in other countries, such a measure would probably not be successful. The stock purchases made by the Japanese central bank and its regulatory interventions in the past have demonstrated the impact those measures have on financial markets; due to the irritation of market participants, it led to significant price decreases, illustrating that share purchases may not produce the desired economic welfare (Baldwin & Weber di Mauro, 2020).

A system collapse due to inflation?

Because of the severity of this crisis, nearly every known fiscal tool is being utilized to cushion the crisis. The interest rate policy of the ECB has hit the zero lower bound (ZLB). Therefore, financial authorities are no longer able to stabilize the economy by lowering interest rates. This, combined with a high savings rate, is known as a liquidity trap. During a liquidity trap, consumers prefer to hold on to their cash instead of investing it in low-interest investments. This renders monetary policy, carried out through a central bank's open market operation, ineffective. With interest rates at the ZLB, demand depressed, and monetary stimulus exhausted, governments must resort to unconventional fiscal stimulus such as helicopter money. Fiscal stimulus is particularly effective during an economic contraction when monetary policy has already been exhausted, as in the case of the current crisis. In fact, economic research by Fatás and Summers suggests fiscal stimulus is needed to prevent a slow recovery from a crisis that could potentially lower outputs in the future (Fatás & Summers, 2018)[9]. However, Rogoff (2017) warns that fiscal quantitative easing "in today's much larger capital markets and advanced economies […] could prove a slippery slope." The question that arises is what impact those fiscal measures, such as a helicopter drop and billion-dollar stimulus packages, have on long-term factors such as the inflation rate.

In the event of an expected inflation, investors will invest their money in supposed inflation-hedges such as gold and real assets. As a result, prices rise due to increased demand. Currently, the real price of gold (inflation adjusted) is equal to the level in early 1980 and mid-2011 (Erb, Harvey, & Viskanta, 2020). Many people trust gold to be an inflation hedge, although it is statistically unproven. Historic data from the U.S. shows that between 1980 and 1985, the U.S. Consumer Price Index[10] rose 35%, while the real price of gold[11] fell 67% (Erb, Harvey, & Viskanta, 2020). Inflation averaged 6.3% during those years, which should have resulted in an increase in the price of gold; however, the price fell by more than half. Overall, the research done by Erb, Harvey, & Viskanta claims that there is very little, if any, correlation between inflation and gold. It seems gold is at a peak because central banks and governments are flooding the market with liquidity. Individuals, ETFs, and other institutions invest their surplus of liquidity in equities. This can be observed not only in the price of gold, but also in the development of other assets such as stocks and real estate (Wille, 2020). This being said, the price of gold should be viewed as an indicator of public expectations and liquidity status rather than a predictor of future inflation rates (Erb, Harvey, & Viskanta, 2020).

Two money-financed (rather than debt-financed) fiscal interventions—a tax cut and an increase of government purchases—and their potential impact on the inflation rate are analyzed below. Although taxes must be adjusted to government spending in the short- or long term, it is assumed in the following scenarios that money-financed fiscal intervention during an economic crisis can temporarily lower taxes despite increased government spending to stimulate the contracting economy. Moreover, Galí's research on money-financed fiscal interventions showed that debt-financed tax cuts and other debt-financed fiscal policies essentially have no stimulus impact and affect only debt and taxes (Galí, November 2020). This is equivalent to no intervention, which highlights the importance of a money-financed measure to overcome a severe crisis with regards to the ZLB constraints. However, the expansionary economic effect is accompanied by a risk to the inflation level.

According to the Federal Statistical Office, an inflation rate of -0.1% was expected in July 2020 on the German market. The 3% reduction in value added tax (VAT)—effective as of July 1st—depressed the inflation rate. This slight deflation could have had a negative impact on markets in the short term, as market participants

[9] Fatás & Summers research has shown that a lack of fiscal stimulus correlates with lower economic output levels and a slow economic recovery after a crisis has been overcome.

[10] The Consumer Price Index (CPI) serves as a measure for calculating the inflation rate.

[11] The price of gold divided by the CPI index.

had the incentive to increase their money's value by saving it. This would have initiated a cycle in which demand—and therefore the company's profitability—fell. Companies would have had to lay off workers, further reducing the demand for goods. Fortunately, this vicious cycle did not occur, and if it had, would have been a short-term scenario (Destatis, 2020).

