



EXECUTIVE MASTER'S DEGREE IN BUSINESS ADMINISTRATION
(EMBA)

Dissertation Thesis

“The Interrelationship of Central Banks - Opportunities
and Threats of EU Financial Institutions”

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Piraeus, 2024

Παράρτημα Β: Βεβαίωση Εκπόνησης Διπλωματικής Εργασίας



**ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ
ΣΧΟΛΗ ΟΙΚΟΝΟΜΙΚΩΝ ΕΠΙΧΕΙΡΗΜΑΤΙΚΩΝ ΚΑΙ ΔΙΕΘΝΩΝ ΣΠΟΥΔΩΝ
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ΒΕΒΑΙΩΣΗ ΕΚΠΟΝΗΣΗΣ ΔΙΠΛΩΜΑΤΙΚΗΣ ΕΡΓΑΣΙΑΣ

(περιλαμβάνεται ως ξεχωριστή (δεύτερη) σελίδα στο σώμα της διπλωματικής εργασίας)

«Δηλώνω υπεύθυνα ότι η διπλωματική εργασία για τη λήψη του μεταπτυχιακού τίτλου σπουδών, του Πανεπιστημίου Πειραιώς, στη Διοίκηση Επιχειρήσεων για Στελέχη : E-MBA» με τίτλο

"The Interrelationship of Central Banks - Opportunities and Threats of EU Financial Institutions".

.....
έχει συγγραφεί από εμένα αποκλειστικά και στο σύνολό της. Δεν έχει υποβληθεί ούτε έχει εγκριθεί στο πλαίσιο κάποιου άλλου μεταπτυχιακού προγράμματος ή προπτυχιακού τίτλου σπουδών, στην Ελλάδα ή στο εξωτερικό, ούτε είναι εργασία ή τμήμα εργασίας ακαδημαϊκού ή επαγγελματικού χαρακτήρα.

Δηλώνω επίσης υπεύθυνα ότι οι πηγές στις οποίες ανέτρεξα για την εκπόνηση της συγκεκριμένης εργασίας, αναφέρονται στο σύνολό τους, κάνοντας πλήρη αναφορά στους συγγραφείς, τον εκδοτικό οίκο ή το περιοδικό, συμπεριλαμβανομένων και των πηγών που ενδεχομένως χρησιμοποιήθηκαν από το διαδίκτυο. Παράβαση της ανωτέρω ακαδημαϊκής μου ευθύνης αποτελεί ουσιώδη λόγο για την ανάκληση του πτυχίου μου».

Υπογραφή Μεταπτυχιακού Φοιτητή/ τριας

A handwritten signature in black ink, appearing to read 'Lemonias Theodoros', written over a horizontal line.

Όνοματεπώνυμο Lemonias Theodoros

Ημερομηνία 01/02/2024

Thank you kindly

To my Supervising Teacher Dr. Cambis Dimitrios for the trust, patience, and guidance that's been instrumental in the completion of this dissertation. I also want to thank you for listening to my aspirations for the next steps in my career and providing me with the appropriate subject and all according material in order to learn in an appropriate way about the matter.

I would also like to extend my heartfelt thanks to my dear friends and family. This dissertation is as much a reflection of your collective support as it is of my individual efforts.

Abstract

This dissertation explores the interrelationships between by Central Banks (CBs) in executing their mandates for monetary policy and supervision of the banking system. The purpose of this thesis is to analyze CBs various functions and responsibilities in achieving their objectives, overseeing the financial system and the impact these decisions have on the financial institutes.

Chapter 1, delves into the historical development of CBs and examines their independence. It discusses the mandates and functions of CBs, as well as the tools they utilize to implement monetary policy and supervise the banking system. Furthermore, this chapter investigates the interrelationship between fiscal and monetary policies, and the impact of these policies in the post-pandemic period we are currently in.

Chapter 2, focuses on the supervisory role of Central Banks in the financial system. It describes the functions, structures, and ultimate objectives of financial institution control. Lessons are drawn from past experiences of tightening and loosening monetary policy and maps out systemic risks associated with these licensed/supervised institutions. Additionally, supervisory mechanisms for credit and operational risk control are briefly laid out, with particular emphasis on ECB.

Chapter 3, examines the opportunities and threats faced by CBs and supervised institutions with focus to ECB and EU Financial Institutions. This includes an analysis of mergers and acquisitions, the quality and type of securities per credit facility type, as well as the growing role of Fintech and ERP firms in times of modern banking.

In conclusion, this dissertation provides a comprehensive analysis of the mandates, functions, and supervisory roles of CBs in the context of monetary policy and financial system oversight. The exploration of opportunities and threats reveals the changing landscape of global finance and the evolving role of technology. The findings contribute to a deeper understanding of the challenges and potential strategies that CBs and supervised institutions may face in the future.

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Chapter 1: Mandates and Function of Central Banks

Historical Evolution of Central Banks

Central banks are the cornerstones of a country's financial system. They wield immense power and have a profound impact on the economy. Yet, they often operate quietly behind the scenes, conducting intricate monetary policies and implementing complex financial strategies. At times of economic stability and financial prospect they have a laissez-faire approach, and at times of economic turmoil they would have, to any extent, a hands-on policy to mitigate the impact of a possible or ongoing economic downturn. Let us discuss first the nature of central banks, exploring their historical evolution¹, primary functions, and the pivotal role they play in the modern economic landscape.

Central banks, whether they are those of nations or unions, have evolved over centuries, mirroring the growth of the modern financial system. While they vary in structure and function from one country to another, their core purpose remains consistent – stability and prospect. Central banks emerged in response to the financial needs of governments and their citizens.

The Bank of Sweden (Sveriges Riksbank), established in 1668, is often cited as the world's first central bank. It was created to manage the currency, facilitate international trade, and provide loans to the government. Over the years, this model was adopted and adapted worldwide, leading to the establishment of central banks in various forms.

The existence of a Central Bank, as ideas and systems, has passed through many phases to adapt to the financial needs of governments and their citizens. The 17th and 18th century were a Founding phase, initially established to serve as financial advisors to governments and facilitate international trade. These banks were largely focused on issuing currency and lending to governments. Followed by the Classical Gold Standard Phase of the 19th and 20th Century when their main purpose was to maintain the gold standard. They held gold reserves to back their currencies and ensured exchange rate stability. The aftermath of World War II ushered a shift in the role Central Banks played in their respective economies, with the Federal Reserve System in the United States at the forefront of this shift. Later in the 20th Century, before even the crumbling of the Bretton Woods system and the collapse of the Gold Standard, the shift had started towards the Monetary Policy Independence Phase. The Fed had regained its independence from the US Treasury after 1951, and other Central banks worldwide followed until the end of the Century. Although they still had to report to their nations' leaders, gaining greater autonomy and independence, separating from direct government control was a prerequisite to ensure that monetary policy decisions were based on economic objectives rather than political pressures. Currently, we are in the Digital Era Phase, and as economies became increasingly digital, central banks had to adapt. They explored the concept of central bank digital currencies (CBDCs) and developed policies to navigate the complexities of the digital age.

¹ <https://www.clevelandfed.org/publications/economic-commentary/2007/ec-20071201-a-brief-history-of-central-banks>

Central banks since the time they were first founded and with the role they have been assigned, face multiple challenges that by time only increase in quantity and complexity. It is a tight rope to walk to learn from past mistakes, have enough foresight, and avoid failing in your tasks in a different manner every time whilst holding true to the independence feature.

The main challenges Central banks face would be

- maintaining price stability, achieving and sustaining a low and stable rate of inflation remains a constant challenge using a mix of policy tools to keep it in check,
- balancing low unemployment and steady economic growth while maintaining price stability can be a complex juggling act,
- achieving globalization and financial integration in a time of interconnected financial markets. Especially at the current digital era central banks must consider international implications when implementing policies,
- following technological advancements, riding the wave of the digital transformation, and managing emerging threats and opportunities, such as cryptocurrencies and CBDCs, whilst staying true to its prudent objectives,
- keeping up to ESG factors, addressing climate change and environmental sustainability within their mandates' context, considering the implications of environmental factors on financial stability and economic growth

The Role of Central Banks in Economic Crises is pivotal and unsubstituted by any other institution. In the 2008 global financial crisis, CBs were instrumental in averting a complete financial meltdown. Through unconventional monetary policies and acting as lenders of last resort, they ensured liquidity in the banking sector and prevented the spread of the crisis. Similarly, during the COVID-19 pandemic, central banks rapidly implemented measures to maintain economic stability, including interest rate cuts, asset purchases, and various forms of support for businesses and individuals. Now, in the post-pandemic era they are once again called to action, to keep in check inflation and stagflation, and to disassociate its role with the economy from a period of “cheap money”- mitigating any withdrawal symptoms that would start a domino effect.

Central banks have come a long way since their inception in the 17th century. They have continuously adapted to the evolving economic landscape and played pivotal roles during economic crises. As we step into the digital age and confront new challenges such as climate change and digital currencies, central banks are forced to continue evolving. Their ability to adapt and effectively manage complex economic and financial environments will remain critical to the overall stability and prosperity of nations. In a world of economic uncertainty, central banks serve as essential pillars of economic resilience and interconnectedness.

The Question of Central Bank Independence

Central banks play a pivotal role in shaping the economic landscape of a country. Their actions can significantly influence macroeconomic performance, including inflation rates, unemployment levels, and overall economic stability. One of the key determinants of a central bank's effectiveness is its degree of independence from political influence, which (an intervention) will almost certainly disrupt the equilibrium. Central bank independence is a crucial aspect of modern monetary policy, with an extensive body of literature suggesting a positive association between independence and macroeconomic performance. In this part we should delve into the relationship between central bank independence and macroeconomic performance, exploring how an independent central bank can contribute to (comparative) lower inflation, stable economic growth, and improved overall economic health.

Although researchers do not always find strong correlation for independence and other growth factors of a country's GDP, there seems to be² a strong negative correlation between central bank independence and inflation. Countries with more independent central banks tend to have lower and more stable inflation rates. Research³ has also shown positive correlation between independence and economic growth in countries with high inflation, while this is not true for low-inflation countries. Review of empirical evidence⁴ on said independence reveals also that when a central bank is perceived as politically influenced, people may anticipate higher inflation, and usually higher inflationary expectations are a self-fulfilling prophecy, exacerbating the problem. An independent central bank should establish its credibility by consistently adhering to a low & stable inflation policy, insulating itself from political decisions i.e. being susceptible to political pressures to stimulate the economy through expansionary monetary policy. It is but certain that countries with more independent CBs experience fewer (or less severe) banking crises and financial instabilities. This positive association is consistent with the idea that independent central banks are more focused on long-term stability rather than short-term political goals.

Another positive correlation in the matter, seems to exist between transparency⁵ and independence, impacting the effectiveness of central banks in controlling inflation and making monetary policy decisions.

The extent to which central banks disclose information about their policies, operations, and decision-making processes to the public and financial markets, disclosing economic forecasts, policy meeting minutes, inflation targets, and other relevant information – seems to lead the market in making more accurate forecasts, and in turn the governance better equipped to pursue price stability.

Lastly, exploring the question of independence, it is important to discuss what happens when the Central bank would not have the treasury's support. A central bank in order to be financially independent needs enough capital to start (provided that the treasury provides the initial injection and this transaction ends there), it holds

² Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence Author(s): Alberto Alesina and Lawrence H. Summers (May, 1993) <http://www.jstor.org/stable/2077833>

³ Al-Marhubi, F. and T. D. Willett (1995), The Anti-Inflationary Influence of Corporatist Structures and Central Bank Independence: The Importance of the Hump Shaped Hypothesis, *Public Choice* 84 (1996)

⁴ Central bank independence and macroeconomic performance: a survey of the evidence by Friedrich Kißmer and Helmut Wagner *Diskussionsbeitrag Nr. 255* Juni 1998

⁵ Central Bank Independence and Transparency: Evolution and Effectiveness Prepared by Christopher Crowe and Ellen E. Meade May 2008

essentially low-risk and “riskless” securities in its portfolio and transfers all income to the treasury (assuming the balance sheet is positive). If the bank was to start diluting its portfolio with higher-risk securities under some circumstance e.g. the need to inject liquidity in the market, then its independence may start to look thinner – thus it may need financial support from the treasury. On top of that, buying long-term securities, especially uncontrollably, from the treasury may subject inflationary spirals along with expectations that would disrupt financial growth and stability in any system.

Central Banks’ Role in the Economy

Central banks play a pivotal role in the financial systems and economies of nations worldwide. Their core objectives are essential to maintaining stability, ensuring economic growth, and safeguarding the well-being of their respective countries. These institutions have been granted several key responsibilities to fulfill these core objectives. Each Central Bank has a different core objective, the FED’s dual mandate is maximizing employment, price stability, which in turn means low and stable inflation and maintaining moderate long-term interest rates, On the other hand, the ECB is only focused on price stability, thus stable and low inflation so that money does not lose its power. Their main responsibilities are deciding monetary policy, indirectly ensuring financial stability, and currency issuance.