The amount of savings in Germany has already increased, partly because supply stopped during the lockdown and halted consumer spending, and partly because loss of income was financed by the state (Die Bank, 2020). Thus, the velocity of money has been significantly reduced. Using the quantity theory of money, one can predict a long-term scenario:

$$M * V = P * Y$$

In this formula, *M* stands for the amount of money that circulates in an economy during a period, *V* for the speed (velocity) of money circulation, *P* for the price level, and *Y* for the trade volume (of real goods), which is strongly correlated with GDP.

The market is currently experiencing a flood of money from state and central bank funds, which will also continue in 2021. This is reflected in Germany's 2021 budget with about €180 billion in new debt created to increase government purchases further, thus cushioning the crisis and accelerating economic recovery (Deutsche Welle, 2020). This leads to a significant increase in *M*, which causes fears of inflation in the public. Because the velocity of circulation is reduced as described above, the increase in the money supply does not initially affect inflation. Only with a normalization of the velocity *V* through a restoration of the demand for goods and services does the increased money supply *M*, with a constant trading volume *Y*, lead to rising prices *P* and thus to an increase of inflation. One must recognize that the recovery of *V* can go beyond normalization due to the digitalization of money transfer and a catch-up effect in demand. Thus, an increase of inflation may be more expansionary than expected. However, it can be assumed that *V* will continue to be at a low rate until the public is vaccinated and the economy can begin to recover.

The decline in supply and demand is due to the lockdown. Because of uncertainty and burgeoning fears about the future, demand remains low despite the slowly restoring supply. Data shows that the total spending in Germany reached the lowest level at -11.1% in the 2nd quarter of 2020 (Statistisches Bundesamt, n.d.). During the second lockdown through the winter months, spending decreased severely once again. The stimuli that have been launched are therefore not going to have the desired effect on the real economy. Most of the money owned by the public is currently being saved. These savings increase excess reserves held by the ECB and other banks. As soon as the uncertainty is gone, people will catch up on postponed investments and consumption so that the large amount of money ultimately influences the purchasing power.

Incentive to increase consumption is offered by low or negative interest rates, or safekeeping fees[12] on deposits, as introduced in Germany. As the value of *V* increases, the price level increases. Since *M* has already grown exponentially, small changes in *V* should trigger large changes in the price level. With a rising inflation rate, one can assume a rising nominal interest rate based on Fisher's equation:

$$(1 + i) = (1 + r)(1 + \pi)$$

where: *i* equals the nominal interest rate, *r* equals the real interest rate, and π is the inflation rate.

The predictions above are supported by the Fiscal Theory of the Price Level (FTPL), developed by John H. Cochrane and other economists. The theory states that fiscal policy is an important inflation driver, just like conventional monetary policy (Cochrane, 2019). It is equivalent to the government valuation equation:

$$\frac{B_t + 1}{1 + R_t} = B_t - P_t \tau_t$$

where B_t is the nominal debt by the government due at the beginning of period *t*, R_t is the nominal interest rate, P_t is the price level, and τ_t is the real tax. Brunnermeier, Merkel, & Sannikov (2020) describe the FTPL as follows:

> The Fiscal Theory of the Price Level stresses the role of money as a store of value and argues that the real value of all outstanding government debt, i.e., the nominal debt level divided by the price level, is given by the discounted stream of future primary government surpluses. Primary surpluses are the difference between government revenue and expenditures excluding interest payments. Absent

[12] The introduction of a safekeeping fee enables banks to generate a small profit on deposits (or at least no loss) in a negative interest rate environment.

government default, an increase in primary deficits leads to an increase in the price level, i.e., inflation, by devaluing outstanding debt.

Most countries are finding themselves in a corresponding situation due to the COVID-19 economic crisis. Through international consolidation, sovereign defaults will be prevented, at least in the short term. Nevertheless, the primary deficits will increase significantly, which will lead to a devaluation of the currency and cause inflation, according to the FTPL. This is an abbreviated representation of the FTPL, as a complete explanation would go beyond the scope of the present research.