One of the primary objectives of central banks is to maintain price stability within their economies. This typically translates to keeping inflation within a target range, usually announced around 2%. Low and stable inflation is considered a key factor for sustainable economic growth, as it ensures that the purchasing power of a nation's currency remains relatively constant over time. This in turn, fosters consumer and business confidence. Central banks also aim to promote economic growth and maximize employment, even when not explicitly written in their mandate. These objectives are often seen as complementary to maintaining price stability. By influencing interest rates and controlling the money supply, central banks can stimulate or slow down economic activity, which directly impacts employment levels and overall economic growth. Ensuring the stability of the financial system is crucial to preventing financial crises and economic disruptions. Central banks monitor and regulate financial institutions, setting capital and liquidity requirements, conducting stress tests, and providing emergency funding when needed to prevent systemic collapses. Sufficient liquidity may well be the most crucial to maintaining and averting short term crises that could cause a domino effect and subsequent bank-runs that would collapse any healthy financial system.

The primary responsibility of central banks is to formulate and implement monetary policy. They control the money supply, interest rates, and other monetary tools to influence economic conditions. By adjusting these levers, central banks can either encourage borrowing and spending (expansionary policy) or increase inflation slowing economic activity (contractionary policy).

Central banks are responsible for regulating and supervising financial institutions, including commercial banks. This role includes setting prudential standards, monitoring financial stability, and ensuring that these institutions operate safely and soundly. In times of financial crises, central banks may provide emergency loans to stabilize the banking system - at least in the short-term.

Central banks have a monopoly on issuing the national currency. However, in some regions, several countries have central banks that function as part of a larger union, such as the European Central Bank (ECB) in the Eurozone. These supranational central banks carry out additional responsibilities tailored to the complexities of such unions and work closely with the Central Banks of the members for regulation monitoring purposes. They ensure uniform design, security features, and denominations across the entire currency union, and in turn this simplifies cross-border transactions and promotes economic integration. Another responsibility is that for managing currency reserves and investing these reserves in assets, such as government bonds or foreign exchange reserves, to generate income and maintain the stability of the union's currency.

One of the most important responsibilities of a Central bank, is acting as a lender of last resort during times of financial crisis. They can provide emergency loans to financial institutions that are facing liquidity problems, preventing bank runs and preserving overall financial stability. They also engage in extensive research and analysis of economic data, trends, and financial markets. They contribute to economic research and publish reports on various aspects of the economy, which can inform policymakers, businesses, and the public.

They communicate their monetary policy decisions and economic assessments to the public and financial markets. This transparency is essential to managing expectations and guiding market participants. Central bank officials may hold press conferences, release policy statements, and publish economic forecasts. It is of the highest importance that a central bank reads properly the events especially in times of crises and holds a “straight face” with its calculated decisions – if the captain projects uncertainty and immaturity in the decisions taken it is certain that it will cause panic and instability in the market.

Central banks also oversee and manage payment systems, ensuring the efficient and secure transfer of funds between financial institutions. This responsibility is critical for the smooth functioning of an economy, and in cases of a currency union this role of smooth financial integration across member states gains a broader context.

Finally, central banks are responsible for the regulation and supervision of financial institutions, in the case for Europe the ECB sets the guidelines and with the help of the nations’ central banks they make sure they are followed. They work to maintain the stability of the financial system and ensure a level playing field for all financial institutions.

Tools of Monetary Policy

Central banks play a critical role in shaping the economic landscape of a country or union. One of their most essential functions is controlling the money supply, which directly impacts economic stability and growth. Central banks use various instruments to implement monetary policy and influence the overall economic conditions within that country or union. In light of recent global economic challenges, such as the COVID-19 pandemic, understanding how central banks wield these tools is more crucial than ever.

The Role of Interest Rates

Interest rates are a cornerstone of monetary policy and serve as a powerful tool for central banks to influence the money supply. CBs target the interest rate, specifically the rate at which banks can borrow from the central bank and the rate at which banks can “park” their excess reserves at the central bank.

- Investigating interest rates as a monetary policy tool, CBs use them to achieve various objectives, but one of the most critical is managing inflation. By manipulating the interest rate, central banks can affect the spending and investment behavior of consumers and businesses, ultimately impacting the overall price level in the economy. This manipulation usually stems from altering the discount rate at which commercial banks are borrowing money from the CB, which in turn affects their lending practices.
- Delving deeper into interest rate dynamics, when central banks raise interest rates it has a ripple effect throughout the financial system. Banks, in turn, increase the rates they offer to customers, making borrowing more expensive. This discourages lending and reduces the creation of new money in the economy, a process referred to as monetary policy tightening, something advocated strongly during and after the Great Inflation in the 1980s. On the other hand, when central banks lower interest rates, banks become more inclined to lend, stimulating economic activity, investment, and money creation. This is known as monetary policy loosening (easing).
- Most CBs who are aiming for price stability also do inflation targeting, typically around 2%. They adjust interest rates to keep inflation as close to this target as possible.
- While the theory behind interest rate-based monetary policy seems straightforward in tackling challenges for real-world application, recent events in regions like Europe, the U.S., and Japan have raised questions about its efficacy. Despite years of low interest rates, inflation often remains stubbornly below target lagging behind policy. This also raises questions for the efficacy of old-fashioned New Keynesian economics and the Phillips Curve. This reality has prompted central banks to explore alternative measures, such as quantitative easing and helicopter money – which in turn create other issues that we will explore further in latter sections.

Open Market Operations

Open market operations refer to the buying and selling of government securities by a central bank in the open market. The Treasury as the government's fiscal agent plays a key role in managing the money supply. It does so by influencing the levels of government spending, taxation, and borrowing. By coordinating with the Treasury, the Central Bank can ensure that fiscal and monetary policies work in tandem to achieve overall economic goals. Their conjunction is performed via mechanisms such as providing loan facilities to commercial banks. The Treasury issues debt (in form of government securities) to finance government spending, and the Central bank engages

in open market operations by purchasing these newly issued bonds. With increased reserves and lower interest rates, commercial banks are incentivized to take loans through the discount window at a discount rate⁶ and then give loans to individuals and businesses increasing the money flowing in the market. As the loans are disbursed, M1 in the economy begins to multiply and that initial injection of funds from the Central Bank results in a cascading effect as these funds are used for further lending and spending. Commercial banks may also purchase these bonds as part of their investment portfolio. In certain situations that the monetary policy revolves around tightening decisions, the Central bank in order to deflate its balance sheet, between other tools it uses to cool down the economy, will sell bonds from its portfolio thus reducing money in the economy. In the case the Treasury's debt management strategy is to reduce its spending and/or debt, it may engage in buying back its own bonds from the market, taking into account preserving financial stability.

These operations are a core component of monetary policy and are used to influence the money supply, in short,

- Central banks buy government securities from or sell them to banks in the open market. When they buy securities, they release money into the banking system, increasing the money supply. Conversely, selling securities withdraws money from the system, reducing the money supply.
- Open market operations are a flexible tool that allows central banks to fine-tune the money supply based on current economic conditions and policy goals. If the economy requires stimulation because of e.g. an exogenous shock on supply, then increasing the M2 will result to “cheaper” money lending and more liquidity in the market – but this should be only a short-term stimulation since the disengagement of this dependence would impact other macroeconomic factors, like inflation.
- During economic shocks and crises like the COVID-19 pandemic, CBs have engaged in massive open market operations to inject liquidity into the financial system targeting the stabilization of markets, mitigating expected economic downturns and restoring confidence.

Reserve Requirements

Reserve requirements are regulations stipulating the minimum amount of reserves that banks must hold. These reserves can be held in the form of currency or deposits with the Central bank. Reserve requirements directly affect a bank's lending capacity. When reserve requirements are increased, banks have less money available for lending, leading to reduced money creation. Conversely, lower reserve requirements free up more funds for lending – stimulating growth but at the risk of higher leveraging. Adjusting reserve requirements can have a significant impact on the money supply, assisting CBs to achieve their monetary policy objectives.

Unconventional Monetary Policy

Unconventional monetary policy refers to measures that central banks take when traditional monetary policy tools, like interest rate adjustments become less effective or

⁶ the rate at which banks are borrowing money from the central bank

just need complementing in stimulating or stabilizing the economy⁷. These policies are often used in times of economic crisis, low inflation, or when interest rates are near or at zero. Some common unconventional monetary policy tools include:

- Quantitative Easing (QE): Central banks purchase long-term securities (typically government bonds) to increase the money supply, lower long-term interest rates, and stimulate economic activity. The goal is to reduce borrowing costs and encourage lending and investment.
- Forward Guidance: Central banks communicate their intentions regarding future monetary policy, such as keeping interest rates low for an extended period. This guidance influences market expectations and helps shape long-term interest rates.
- Negative Interest Rates: Some central banks set interest rates below zero, effectively charging banks for holding excess reserves. This encourages banks to lend money rather than hoard it, potentially boosting economic activity.
- Asset Purchase and Credit Easing Programs: In addition to government bonds, central banks may purchase other financial assets, such as corporate bonds or mortgage-backed securities, to support specific sectors of the economy. Central banks may provide targeted support to specific sectors of the economy by buying assets or providing loans, such as (in USA) the Federal Reserve's Term Asset-Backed Securities Loan Facility (TALF) during the 2008 financial crisis.

Macroprudential Tools

Macroprudential tools are a set of policies and regulations designed to promote⁸ financial stability and prevent systemic risks within the financial system. They are distinct from traditional monetary policy, which primarily focuses on controlling inflation and stabilizing economic output. Macroprudential tools, on the other hand, address risks that can arise from excessive credit growth, asset price bubbles, or other vulnerabilities in the financial sector. Some common macroprudential tools include

- Regulating Capital requirements which require financial institutions to maintain a certain level of capital to absorb losses and withstand financial shocks. Higher capital requirements reduce the risk of bank failures and contagion during crises, but a brake on leveraging of financial institutions could seriously impact their lending ability and operations.
- Similar to Capital requirements, Liquidity requirements mandate that banks maintain sufficient liquid assets to meet short-term obligations. This helps ensure that banks can withstand liquidity crises and avoid bank-runs. Extending these requirements, countercyclical buffers also require banks to build capital buffers during periods of rapid credit growth. When the economy is overheating, banks must set aside extra capital to protect against potential downturns.
- Loan-to-Value (LTV) and Debt-Service-to-Income (DSTI) Ratios (as well as others like LTI, DTI etc.⁹) are used by national authorities to limit excessive borrowing and risk-taking by borrowers. These ratios restrict the amount individuals and businesses can borrow based on the value of assets and income, reducing the risk of defaults (and increasing Non-Performing Loans metric). Together with

⁷ (UN)CONVENTIONAL MONETARY AND FISCAL POLICY, Jing Cynthia & Wu Yinxi Xie, December 2022
<http://www.nber.org/papers/w30706>

⁸ How real is Europe's banking union?, Ignazio Angeloni, April 2018, www.bankingsupervision.europa.eu

⁹ Loan to Income and Loan to Deposit ratios regulating prudential mixture of assets and liabilities

directives, like MiFID II, that require a more intricate KYC by banks, and analytical tools, like the AnaCredit project, that analyze credit risks for institutions, commercial banks are better equipped to handle systemic risks and less susceptible to crises.

- Regulatory authorities' subject banks and financial institutions to stress tests to assess their resilience under adverse economic conditions. This helps identify vulnerabilities and the need for capital adjustments.

Understanding the intricacies of how central banks control the money supply is crucial for policymakers, economists, and the general public. Central banks employ a combination of tools to implement monetary policy and control the money supply. Interest rates play a central role in influencing economic activity and managing inflation. Open market operations allow central banks to fine-tune the money supply to respond to economic shocks. Reserve requirements provide an additional lever to influence lending capacity and, consequently, the money supply.

In today's rapidly changing economic landscape, central banks face new challenges and uncertainties¹⁰, and while they remain at the forefront of economic management their choices have far-reaching implications. The COVID-19 pandemic has underscored the need for innovative approaches to monetary policy, prompting central banks to explore unconventional methods like quantitative easing and (a more fiscal approach) helicopter money. The ability to comprehend, adapt and refine these instruments is essential to making well-informed decisions and maintain economic stability and growth in an increasingly interconnected global economy.

The Interplay of Fiscal and Monetary Policies

Fiscal and monetary policies are two critical tools used by governments and central banks respectively to influence the short-term and macroeconomic conditions within a country. These policies play a vital role in managing inflation, promoting economic growth, and ensuring overall financial stability. While they have distinct purposes and mechanisms, they are not isolated from each other. In practice, fiscal and monetary policies often interact and complement each other, and understanding the interplay between them is essential for policymakers, economists, as well as the general public. Let us explore some aspects of the interplay of fiscal and monetary policies, their objectives, instruments, and the implications of their coordination or lack thereof.

The objectives of Fiscal policy, mainly focused around promoting economic stabilization and maximizing prosperity, are

- Counteracting fluctuations in the business cycle by fiscal policy adjustments, where especially during economic downturns, expansionary policy, involving increased government spending or tax cuts, can stimulate demand and promote growth. Conversely, during periods of inflation or overheating, contractionary fiscal policy including reduced government spending or increased taxation, has the potential to cool the economy.

¹⁰ <https://www.reuters.com/business/finance/us-banks-seen-building-5-bltn-reserves-recession-risks-grow-2022-10-11/>

- Redistribution of income, able to address income inequality by adjusting tax rates and implementing social welfare programs.
- Investing in long-term growth, most importantly in infrastructure, education, and research and development to foster long-term economic growth and competitiveness. There is strong evidence¹¹ hinting that proper disaster management and preparedness can go a long way, and “In many cases, resilience investments are more cost-effective than disaster relief and recovery investments.”. On the other hand, chronic underinvestment, and ad-hoc relief programs can cost multiple times upward, not factoring in the people well-fare in such a crisis.

To achieve these objectives, fiscal policy relies on several instruments such as deciding on a program for *government spending*. Governments can increase or decrease expenditures in various areas such as healthcare, education, defense, and infrastructure development. Increased government spending can boost aggregate demand, while decreased spending can have the opposite effect. Another instrument are changes in *taxation*, including tax cuts or increases, influencing consumer spending, investment, and saving. Tax cuts can stimulate economic activity, while tax hikes can reduce it. Suffice to mention that a sudden increase in consumer deposit accounts after a tax-cut could fuel rising aggregate demand and down the line a spike in inflation. Lastly, *social welfare* programs which also are government spending decisions, like unemployment benefits, welfare, and even food stamps are transfer payments made to individuals. Adjusting these payments can influence disposable income and aggregate demand.

Monetary policy, as already discussed, has as objective to maintain a relevant price and financial stability, balance unemployment and inflation, its (the CBs) main tools are adjusting the interest rates, setting reserve requirements, and performing Open Market Operations. The interplay between the two policies is complex, and their coordination or lack thereof can have a significant impact on the economy.

A hand in hand approach would describe a harmonization between the two policies. During economic downturns, expansionary fiscal policy, such as increased government spending, can be complemented by accommodative monetary policy, i.e. lowering interest rates. This dual approach can provide a more potent stimulus, encouraging investment and consumer spending. Similarly, in an overheating economy when inflation is a concern, fiscal and monetary policies should be coordinated to steer clear of it. Contractionary fiscal policy, e.g. reducing government spending or introducing a new tax, can be supported by tighter monetary policy, i.e. raising interest rates. This combination should help control inflationary pressures and maintains price stability. A mix and match approach is also desirable since fiscal policy can target specific economic classes, while monetary policy will impact an economy as a whole.

Describing a disharmonization of the two policies, a case for conflicting objectives can be made, where for example a government would initiate an expansionary policy like introducing transfer payments as stimulus checks while the CB has a target to tame inflation by employing a contractionary policy. A Central Bank’s autonomy could be

¹¹ Building resilience: The history and future of US crisis management, by Tony D’Emidio, Zoe Fox, Jon Spaner, and Ophelia Usher (August 2022)

compromised in cases where Fiscal policy gets dominant, with the government rampantly increasing spending by not taking into account inflation.

In the 2008 Financial Crisis, such a disharmonization in their objectives took place in USA, when in response to the crisis the Federal Reserve implemented aggressive monetary policies, including massive asset purchases and interest rate cuts to stabilize financial markets and prevent a deeper economic downturn - concurrently local governments in various states implemented fiscal stimulus packages at first, but increased government debt led soon to austerity measures at the federal and state levels thus implementing a contractionary approach.

In the more recent Pandemic crisis and specifically in its beginning, governments worldwide implemented substantial fiscal stimulus programs to support businesses and individuals affected by lockdowns. Central banks reduced interest rates and engaged in QE to increase liquidity and support financial markets. The coordinated response helped prevent a complete economic collapse and facilitated a quicker recovery as businesses and households had access to needed funds. But as the time goes by, and with the effectiveness of QE being questioned, Central banks have started (reluctantly and delayed) a contractionary strategy by increasing their discount rates, but many governments cannot let go of their fiscal stimulus since it would create an economic (and political) shock.

The intricate relationship between macroeconomic variables

There are many aspects to an economy's health and stability - quality and quantity measures to investigate the effectiveness of monetary and fiscal policies. These variables and their intricate relationship are at the heart of macroeconomic dynamics

- The **Public Debt-to-GDP ratio**, a critical indicator of a government's fiscal health, representing the total outstanding debt of a government as a percentage of its Gross Domestic Product. Expansionary fiscal policies that involve increased government spending, tax cuts, or other stimulus measures can lead to budget deficits¹². On the other hand, prudent fiscal policies involve maintaining fiscal discipline to keep the debt-to-GDP ratio at a sustainable level.
- The **M1 supply**¹³ is interrelated with the fiscal policy and money velocity. Expansionary fiscal policies can lead to a higher money supply, leading to more transactions and higher money velocity. If government spending is financed by borrowing, it can have a crowding-out effect (theory that argues that rising public sector spending drives down or even eliminates private sector spending) on private investment, illustrating Gresham's law that "cheap money drives out dear money". This could limit the money supply's growth and thus reduce money velocity. In an article¹⁴ by N. Kaldor (1985), it is noted that the UK's money supply target in 1979 was 7-11% but actually rose to 22%, something attributed to a failure to recognize the causes of inflation (specifically cost-push inflation) and the lack of confidence by the public, expecting higher inflation and as a self-

¹² <https://www.wsj.com/economy/central-banking/rising-interest-rates-mean-deficits-finally-matter-74249719>

¹³ M0 = Currency notes + coins + bank reserves

M1 = M0 + demand deposits

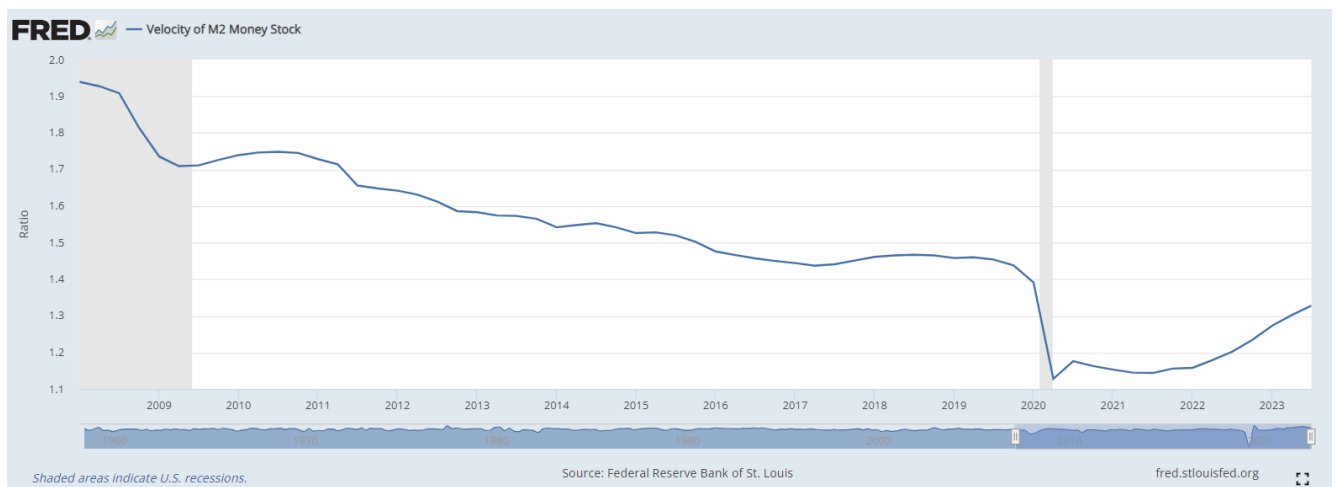
M2 = M1 + marketable securities + other less liquid bank deposits

M3 = M2 + money market funds

¹⁴ Kaldor, N. (1985). How Monetarism Failed, Pages 10-12. doi:10.1080/05775132.01.11470996

fulfilling prophecy achieving it. Other than that, money creation in the modern economy although influenced by the Central Bank it is not solely controlled by it. The amount of money created in the economy is handled by commercial banks in the form of credit.

- **Money velocity**, the rate at which money changes hands within an economy, which reflects the quantity of transactions in an economy. Exponential increase of transactions would create inflationary pressures in an economy that should soon start to overheat. The opposite is also true, contractionary fiscal policy would decrease the velocity and should impact interest rates. Velocity of M1 & M2 provides insights into the effectiveness of monetary policy by the Central bank, e.g, if V1 (velocity of M1) is significantly higher than V2 it might suggest that more liquid assets are actively circulating. And if V2 is significantly low it may suggest stagnation in the economy overall that will impact other factors as well¹⁵. As of Q3 2023 after V2 had hit a new low in sixty years, it shows signs¹⁶ of gaining positive momentum.



¹⁵ The Implications of Macroeconomic Factors in the Future of Hellenic Shipping Industry – A Systemic Approach in the Analysis of Complex Decision-Making Process, By Dimitris Cambis 2022, p.15

¹⁶ <https://fred.stlouisfed.org/series/M1V> & <https://fred.stlouisfed.org/series/M2V> 2008-2023 Q3

- The **10-year (and 10 minus 2 -year) bond yield curve** which represents the relationship between the interest rates of bonds with different maturities. In a typical “healthy” yield curve it is upwards sloping, claiming that longer term bonds give higher interest rates, something expected by all players in an economy since longer term bonds are accompanied by additional risk and higher opportunity cost. In an inverted yield curve we encounter a weird phenomenon, where the yield on the (shorter) 2-year Treasury bond is temporarily higher than the yield on the 10-year one. Short term bond yields react faster to interest rate hikes since debt outstanding for longer does not renew as quickly, and since interest rates were raised so suddenly this phenomenon occurs. The curve will normalize as longer-term yields are raised as well, and investor sentiment (that may expect near-term rate cuts) leans towards opting for long term bonds. This is also noted as a precursor to a recession, graphing out the 2 versus 10-year treasury yield (Figure 1¹⁷) you can see that inverted yield curves actually tend to be followed by recessions (the grayed-out area). In more detail, if a bond’s face value and coupon stay the same, in order to be sold the yield to maturity rate must become more attractive thus selling it at a discount. Investors and commercial banks that have a portfolio heavily comprised of such investment instruments could be exposed¹⁸ to huge loses. Since the second half of 2022 as rates have been hiked (Figure 2¹⁹) the yield curve has been inverted, and as the new 10-year bond yields are rising as well - the normalization of the curve should follow. Note that having reached a 16-year high at 4.8% causes significant concern, with US Treasury bonds prices falling by 46% since March 2020²⁰. The consequences of rising yields include increased mortgage rates, more expensive corporate borrowing, potential government spending cuts, less attractive investments, and challenges for international companies dealing with exchange rates.

¹⁷ <https://fred.stlouisfed.org/series/T10Y2Y>

¹⁸ <https://www.theguardian.com/business/2023/mar/17/why-silicon-valley-bank-collapsed-svb-fail>

¹⁹ Source: <https://www.worldgovernmentbonds.com/country/united-states/>

²⁰ <https://www.bloomberg.com/news/articles/2023-10-04/long-bonds-historic-46-meltdown-rivals-burst-of-dot-com-bubble>