Financial authorities will be forced to combat an inflationary development by raising interest rates. However, even if German banks long for higher interest rates, rapidly increasing interest rates pose two risks. First, as can be read from the bank balance sheets, customers tend to seek short-term investments for their savings when interest rates are low, which causes difficulties with banks' maturity transformation. In the short-term deposit business, banks must pass on the high interest rates to savings customers in the event of an inflation-related interest rate shock, which means that these deposits would quickly adapt to rising interest rates and become more expensive on the liability side of the bank's balance sheet. However, this cannot happen this quickly within the lending business on the asset side of the balance sheet. Loan contracts are usually long-term and tied to the currently low interest rates. An adjustment to high interest rates can therefore only be made for new contracts, which means that the average interest rate in the loan business on the debit side of the balance sheet will only slowly approach a higher interest rate level. Furthermore, strong competition will make it difficult to increase the interest rate on loans; however, it will cause quick-rising rates on short- and mid-term deposits. Even if, in an inflationary scenario, the yield curve should become steeper because of long-term inflationary expectations, the income from maturity transformation would melt until the higher interest rate structure has been fully integrated into the lending business. Such a development is likely to cause troubles, especially in the German market, since 70% of the income of German banks depends on their interest business (Maisch, 2019). UBS pointed out another current problematic scenario in its 2019 annual report associated with rising interest rates. In this report, UBS states that "lower GDP growth and rising interest rates may reduce the income of clients to whom we have lent money, which leads to changes in the credit risk parameters for probability of default, loss given default and exposure at default, and results in higher predicted credit losses" (UBS Group AG, 2019).

The second risk lies with the governments and their debts. During the period of low interest rates, economically weaker countries incurred a lot of debt cheaply. For example, Italy's mountain of debt is currently about 133% of its GDP but it only has to pay 3.7% of its GDP for interest payments, which should cost about €64.7 billion (Varrella, 2019). If inflation leads to an average 4% rise in interest rates, the interest expenses increase to 5.3% of the GDP (Mayer, 2018). An additional interest expense of almost €28 billion would therefore emerge. The government would need to stop or cut investments and would have to introduce strict austerity measures, as refinancing costs would soar. Furthermore, due to the additional debt that arose from the COVID-19 crisis, the effect of rising interest rates would be even more severe. If interest rates rise, government defaults can be expected due to rising costs (e.g. for debt) which some countries will not be able to compensate. These countries would likely resort to the EU and seek a rescue fund, financed by financially healthier countries like Germany.

For Dr. Ralph Solveen, Deputy Head Economic Researcher at the Commerzbank, a big threat to the economy and financial markets also results from rising protectionism. Until now, prices have been kept down because production has been moved to the best possible locations with the most favorable conditions. If, because of COVID-19, production is shifted into EU countries, prices would rise. Arising protectionism could have a bigger impact on the inflation rate than an increase of money supply (Solveen, 2020). However, hope for a weaker-than-expected inflation is seen in the unemployment rate. Rising wages are historically one of the biggest drivers of inflation. Conversely, because unemployment rose during the pandemic, demand will decrease due to the lack of income. Therefore, a high unemployment rate is likely to weaken inflation, according to Peter Bofinger, member of the German Federal Council of Economic Experts until 2019 (Mallien & Riedel, 2020).

Moreover, observations made in the past show that bailouts and stimulus packages issued during the financial crisis of 2008/2009 had no big impact on the inflation rate. At that time, money had to support the liquidity of the banks so that there would not be a credit crunch. In 2020, countries around the world are experiencing a

different type of recession. This time, lockdowns caused the supply to slow dramatically while demand at first remained unchanged. In 2020, the state-enforced freeze on supply meant that companies were doing badly at first, as they had to stop operations while costs were still running. This demanded many new, short-term loans, serviced by money from the ECB and other central banks. How the money from these new loans affects inflation depends on how companies use the money. While small and medium-sized companies need money to ensure their survival, financially strong big players can use this additional cheap money for other purposes.

The situation is oppressive if one looks at the national debt, which already significantly increased before COVID-19 due to the financial crisis. As long as the ECB can keep interest rates low, states shouldn't have too much of a problem funding rescue packages. If unexpected inflation occurs, however, the central banks will have to react by increasing interest rates, which could quickly lead to sovereign defaults and bank failures.

Conclusion

While the German credit institutions are currently swimming in liquidity and can still easily meet the legal requirements to hold enough liquidity, the tightening quantitative and qualitative capital requirements in an ongoing low/negative interest rate scenario have put them under pressure and pushed them to the limits of capital formation. In international comparison, German credit institutions have had to accept competitive disadvantages in the interest rate business for years. This shortcoming is especially burdensome since the business models of European banks are mainly geared towards interest income. However, a change in business models, as requested by BaFin President Felix Hufeld, also appears difficult (Osman, Handelsblatt, 2019). The business models have historically been geared towards the interest rate; therefore, fundamental adjustments toward commission income and penalty interest require time and acceptance. The German capital market is clearly regulated and shaped by consumer-friendly jurisprudence, which means that an increase of commission (as seen in the United States) or negative returns on savings contracts and life insurance for European credit institutions is a long way off.