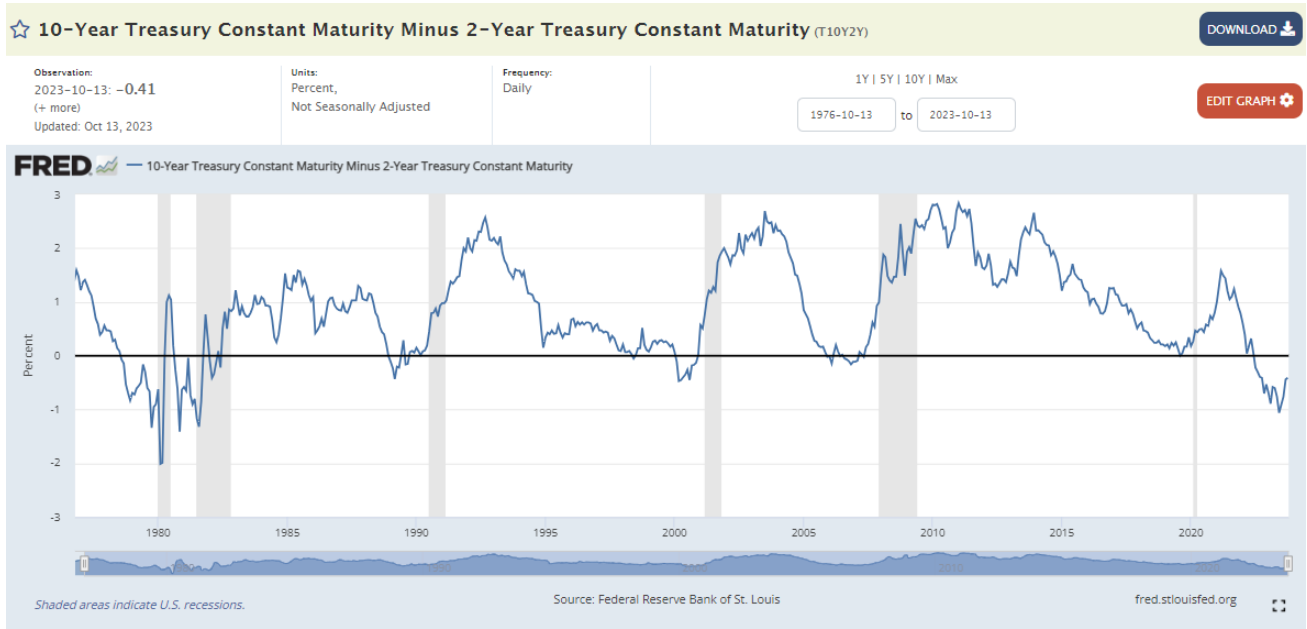


Figure 1

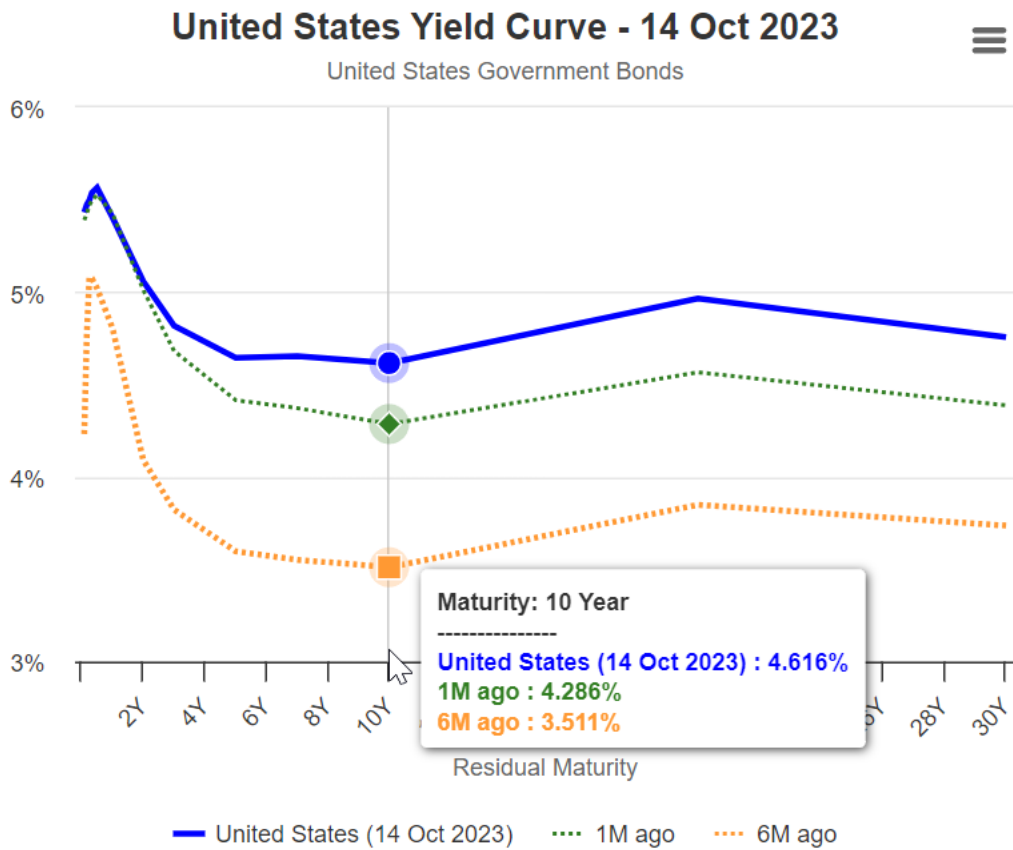


Figure 2

- As already described, **Interest Rate movements**, their hiking or relaxing, can have a soothing effect on the market or unforeseen consequences, and their impact can last short periods or even multiple years until market adjustment. What plays a crucial role as always are the Market expectations, for example fiscal expansionary policies are perceived as inflationary and can push bond yields higher.
- **Inflation** as a metric in the economy represents the sustained increase in the general price level. The *fiscal theory* of the price level posits that the price level in an economy is fundamentally linked to expected future government surpluses. It suggests that the real value of government debt depends on anticipated future fiscal policy, emphasizing the central role of fiscal policy in shaping inflation. That price-level control requires a well-designed monetary-fiscal regime²¹, where monetary policy influences expected inflation, while fiscal policy determines unexpected inflation. Fiscal policies that are expansionary can cause demand-pull inflation (stimulation on consumer spending and investment pushes aggregate demand and exceeds aggregate supply), and policies that lead to an increase of production costs or higher taxes/tariffs on businesses disrupt the supply chain and cause cost-pull inflation. Unemployment rates on the other hand are also influenced by fiscal policies, in the way that expansionary policies can help reduce unemployment by stimulating demand and promoting job creation, or policies that can lead businesses to cut jobs to cope with rising costs.
- The intricate **relationship of Unemployment rates and Inflation** led to the introduction of the Philips Curve, an economic concept by A.W. Phillips in 1958, a cornerstone of macroeconomic analysis often used to inform monetary policy decisions. It describes the trade-off between the two, graphing an inverse relationship between the variables. But as years unravel, this theory seems to not stand its ground, rampant inflation is well accompanied by an increase of unemployment. This conundrum is further analyzed²² and its reasons to crumble attributed, and a new “Kaleckian²³ Phillips Curve” is proposed. It argues that worker bargaining power significantly influences the slope of the Phillips Curve. This new theory is based on the idea that workers negotiate with firms not only for wages but also for a share of production rents. It suggests that the collapse of worker bargaining power since the 1980s may be a crucial factor contributing to the shift in this relationship. Analyzing labor share data from the Bureau of Economic Analysis, they find a positive and significant effect on inflation, indicating that the labor share indeed plays a role in inflation dynamics. If worker bargaining power is a critical factor in shaping inflation dynamics, then policies that strengthen labor unions and empower workers may play a crucial role in achieving macroeconomic stability.
- The **sovereign bond valuation**, performed by major credit rating agencies, is also an important variable indicating at a country’s creditworthiness. Both monetary and fiscal policy can influence interest rates, directly and indirectly respectively. It is intertwined with government borrowing cost, interest rate movement i.e. the yield curve, and market expectations. Recently, Fitch downgraded the United

²¹ “Fiscal Histories”, by John H. Cochrane, DOI 10.3386/w30328

²² Ratner, David, and Jae Sim (2022). “Who Killed the Phillips Curve? A Murder Mystery,” Finance and Economics Discussion Series 2022-028. Washington: Board of Governors of the Federal Reserve System, <https://doi.org/10.17016/FEDS.2022.028>.

²³ Michał Kalecki was a Polish Marxian economist, one of the most distinguished economists of the 20th century.

States of America's Long-Term Foreign-Currency Issuer Default Rating (IDR) from 'AAA' to 'AA+'²⁴. This was attributed to expected fiscal deterioration (recurring debt limit standoffs and last-minute resolutions which have eroded confidence in fiscal management), a rising general government debt, rising of the country's debt ceiling²⁵, and the perceived credit risk for a default in the economic outlook that is to come (a recession).

- The **identity of the sovereign debt holders** also plays a contributing factor especially for emerging market economies. Private financial institutions, and particularly non-bank financial institutions, play a significant role in holding sovereign debt in regards to their demand elasticity. These investors exhibit higher demand elasticity compared to other groups and they are more sensitive to changes in yield and other economic factors. Sovereign debt is absorbed by the six different investor groups (foreign vs domestic & bank vs non-bank vs official). During the pandemic crisis, all governments have issued debt to respond to the shock and meet financial obligations. It is highlighted²⁶ that private financial non-banks institutions absorb substantially more of the variation in outstanding government debt than other investor groups, mostly comprised by investment funds. Especially for emerging markets, in comparison to advanced economies, they face significant borrowing exposure and a risk to lose this group of investors, while they have the greatest exposure from relying only on foreign banks. Suffice to say that this identity has a loose connection to the independence of CBs and their decisions on monetary policy decisions.
- The **relationship between gold price and 10-Year Real Interest Rate**, gold was always a safe haven to hedge against a currency crisis and as the world gets more volatile gold is becoming a better choice²⁷. The expectation of rate cuts, geopolitical instabilities, and the market sentiment along with it, as well as uncertainty against soon-to-come opportunity cost may lead investors to mix up their portfolio with assets that although give no yearly coupon – are safer in the grand scheme. After a de-valuation of US sovereign bonds, a sluggish GDP, increased Debt to GDP ratio and a fading resolve²⁸ by FED to fight inflation, it may be sensible for investors to want to diversify away from the dollar.

Circling back to the Central Bank Independence question, Central Banks may be granted autonomy to make monetary policy decisions free from political influence, however coordination with fiscal authorities must be conducted carefully to maintain that independence and accountability. In the same manner, the government must show Fiscal discipline to avoid rising government debt levels. Last but not least, close coordination of fiscal and monetary policies, their forward guidance and transparency can influence inflation expectations. In a globalized world, the interplay of fiscal and

²⁴ <https://www.fitchratings.com/research/sovereigns/fitch-downgrades-united-states-long-term-ratings-to-aa-from-aaa-outlook-stable-01-08-2023>

²⁵ A cap on the total amount of outstanding debt that a government can legally issue to fund its operations and meet its financial obligations.

²⁶ “Who Holds Sovereign Debt and Why It Matters” by Xiang Fang, Bryan Hardy & Karen K. Lewis (2022), DOI 10.3386/w30087

²⁷ <https://www.bloomberg.com/news/newsletters/2023-12-04/the-factors-driving-the-gold-price-to-new-highs>

²⁸ <https://www.bloomberg.com/news/articles/2023-12-01/powell-pushes-back-on-rate-cut-bets-but-markets-push-back-harder>

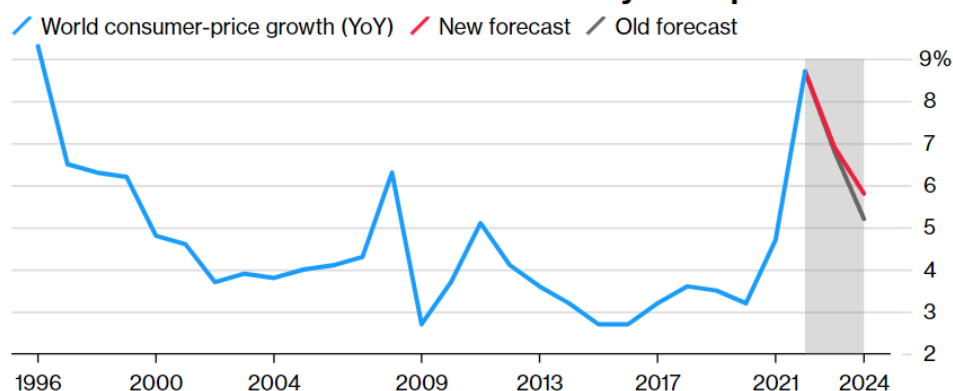
monetary policies in one country can have implications for other nations through trade, exchange rates, and financial markets.

A Critique on Monetary policy decisions in the post-Pandemic crisis

The extensive use of quantitative easing (QE) by Central Banks, particularly following the 2008 financial crisis and during the recent pandemic, has not demonstrated convincing economic benefits. While QE was initially implemented to inject liquidity into the financial system during emergencies, it has persisted for years, becoming a routine policy tool. The economic impacts of QE remain unclear, with studies suggesting varying degrees of success usually smaller than those advertised by the CBs. Direct costs of QE, such as the Federal Reserve paying interest on reserves, have emerged, and indirect costs are also prevalent including distortions in risk assessment and potential propping up of zombie companies that had a little too much cheap money²⁹. QE is blurring the lines between fiscal and monetary policy, threatening central bank independence, and complicating adherence to monetary policy rules. Central banks should acknowledge the impact that this tool has had and possibly retire the prolonged use of it, as its persistent use may pose challenges to financial stability and credibility, particularly in managing expectations during future economic downturns.

So now, we turn into a time of cancelling, or better phrased mitigating the adverse effects that QE had by employing Quantitative Tightening (QT). In USA the FED has a considerable amount of long-term debt securities exceeding \$7 trillion to unload as part of its QT efforts. The aim of QT is to gradually reduce excess cash reserves in the banking system, a strategy initiated to curb inflation. An inflation that seems stubborn to go down in the same velocity that the cash is exiting the banking system, and as was the case for QE – tightening has negative effects in the short term like disrupting short-term interest rates and destabilizing financial markets³⁰. The IMF predicts that inflation won't give in any time soon, and the FED as well as the ECB could persist with QT and intense monetary policy tools until the results are preferable, impacting long-term interest rates and financial conditions.

Inflation Won't Slow as Much as Previously Anticipated



Source: International Monetary Fund

The reasons behind this stubbornness are more opaque than clear, and hard to track. Spikes in energy cost, supply chain disruptions, geographical tensions, insufficient

²⁹ <https://www.bloomberg.com/opinion/articles/2022-11-22/fed-s-qe-was-a-colossal-monetary-policy-mistake>

³⁰ <https://www.bloomberg.com/opinion/articles/2023-10-18/the-fed-has-a-lot-of-quantitative-tightening-to-do> As happened prior to the pandemic crisis for the repurchase agreement (repo) in short-term secured loan agreement market

monetary policy decisions, and other paint a different set of reasons for its nation's economy. Thus, the inflation in each country has a different origin.

In a nutshell, the case for both (FED & ECB) is that the surge was spurred by factors including coronavirus pandemic supply chain disruptions, fiscal stimulus in response to the global lockdown (most prevalent in US), subsequent strong demand and a tight labor market (especially in the US), and food and energy disruptions from Russia's invasion of Ukraine, which had a particular effect in the Europe area.

In the US, inflation has been mostly demand-pull^{31,32}, due to increase of customer spending for goods and services with excess savings made in that period (post-pandemic). Stimulus checks (fiscal) and Quantitative Easing (monetary) spurred higher inflation. Also wage inflation played its role due to competition, with a special focus on the technology and financial services industry and companies hiring ever more aggressively, but this has been tamed in the last year. The core inflation in US is bigger than Europe, which had its inflation roots in cost-push³³.

³¹ <https://www.piie.com/blogs/realtime-economic-issues-watch/inflation-story-differs-across-major-economies>

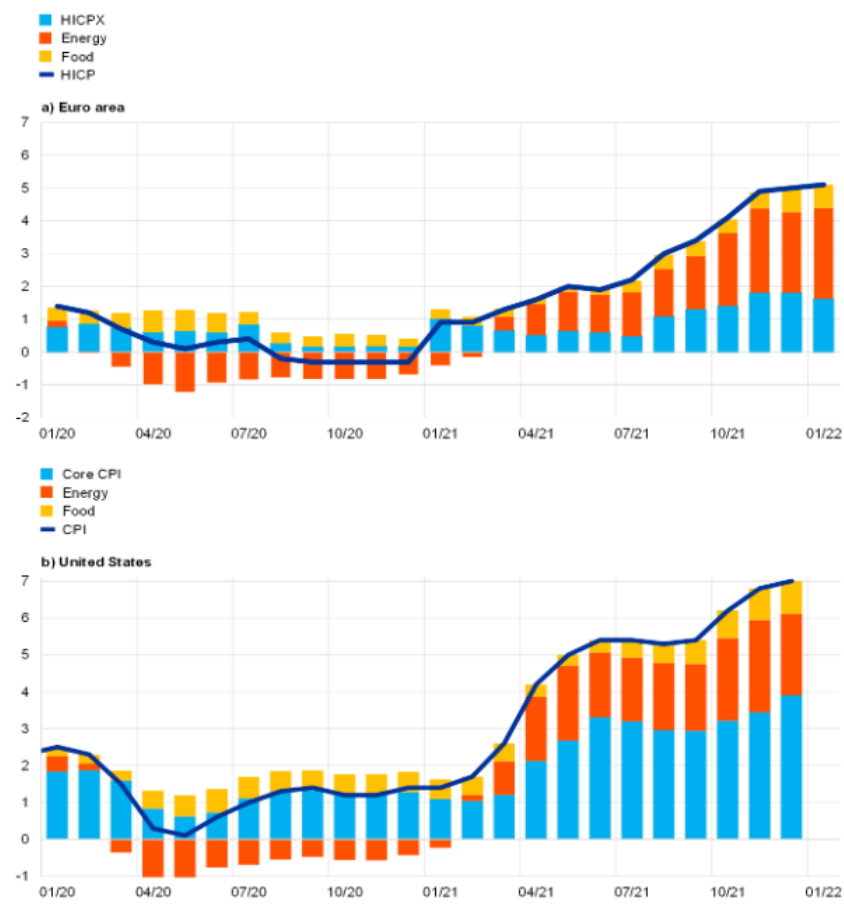
³² Monetary Policy in the Time of COVID, Jerome H. Powell (August 2021)<https://www.bis.org/review/r210902e.pdf>

³³ https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202207_07~8b71edbf.en.html

HICPX (excluding energy and food) inflation seems to be equally supply and demand driven up to 2022, because of supply chain issues caused by the lockdowns, but HICPX is only a third of total inflation

Headline inflation

(annual percentage changes, percentage point contributions)



Sources: US Bureau of Labor Statistics and ECB staff calculations.

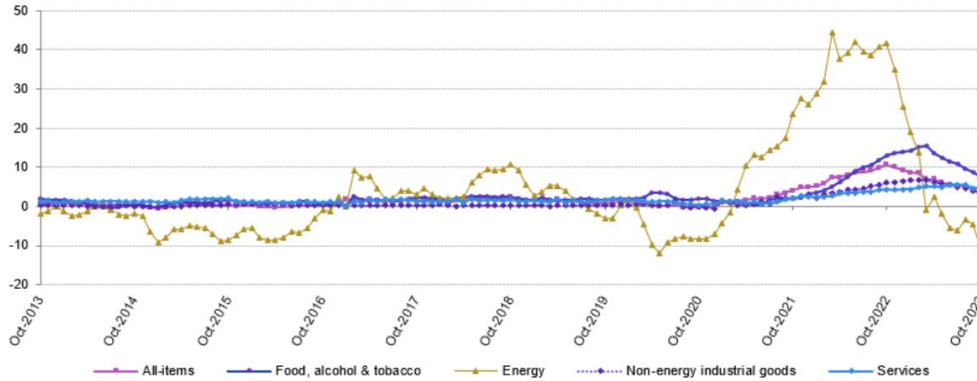
Note: The latest observation is for December 2021 for the United States and January 2022 (flash release) for the euro area.

Energy costs and food have been heightened because of geographical tensions with the war in Ukraine, in a supply chain that was already strained with the lockdowns. Thus this inflation (HICP) has shown to give in (transitory) since some energy pressures have been alleviated. According to the IMF³⁴ estimations for the cost pushed to the consumers, import costs account for 40% of the inflation, and labor cost for 25%.

³⁴ <https://www.imf.org/en/Blogs/Articles/2023/06/26/europes-inflation-outlook-depends-on-how-corporate-profits-absorb-wage-gains>

**Euro area annual inflation and its main components,
October 2013 - October 2023**

(%)



Source: Eurostat (online data code: prc_hicp_manr)



Since Europe had used more constrained fiscal stimulus tools compared to US where more than \$5 trillion were directly provided, thus higher stubborn inflationary pressures are expected for the national debt created by the latter. US core inflation has been pushed to 3% from a record-high 9% back in June 2022, but it is uncertain when it will subside further and what the FED will have to do to meet its end. In Europe inflation has also decelerated although the tools used by the ECB were not as severe in the US, with the inflation currently at 2.9%. Important to note that despite their best efforts both Central banks inflation target of 2% have not been met.



What comes next for both? Stubborn inflation in the US if met with stronger measures by the FED it could choke off growth and trigger a lingering recession, but if not addressed in time it could send the economy down a spiral that will deal as much damage, thus the FED's position is on thin ice – taking into account weakened GDP growth forecasts³⁵ as well.

³⁵ <https://www.bloomberg.com/news/articles/2023-10-10/imf-warns-of-inflation-s-tenacity-weaker-global-growth-in-2024>

GDP Forecast

	2023	Change vs prior forecast	2024	Change vs prior forecast
World	3.0%	0.0PP	2.9%	-0.1PP
US	2.1	+0.3	1.5	+0.5
Euro area	0.7	-0.2	1.2	-0.3
Germany	-0.5	-0.2	0.9	-0.4
France	1.0	+0.2	1.3	0.0
Italy	0.7	-0.4	0.7	-0.2
UK	0.5	+0.1	0.6	-0.4
Japan	2.0	+0.6	1.0	0.0
China	5.0	-0.2	4.2	-0.3
India	6.3	+0.2	6.3	0.0
Russia	2.2	+0.7	1.1	-0.2

For Europe on the other hand, further de-escalation of geographical tensions and normalization of energy and food could be depicted soon as deceleration of inflation even more. The sovereign bonds that have been issued recently may put US in a more favorable position as the choice for investors, in the context of their rates – having also the feature of the global reserve currency, but the GDP lift needed in the next decade does not have a clear path (and will probably cause a larger issue down the line³⁶), and the growth bet is on AI investment³⁷, energy sector innovations, and boosting a low PMI by brain-gain from developing countries. All the while tensions with the US-China Chip war³⁸ that is threatening to further disrupt the supply chain for the technology manufacturing sector that has the potential to fragment the global economy in geopolitical blocs. Europe in the context of manufacturing semiconductors is the weakest link³⁹ after Taiwan, China, Japan, S. Korea, and the US.

In conclusion, rethinking the use of quantitative easing it effectively swaps long-term borrowing costs for short-term ones, but what is a good deal at low interest rates becomes a costly nightmare for the taxpayer when the rates hike. During a (deflationary) banking crisis it would be great help to inject liquidity in the market, but its long-term

³⁶ <https://www.bloomberg.com/opinion/articles/2023-10-09/worst-bond-collapse-in-150-years-caused-by-unintended-consequences>

³⁷ <https://www.bloomberg.com/opinion/articles/2022-09-09/artificial-intelligence-will-be-a-great-equalizer>

³⁸ <https://www.bloomberg.com/news/newsletters/2023-09-05/supply-chain-latest-us-china-economic-and-tech-battles>

<https://www.ft.com/content/3bab2b03-0cd9-4e91-86ab-dcda499fb231>

³⁹ <https://www.bloomberg.com/news/newsletters/2022-07-05/the-missing-piece-in-europe-s-chip-dreams>

use has shown that it distorts financial markets with the sheer volume of excess money, like the cryptocurrency emerging market or the blowup of SVB. And unwinding the balance sheets through tightening can cause turbulence that can send a nation into a recession, therefore when and how broad banks use such a tool is under close inspection. Lastly, fiscal and monetary policy working against each other is also of concern since governments have an incentive to stay into office and they could jeopardize the work the central bank is trying to do to tame inflation.

Are we heading towards a global recession? Textbook Recession is the business cycle contraction when there is general decline of economic activity, but how it is measured is important. The ECB defines a recession as “a significant decline in the level of economic activity, spread across the economy of the Euro Area, usually visible in two or more consecutive quarters of negative growth in GDP, employment and other measures of aggregate economic activity for the Euro Area as a whole.”, where in the US the National Bureau of Economic Research looks beyond GDP growth at six indicators⁴⁰ to determine accordingly if a recession is looming. These indicators ([Appendix A](#)) although showing a sluggish US economy trying to recover, they do not point towards a recession, but there are concerns⁴¹, in part of unemployment, soaring public debt as a ratio to GDP across the world, and other economies outside US that have been weakened, that it's not out of the question. The IMF predicted⁴² in the first quarters of 2023 slow recovery, and is still in line with that slow and steady⁴³ take – with global growth prediction for the next year at 2.9% and expecting core inflation to decline gradually.

⁴⁰ <https://www.bloomberg.com/news/articles/2022-08-01/here-s-what-the-six-key-official-indicators-of-us-recession-show>

<https://www.bloomberg.com/opinion/articles/2022-07-15/are-we-in-a-recession-in-2022-it-s-still-an-economic-judgment-call>

⁴¹ <https://www.bloomberg.com/news/articles/2023-10-01/6-reasons-why-a-us-recession-is-likely-and-coming-soon>

⁴² <https://www.imf.org/en/Publications/WEO/Issues/2023/04/11/world-economic-outlook-april-2023>,

A challenging Outlook and executive summaries

⁴³ <https://www.imf.org/en/Publications/WEO/Issues/2023/10/10/world-economic-outlook-october-2023>,

Outlook: Stable but Slow and executive summaries

Chapter 2: Central Banks' Supervisory Role in Safeguarding the Financial System

Central banks play a pivotal role in maintaining financial stability and their influence extends far beyond the mere management of monetary policy. Ensuring the smooth functioning of a nation's (or a union's) financial system although not the fundamental responsibility of CBs – it is a reasonable deduction for the work they do. Needless to say when the banking sector is impaired, monetary policy is unlikely to have its desired effect. The question is not if but how they should do it. Central Banks may steer the economy towards stability and growth by

- Acting as crisis managers, taking on the role of lenders of last resort, in an acute economic recession or financial meltdown. The inability to provide in time a critical backstop, as we learned the hard way during the 2008 financial meltdown, may deepen and lengthen a crisis. By injecting much needed liquidity at the right time, by any unconventional method necessary, may mitigate the effects of the economic downturn.
- Affecting financial stability through their regular monetary policy decisions, considering always that its impact is blunter than refined for market bubble prevention, and this goal should be tackled with a mix of financial regulation (assuming that macroprudential and monetary policy are working in the same direction) to avert a cost of intervention that may impact other parts of the economy.
- Finally they may act, to an extent, as prudential supervisors themselves. It is a given that central banks have a role to play in an acute crisis but is controversial⁴⁴ whether they should be responsible for prudential supervision as well. For the European union and ECB since 2014 the Single Supervisory Mechanism has taken on responsibilities for banking supervision, a quickly implemented setup made under an ongoing crisis (the Great Recession).

Whether they have a dominant supervision part or not, what is relevant is that there should be close cooperation between Central Banks and supervisors to achieve monetary and financial stability. They oversee and regulate the banking sector to ensure that it operates prudently and transparently, reducing the risk of financial contagion. In essence, central banks act as the guardians of the financial system, wielding their authority to maintain stability and confidence in the economy, which is essential for sustained economic growth and prosperity.