Overall, regulatory measures, which were introduced after the 2008/2009 financial crisis, have resulted in German credit institutions now being better prepared for crises. The low interest rate environment, essential for the deleveraging of southern European countries, has limited the options for strengthening equity and thus increased the risk appetite of some banks. Consequently, credit institutions' cost-income ratios will now come into focus. Trends like digitalization, home offices, and customer-contactless business and services allow banks plan to drive down their long-term costs. This development comes at a time in which the pressure to improve efficiency and to use synergy potentials is increasing. An adjustment to the German financial sector using economies of scale and the increase of cost degression effects such as horizontal and vertical mergers seem inevitable in a cooling economy. Germany must consider reconfiguring its three-pillar structure's inefficient costs and mandates. Modernizing this structure will allow German banks to lower costs and increase efficiencies.

As the impact of capacity reduction, efficiency increasing measures, and consolidations usually only arises considerably later, banks would have had to take these measures early in order to benefit from them now. Unfortunately, this has largely been neglected; German credit institutions—especially Volksbanken and Sparkassen—are now forced to reduce costs drastically. In a study done by the management consulting company Oliver Wyman in December 2019, it was estimated that the number of bank branches will depreciate from 29,700 (2018) to approximately 19,100 (2025), to eventually 15,800 (2030). Dr. Rene Fischer, banking expert and partner at Oliver Wyman, credits this development to both the increasing digitalization and the continuing pressure on costs and consolidation (Dr. Fischer, Chouliaras, & Gündling, 2019). Clearly, the crisis is acting as an accelerator for the depreciating numbers of branches. Despite differences in financial cultures, the 2008/2009 financial crisis showed that the equity ratio is not the only decisive factor in the survival of a bank. Instead, it is the sustainable and future-oriented risk assessment of assets and loan collateral as well as a self- and market-discipline that will ensure the survival of German credit institutions.

Since the vaccine is not a solidarity good, the first mover advantage lies with the country that can make a vaccine available and offer an infrastructure for the swift immunization of the population. This first mover advantage will bring both economic and political advantages. The crisis has already led to changes in the economic life; new trends will establish themselves.

Since the COVID-19 crisis is not fundamentally an economic crisis, but rather a biological one, a return to normal conditions after the crisis will result in a countermovement in significant rates of change and catch-up effects. Governments and central banks must ensure that possible overheating effects do not lead to a surprising and unexpected inflation in which suddenly rising interest rates cause banks and states to experience complications financing their operations.

If the economy in Europe experiences a small recovery miracle due to the implementation of stimuli, the ECB should see this as a sign to slow down its expansionary monetary policy to counteract inflationary tendencies. Due to the continuous indebtedness of states and companies, it is the task of the ECB to keep interest rates low in Europe so that interest payments remain affordable and bankruptcies can be avoided. Furthermore, the pressure to create equity for banks will increase again in 2023, and capital buffers that have been used up will then have to be replenished. This could potentially cause a slowed economic growth.

As in business, there will be winners and losers in the banking industry. Only those who have a good starting position and adapt quickly to new circumstances will survive. The focus for banks will lie on technological progress, the reduction of costs, and the increase in synergy effects. Therefore, this crisis is likely to produce much more cost-efficient and technologically advanced credit institutions.

The three-pillar structured banking system in Germany is being put to the test, as the increasing transparency in the market will cause earnings to continue to decline and specialized FinTech companies to attack traditional banks in lucrative business areas. The public-law credit institutions and cooperative banks will have to consolidate, which in turn will increase the systemic risk in the financial markets and cause the differentiation from commercial banks to diminish. The problems that have arisen for banks, along with rapidly advancing digitalization, favor the possible entry of technological giants such as Apple or Amazon into the banking market. Services such as ApplePay and AmazonPay are already established in payment transactions. Since their core business is not in banking, they can forego profits in this business area or even subsidize the banking business temporarily and use this additional service to increase their client base and market share. Conclusively, the 2020 pandemic is a setback for the entire economy, but it can serve as a kickstart for the evolution of the banking market.

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