⁴⁴ Goodhart, Charles and Dirk Schoenmaker (1995), “Should the Functions of Monetary Policy and Banking Supervision Be Separated?”, *Oxford Economic Papers*, Vol. 47, No. 4, pp. 539-560.
Barth, James, Luis Dopico, Daniel Nolle, and James Wilcox (2002), “Bank Safety and Soundness and the Structure of Bank Supervision: A Cross-Country Analysis”, *International Review of Finance*, Vol. 3, No. 3-4, pp. 163-188.

Supervision and Regulation of the Banking System

The European Banking Union

The Banking Union initiative commenced in 2012 within the Euro Area Member States, allowing non-Euro Area Member States to join if they wished so. Its primary goal is to standardize the oversight, resolution, and deposit guarantee schemes for all participating Member States in the Banking Union.

The first pillar of the Banking Union, known as the Single Supervisory Mechanism (SSM⁴⁵), is comprised of the European Central Bank and national prudential supervisory authorities. The ECB took on direct supervisory responsibilities for significant credit institutions in participating Member States in November 2014. This supranational supervisory body, that has a monopoly at issuing licenses for banks, has as its main objective to ensure consistent banking standards and monitor the health of retail banks and institutions. As banks must comply to the rules set by the SSM, assessing their financial health, and addressing issues early on, the SSM can require banks to hold more reserves, impose sanctions for rule violations and even withdraw bank licenses.

The second pillar, the Single Resolution Mechanism (SRM⁴⁶), consists of the Single Resolution Board (SRB) and national resolution authorities. The SRM was created as a response to the financial crisis of 2008 and its primary goal is to facilitate the orderly resolution of failing banks and banking groups with minimal impact on taxpayers and participating member states' public finances. The Bank Recovery and Resolution Directive (BRRD⁴⁷) serves as the foundation of this second pillar, providing an EU framework for governing the resolution of credit institutions and in-scope investment firms. The BRRD operates in tandem with the Single Resolution Mechanism Regulation (SRMR) to establish a harmonised EU resolution framework. The SRMR has established the SRB as a fully independent EU agency acting as the central resolution authority within the Banking Union. In short, the SRM process involves the ECB determining whether a bank is failing or likely to fail, followed by considerations for private solutions and public interest, and then the SRB implements a resolution scheme, i.e. selecting the resolution tools or even in times of crisis the Single Resolution Fund (SRF⁴⁸).

The third pillar of the Banking Union encompasses the Deposit Guarantee Scheme Directive⁴⁹, and potentially something more than guidelines, a fully-fledged European deposit insurance scheme⁵⁰ in the future. The main purpose of this pillar is to safeguard bank deposits and provide a safety net for depositors (usually a specified amount) in case of a bank failure (insolvency).

⁴⁵ <https://www.bankingsupervision.europa.eu/about/thessm/html/index.en.html>

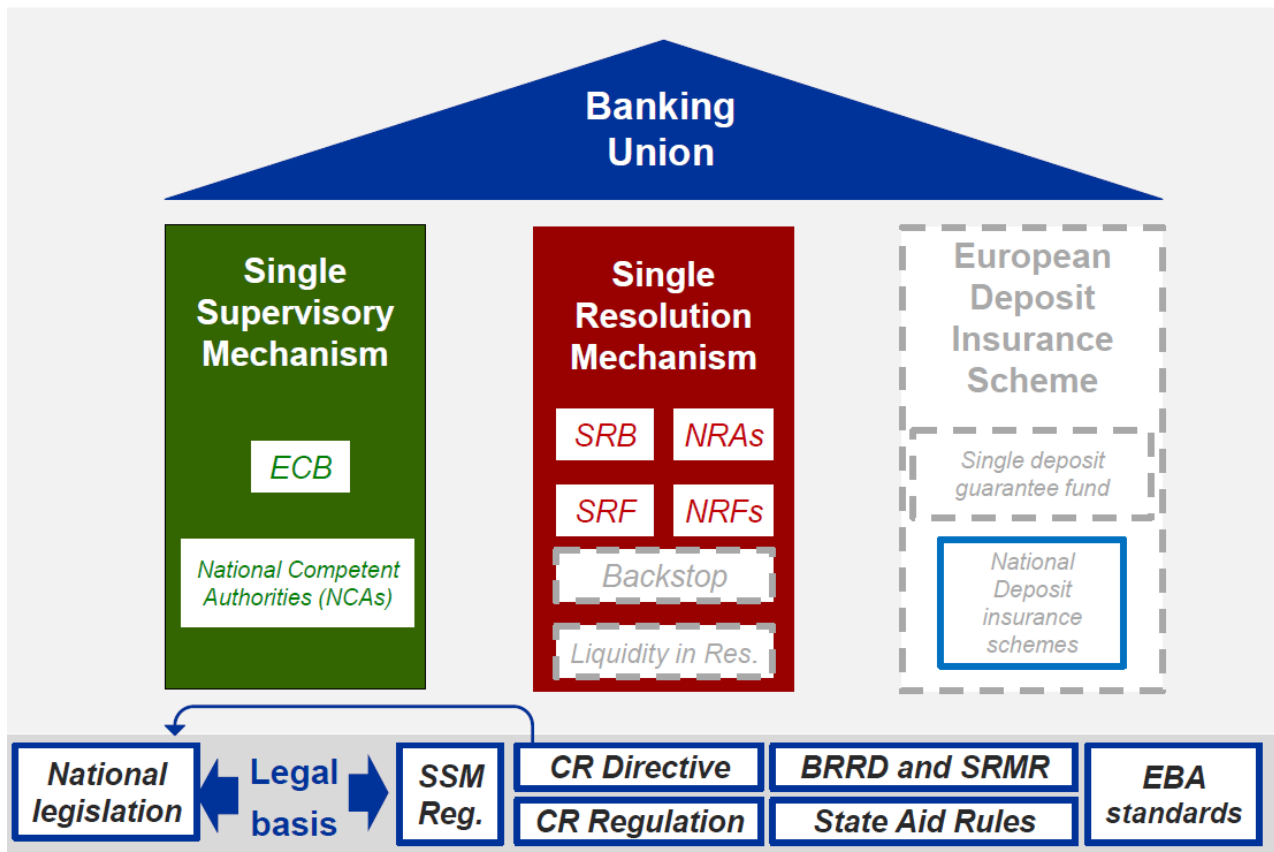
⁴⁶ https://finance.ec.europa.eu/banking/banking-union/single-resolution-mechanism_en

⁴⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0059&from=EN>

⁴⁸ <https://www.srb.europa.eu/en/content/single-resolution-fund>

⁴⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0049&from=EN>

⁵⁰ https://finance.ec.europa.eu/banking/banking-union/european-deposit-insurance-scheme_en



The European Banking Union⁵¹

The dynamic⁵² between SSM and SRB is of critical importance, the need for enhanced transparency, responsiveness, and engagement between these institutions could improve the financial landscape. Transparency and making information readily available for scrutiny between supervisory and resolution authorities (via Memoranda of Understanding), and interaction with the legislative body (European Parliament) for substantive issues such as the response to the COVID-19 crisis, completion of banking union, climate change, fintech issues, competition in banking services and more, would harmonize their justifications and actions.

Basel Accords

Another component of Banking supervision is Basel. Basel refers to the Basel Committee on Banking Supervision (BCBS), an international forum for central banks and supervisory authorities that was established by the central bank governors of the G-10 in 1974. The large fluctuations in the prices of financial instruments that appeared in the 1980s had significant effects on the market value of banks' capital and thus it became necessary to have an internationally accepted framework for capital adequacy aimed at strengthening the capital base and financial stability. The committee's primary objective is to enhance financial stability by improving the quality and effectiveness of banking supervision worldwide. Basel has been instrumental in developing global regulatory standards for banks, commonly known as the Basel Accords. Note that the

⁵¹ How real is Europe's banking union?, Ignazio Angeloni, April 2018, www.bankingsupervision.europa.eu

⁵² SSM and the SRB accountability at European level: room for improvements? René Smits (2020)

Basel Accords are non-binding international treaties, and rather serve as recommendations to be adopted. Many countries have incorporated Basel standards into their domestic regulatory frameworks, and adherence to these standards is often a condition for accessing international financial markets.

In short, Basel Committee on Banking Supervision (BCBS') main activities⁵³ revolve around

- Exchanging information on banking sector developments and financial markets to identify global risks
- Addressing regulatory and supervisory gaps to mitigate risks to financial stability
- Sharing supervisory issues, approaches, and techniques to enhance cross-border cooperation.
- Establishing and promoting global prudential standards, guidelines, and sound practices for bank regulation and supervision
- Monitoring the implementation of BCBS standards globally for consistency and effectiveness, and consulting with non-member central banks and supervisory authorities for guideline promotion

The First Basel Accord⁵⁴, Basel I (1988), focused on establishing minimum capital requirements for banks. It introduced a standardized approach to assess credit risk and assigned specific risk weights to various categories of assets. The key metric was the Capital Adequacy Ratio (CAR)⁵⁵, requiring banks to maintain capital percentage of their risk-weighted assets. The first accord set the minimum ratio of capital to RWA to 8%.

The Second accord, Basel II⁵⁶ (2004) aimed to improve upon Basel I by introducing more risk-sensitive capital requirements. It provided a framework for assessing credit, market, and operational risks. Basel II suggests three pillars,

Pillar I - Minimum Capital Requirements, but with more sophisticated risk assessments

Pillar II - An enhanced Supervisory review process of institutions, assessing the adequacy of funds and risk management practices tailored to individual banks

Pillar III - Disclosure obligations to strengthen market transparency and discipline by providing market participants with the possibility to compare both the risk management policy, the capital and organizational adequacy of credit institutions, thus providing an incentive for their improvement, and of the methods and practices applied by the supervisory authorities

⁵³ <https://www.bis.org/bcbs/charter.htm>

⁵⁴ Bank for International Settlements, <https://www.bis.org/bcbs/history.htm>

⁵⁵ CAR = (Tier 1 Capital + Tier 2 Capital)/Risk-weighted assets, where Tier 1 is the equity capital and disclosed reserves, and Tier 2 capital is other types of supplementary capital, and $RWA = \sum_i (\text{Asset } i \times \text{RiskWeight } i)$

⁵⁶ Bank for International Settlements, <https://www.bis.org/publ/bcbs128.pdf>

The Third accord Basel III (2010) was developed in response to the global financial crisis⁵⁷ of 2008 to address weaknesses in the banking system revealed during that period. The key takeaways are

Rising minimum capital requirements to enhance the resilience of banks

Introduced buffers, like the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) to ensure banks maintain sufficient liquidity to withstand short-term and long-term disruptions

Introduced the leverage ratio to limit excessive leverage, as many banks were highly leveraged prior to the crash of 2008 which only worsened the situation

Stricter requirements for systemically important banks, such as heightened capacity for absorbing losses and reinforced mechanisms for the supervision and resolution of cross-border operations

Strengthened requirements for counterparty credit and market risk frameworks to avert a domino effect in case a party defaulted.

The committee completed revisions of Basel III in 2017, releasing updated guidelines for determining capital requirements related to credit risk, credit valuation adjustment risk, and operational risk. One of the objectives of the post-crisis accord was to address the issue of banks' self-reported risk-weighted capital ratios, since there was variability between banks on how they perceived their credit exposure and financial health.

The latest accord, Basel IV (2023), also referred as finalized Basel III or 3.1, building on the accords before it proposes⁵⁸ to further raise capital requirements (which decreases profitability from the free capital binding). Since this accord will take effect in some years and tweaks should be still undergoing it is not certain at what economic landscape it will take effect yet.

The relationship with the European Commission

Inside Europe, the sole responsible for rulemaking is the European Commission⁵⁹ as the executive arm of the EU. It proposes legislation, coordinates policy, and ensures implementation of regulations across EU member states. Since the BCBS has no legislative authority and only provides guidelines, the Commission plays a crucial role in further implementing Basel regulatory frameworks, like the Capital Requirements Regulation (CRR 2013) and Capital Requirements Directive (CRD 2013)⁶⁰. The Commission works closely with the ECB, national supervisory authorities and other

⁵⁷ Basel Committee on Banking Supervision, 2010, Base III: A global regulatory framework for more resilient banks and banking system

⁵⁸ <https://www.moodysanalytics.com/articles/2023/basel-iv-and-the-butterfly-effect-a-lesson-in-unintended-consequences>

⁵⁹ https://european-union.europa.eu/institutions-law-budget/institutions-and-bodies/search-all-eu-institutions-and-bodies/european-commission_en

⁶⁰ EU law that aims to decrease the likelihood that banks go insolvent implementing Basel standards, CRR is for Pillar 1&3 where CRD regards to Pillar 2 of Basel III

stakeholders to ensure a harmonized approach to banking regulation and supervision within the EU.

In particular, the Commission has set priorities⁶¹ for the digital age that the ECB must adhere to

- The Commission emphasizes the importance of the digital transformation of the European financial sector. This includes the integration of financial technology (“fintech”) and innovative solutions to enhance efficiency and services
- There is a focus on the need for further defragmentation on digital finance legal and regulatory matters. EU Member states do not share the same frameworks nor the same playing field for their fintech companies and customers
- The European Commission aims to foster a well-regulated, data-driven financial sector. Data, both supervisory and publicly available, provide useful insight with the potential of making more sophisticated decisions
- It also places strong emphasis on enhancing digital operational resilience frameworks for financial services. With a focus on cybersecurity and robust frameworks that will take into account operational risks, ensuring the continuity of critical financial operations

⁶¹ ESCB/European banking supervision response to the European Commission’s public consultation on a new digital finance strategy for Europe/FinTech action plan, August 2020

Responsibility for Financial Stability

Financial stability, a term controversial and CBs ensuring it even more so, refers to the condition in which a country's financial system operates smoothly and efficiently without disruptions or crises. It implies that the financial system can withstand shocks and maintain the overall health of the economy. Central banks play a natural role in maintaining financial stability by providing essential functions such as ensuring the smooth functioning of payment systems, preventing and resolving financial crises, and maintaining a balance between their monetary policy and financial objectives. Achieving financial stability involves measures such as market discipline, risk management, banking supervision, and having the ability to distinguish between illiquid and insolvent institutions during crises, and acting accordingly. It also involves addressing issues related to the role of central banks and the level of risk they are willing to take in their market activities. Financial stability is distinct from monetary stability, as it encompasses a broader range of functions and responsibilities for central banks.

Systemic financial risks refer to risks that have the potential to trigger a widespread and interconnected crisis within the financial system. These risks are not limited to individual institutions but can quickly spread throughout the entire financial sector. They often result from vulnerabilities, panic, or failures in one part of the financial system, which then propagate to affect other institutions and markets. These risks are characterized by their ability to disrupt the stability of the overall financial system, potentially leading to a domino effect where one institution's problems lead to problems for others, creating a systemic crisis.

Risks that may disrupt economic activities and deteriorate the financial system's health usually are

- A liquidity risk, especially during a financial crisis there can be a sudden and severe shortage of liquidity in the markets. This can result in a panic, where everyone seeks to withdraw their funds simultaneously. The inability to access sufficient liquidity can lead to financial institutions' insolvency.
- A risk of contagion, when one (or more) financial institution faces a crisis or failure it can trigger a chain reaction, causing other banks and institutions to also face difficulties. This contagion effect can quickly spread throughout the financial system. Of course, the proactive supervision⁶² and risk resolution of commercial banks is more important than last-minute bailouts.
- Absence and inadequacy on market discipline, the inability to distinguish between illiquid and insolvent institutions during a crisis may prove fatal and cause a chain reaction. Investors would panic and withdraw their investments from even fundamentally sound institutions - bank runs can kneel even the healthiest of institutions exacerbating the crisis.
- Inadequate banking supervision and regulation can lead to vulnerabilities building up in the financial system without detection. Regulatory and supervisory authorities may not be able to respond effectively to emerging risks.
- Central banks can face risks to their balance sheets when they intervene in financial markets to ensure stability. This risk can result from the central bank's involvement in purchasing assets or providing liquidity to troubled institutions

⁶² <https://www.bloomberg.com/news/articles/2023-03-17/fed-alarms-at-svb-began-more-than-year-ago-as-examiners-changed#xj4y7vzkg>

that could even be insolvent. In this context and especially in times of crisis⁶³ Bagehot's dictum after more than a century may provide a useful transparent framework for central bank guidance - we should reconsider the restrictions of lending to solvent firms freely, only against good collateral, and only at penalty rates firstly to discourage reckless borrowing and to ensure that only solvent institutions seek assistance. Of course, during a crisis, it should be taken into account that the solvency of a firm may be tied to the central bank's actions and any collateral may be depressed by liquidity and thus the penalty rates should be in accord.

- The mispricing of assets, particularly during periods of speculative bubbles, can threaten financial stability. When asset prices become significantly disconnected from their underlying fundamentals, it can lead to market volatility and eventual corrections that disrupt the stability of the financial system.

Garry J. Schinasi (2003) argues⁶⁴ that central banks have a natural role in ensuring financial stability. Other than traditional monetary policy, CBs provide finality of payment by issuing money, they oversee payments and address systemic risk concerns, how could their role as a transmission mechanism for monetary policy be delinked by stability. Instability can lead to monetary crisis and money supply collapse, at which point it would have to intervene. The case for ECB and FED though differs, in the context of their mandate to ensure financial stability. The ECB's role in prudential supervision and financial stability is more limited. The Federal Reserve's responsibilities include conducting monetary policy, regulating and supervising financial institutions, and addressing systemic risks. This broader mandate allows the FED to play a more active role in maintaining financial stability. The case for this difference, especially after the Great Recession of 2008, is that the FED encompassed a broader role in supervision where in Europe that the European Union and the Eurozone exists supervision is also partly delegated to national authorities. This "extra layer" as a result may disconnect ECB policies and all the institutions under it, where the FED's direct intervention may prove crucial in times of turmoil.

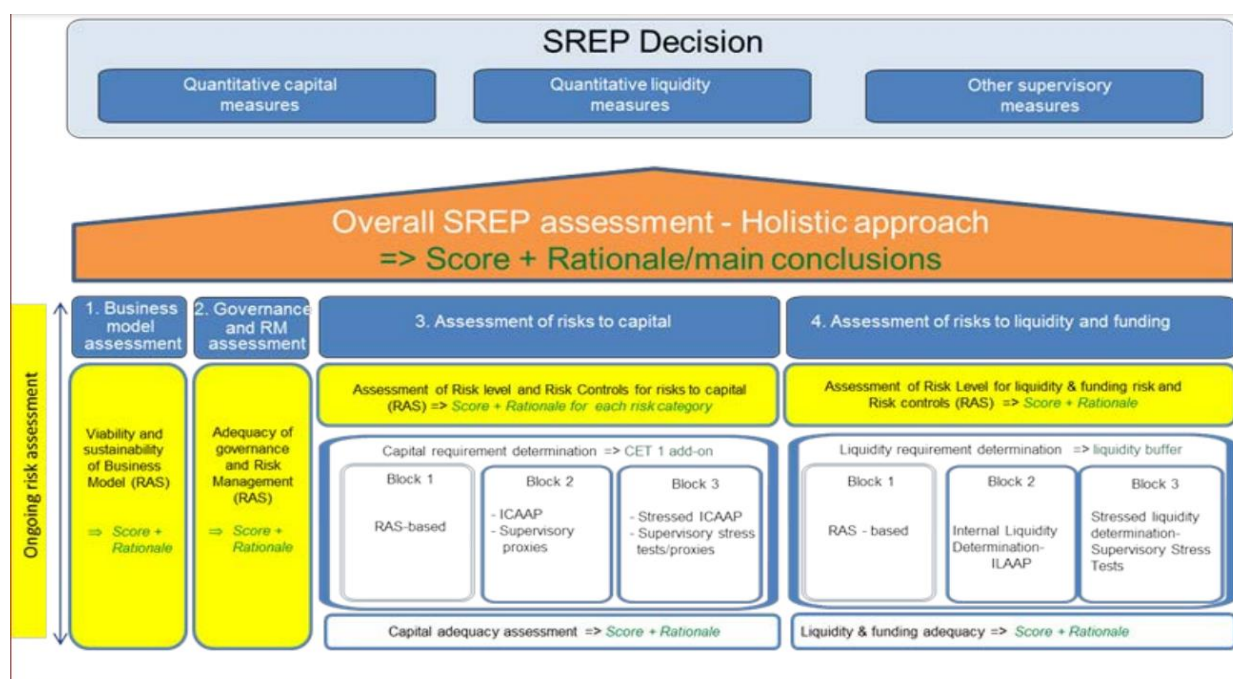
⁶³ <https://www.federalreserve.gov/newsevents/speech/madigan20090821a.htm>

⁶⁴ Responsibility of Central Banks for Stability in Financial Markets, Garry J. Schinasi (2003)

Priorities

The European economic landscape has had its share of turmoil and shocks in the last two decades. The Great Recession, followed by a period of slow recovery, hit by the Pandemic crisis, and now giving way to the post-Pandemic era where uncertainty in the financial markets does not show to give in. The role of monetary policy, as prevalent as ever, sets the course and the supervisory mechanisms, along with fiscal and regulatory measures, make sure that the goals are met. The SSM, focused on supervising and ensuring the stability of the European banking sector, outlines yearly key challenges and risks and their potential impact on the economy and financial markets.

Followed by the disruption of the supply chains in the COVID-19 period, geopolitical tensions inside the borders of Europe brought by additional inflation pressures (other than the fiscal and monetary support i.e. QE to a supply-constrained economy) on the energy and agricultural field⁶⁵, and the unrest in the middle east may spell even more inflation pressures⁶⁶ in the year(s) to come. In order to proact and not just react the Supervisory mechanism must adapt and set its course for supervised banks assessing risks and vulnerabilities, updating its Supervisory Review and Evaluation Process (SREP)⁶⁷ decision.



⁶⁵ <https://www.ecb.europa.eu/press/key/date/2023/html/ecb.sp230707~8f8f9debc6.en.html>,

Chart 4: Contributions of components to euro area headline HICP inflation

⁶⁶ <https://www.bloomberg.com/opinion/articles/2023-11-06/israel-hamas-latest-middle-east-wars-spur-us-inflation-and-recession>

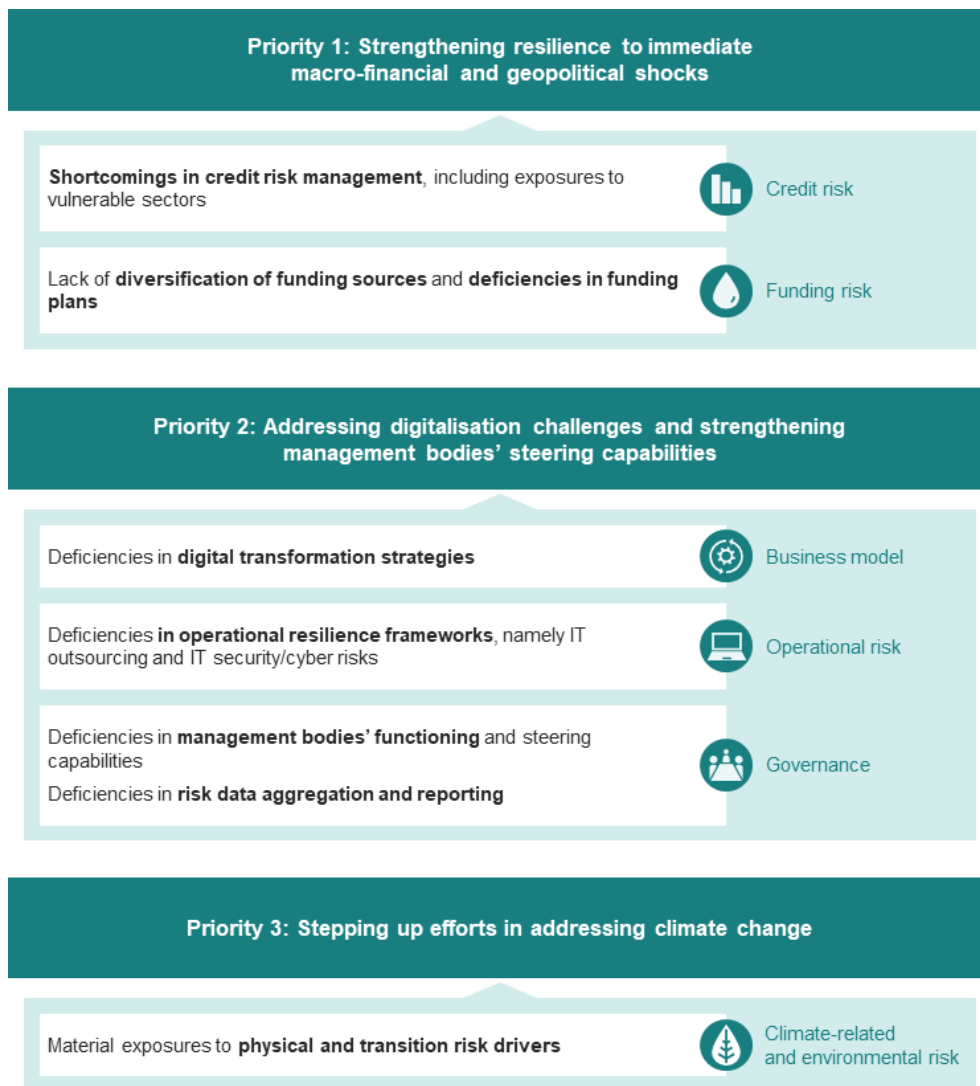
⁶⁷ The SREP decision is the annual outcome of the European Central Bank's train of thought regarding capital and liquidity requirements for commercial banks based on its assessment of their risk profile. In more detail, the supervised banks' risks assessment and quantification of prudential requirements undertaken through a single methodology, taking into account various factors, including the institution's risk management practices, governance, capital adequacy, and the economic environment.

For the period 2023-2025 these supervisory priorities and challenges are categorized as such⁶⁹

- I. **Strengthening resilience to immediate macro-financial and geopolitical shocks**
This involves addressing vulnerabilities (structural deficiencies) in credit risk management (loan origination, risk mitigation and monitoring), particularly in sectors sensitive to the current economic environment, and ensuring that banks have sound capital, liquidity, and funding plans.
- II. **Addressing digitalization challenges and strengthening management bodies' steering capabilities.** The SSM firstly emphasizes the importance of banks adapting to digital transformation, addressing deficiencies in their business model and digital strategies. Secondly it addresses operational risks inspecting closely institutions' outsourcing arrangements for IT or otherwise unmitigated risks. Lastly SSM will be addressing institutional governance to effectively assess their strategy to counter deficiencies in management bodies and challenge issues in the risk data aggregation and reporting process in banks.
- III. **Stepping up efforts in addressing climate change.** Acknowledging the urgency of climate-related challenges, the SSM aims to incorporate climate related and environmental risks (C&E) into banks' business strategies, governance, and risk management frameworks. This includes monitoring banks' alignment with regulatory expectations regarding climate risks.

⁶⁸ <https://www.bankingsupervision.europa.eu/about/ssmexplained/html/srep.en.html>

⁶⁹ https://www.bankingsupervision.europa.eu/banking/priorities/html/ssm.supervisory_priorities202212~3a1e609cf8.en.html



Source ECB: *Supervisory priorities for 2023-2025, addressing identified vulnerabilities in banks*

What these decisions mean for supervised institutions and how should they respond? And what happens if they cannot meet the expectations?

On Priority 1, institutions mostly have to keep addressing identified gaps, expect upcoming reviews and inspections on requirements they have to meet, assess the adequacy of frameworks especially credit risk management frameworks for portfolios in vulnerable sectors, and scrutinize (and possibly redevelop) their liquidity and funding plans.

On Priority 2, institutions have to meet supervisory expectations on digital transformation strategies, pro-actively identify and manage any weaknesses regarding their operational frameworks and remediate any IT cyber security risks, and finally meet expectations regarding bank’s governance arrangements and risk data aggregation and risk reporting principles.

On Priority 3, with ESG factors becoming more prevalent than ever as we see the impact of climate change, institutions must adhere to the principles set by the ECB. Climate change translates into risk rising for material assets since the likelihood and severity of physical risk losses increases⁷⁰. In the context of energy market disruption the risk also rises, therefore banks must run stress tests and prove their readiness on the matter.

Non-compliance with the SSM priorities and supervision would spell trouble for the institution, since the SSM can impose fines, request additional reporting and even restrict business activities. For example, not fulfilling Priority 1 capital and liquidity requirements would mean that corrective actions will be requested, and further inability to provide would be met with financial penalties and even harm the institution's reputational risk and negatively impact its market perception which will be translated in stock price⁷¹ and overall market devaluation.

Risk

What is Risk for financial institutions? Risk is analyzed in two categories, systematic and unsystematic⁷². Systematic risks are referred as general-market risks⁷³ and are grouped⁷⁴ in the following types, Credit risk, Operational risk, Market risk, Liquidity risk and Reputation risk. Where unsystematic risk is referred as a specific risk that does not have a wide market impact. The main antidote to systemic risks is strategic asset allocation - distributing investments among different asset classes (e.g., stocks, bonds, real estate) based on an investor's risk tolerance, financial goals, and market conditions.

Credit risk is defined as the risk of losses due to default of the bank's creditors. Credit risk includes three different risk components: default risk, exposure risk and recovery risk. Default risk refers to the possibility that the bank's creditors will default on their contractual obligations, which usually causes the terms of the contract to be renegotiated, while exposure risk refers to the total amount subject to credit risk. Recovery risk refers to the bank's percentage of satisfaction with the total amount exposed to risk in the event of default by the creditor. Credit risks also includes sovereign risk, which is linked to the inability to repay the public debt, and counterparty risk, which is defined as the default of obligations, in general, by the counterparty.

Operational risk refers to the financial loss resulting from a series of possible operational failures in terms of people risks, process risks, and technology risks. Operational risks can be classified from negligible to substantial and significant (for example risk of bankruptcy due to ineffective management).

Market risk is the risk arising from any adverse changes in economic indicators and prices, such as interest rates, exchange rates, stock and commodity prices. It is the risk of a decline in the level of the respective investment product. There are four main types of market risk: interest-rate risk, equity price risk, foreign exchange risk and commodity price risk. Interest rate risk comes from changes in the level of interest rates. Essentially,

⁷⁰ <https://www.eea.europa.eu/highlights/economic-losses-from-weather-and>

⁷¹ Although reputation was not the sole reason of the stock price devaluation <https://www.reuters.com/business/finance/credit-suisse-how-did-it-get-crisis-point-2023-03-16/>, Credit Suisse goes off piste graph of stock price

⁷² Systematic risks are undiversifiable i.e. cannot be eliminated through diversification of the portfolio, where unsystematic risks can.

⁷³ For example large changes in macroeconomic factors like inflation, policy rates and public debt to GDP ratio

⁷⁴ Crouhy, M., Galai, D., and Mark, R. (2006). The Essentials of Risk Management. New York: McGraw-Hill

it concerns the reduction in the value of an investment due to a rise in interest rates. An investment becomes less attractive if interest rates rise because of the inverse relationship that securities' prices have with interest rates. Stock price risk is the risk associated with stock price volatility. The general market risk of the shares is the risk resulting from the movements of the general level of the market indices and prices, while the specific risk of the shares refers to that part of the price volatility of shares determined by the specific characteristics of the business. Exchange rate risk refers to the risk of an unforeseeable change in exchange rates for portfolio items denominated in foreign currency. Commodity price risk is significantly different from interest rate risk and exchange rate risk, since most commodities are traded in markets where the concentration of supply in the hands of a few suppliers can magnify price volatility. As a result, commodity prices generally have higher volatility and larger price discontinuities than most tradable securities.

Liquidity risk arises because revenues and expenses are not synchronized. It is a result of financial institutions' inability to manage unplanned reductions or changes in funding sources and the inability to recognize or cope with changes in market conditions that affect the institution's ability to liquidate its assets quickly and with minimal loss in value. In general, liquidity risk consists of the inability to meet the overdue obligations of the banking organization, the inability to raise funds from the banking organization which may be due to the lack of liquidity in the market or the inability of the financial institution to access the capital markets and the inability to liquidate bank's assets within a certain period of time. Liquidity risk includes both funding and asset liquidity risk. We define liquidity funding risk as the probability that, during a certain period, the bank will not be able to settle its obligations promptly. Asset liquidity risk is the risk when an institution is unable to execute a transaction at the prevailing market price because there is temporarily no demand (a demand shortage) on the market.

Finally, there is Reputation risk which is the risk of gaining an infamous reputation that will make stakeholders (mainly customers, investors and suppliers) feel uneasy conducting business with the institute. An example of this risk is when an institute has the reputation of money laundering or terrorism funding cases (ML/TF cases).

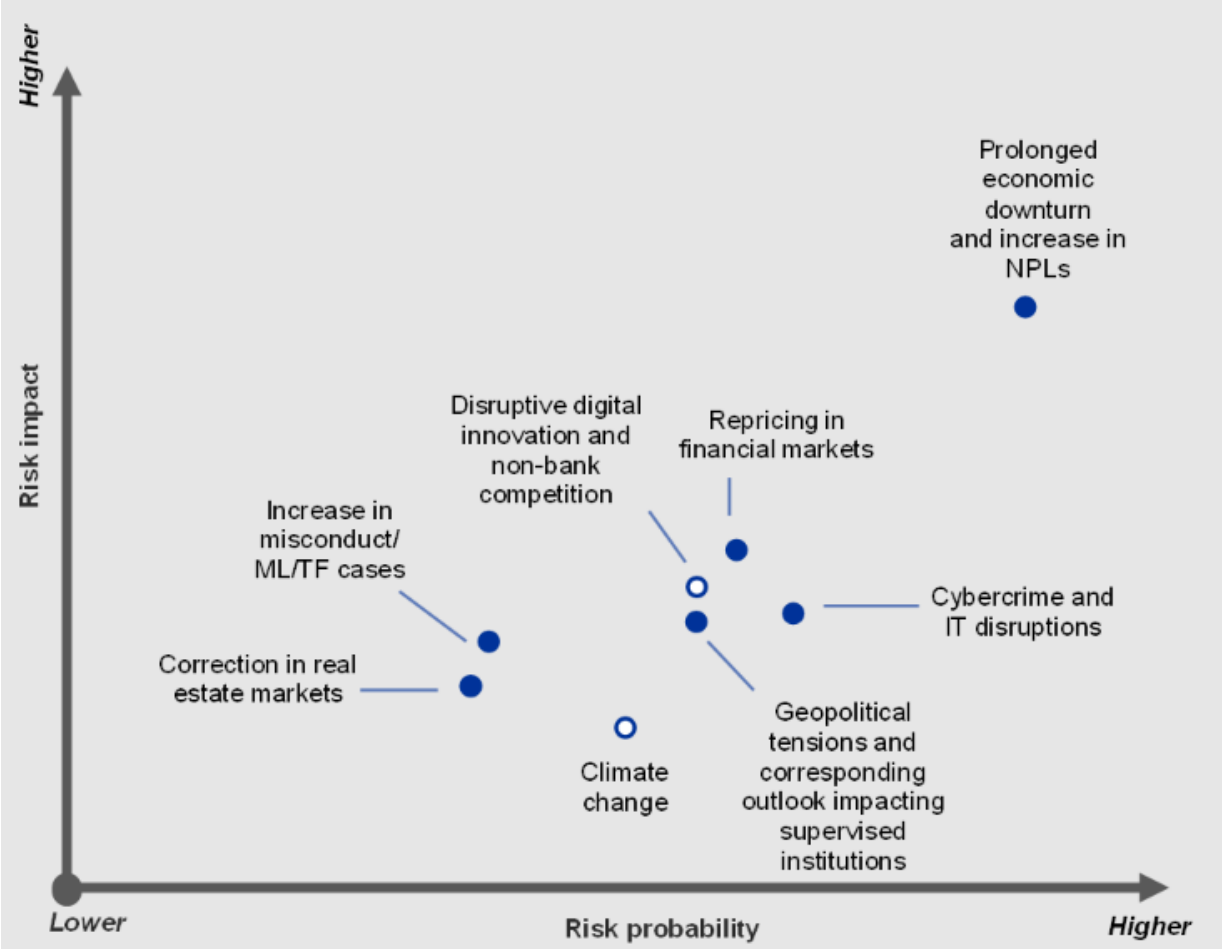
Other risks can also be identified but will not be further discussed, like the Business risk which is the risk tied to the specific activities of the business (e.g. technology, innovation), and Legal and Regulatory risks.

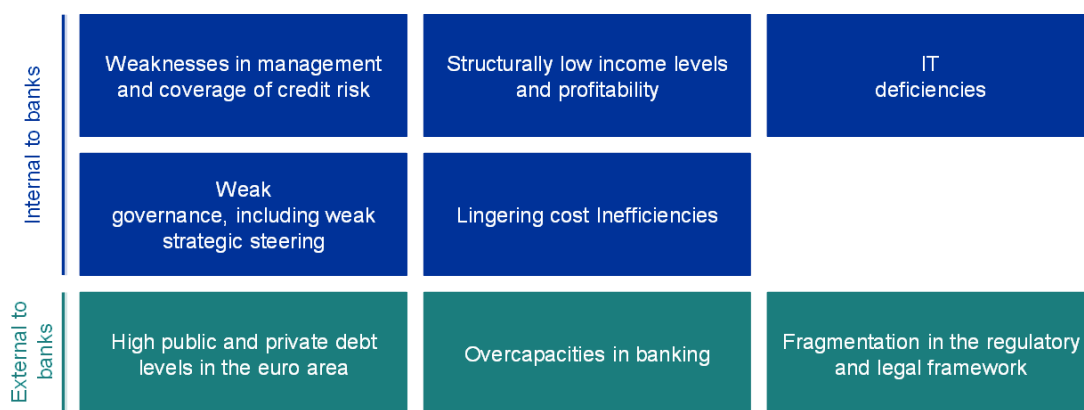
Risk Mapping

The COVID-19 pandemic has profoundly affected the global economy and has triggered an unprecedented fall in euro area economic activity because of the lockdown measures and the disruption of the supply chain. Despite the challenges, the banking sector has played a crucial role in responding to the crisis, supporting the real economy by providing credit and meeting liquidity needs. In close cooperation with the national competent authorities (NCAs⁷⁵), ECB Banking Supervision has assessed the main challenges expected to affect supervised institutions over the next years. The SSM

⁷⁵ NCAs play a crucial role in the regulation and supervision of financial institutions within their respective countries. They collaborate with European Bodies, enforce regulatory standards, run risk assessment and monitoring for the institutions in their jurisdiction, and their drive is financial stability and consumer protection.

provided a Risk Map valuation of vulnerabilities in 2021, foreseeing the post-pandemic era and which risks would be more prevalent in the aftermath of the pandemic crisis.





SSM Risk Map and table of vulnerabilities for 2021⁷⁶

Dots with a white fill denote risk drivers that are expected to increase strongly over the next five years;

This mapping is not an exhaustive list of all risks for financial risks and depicts key risk drivers.

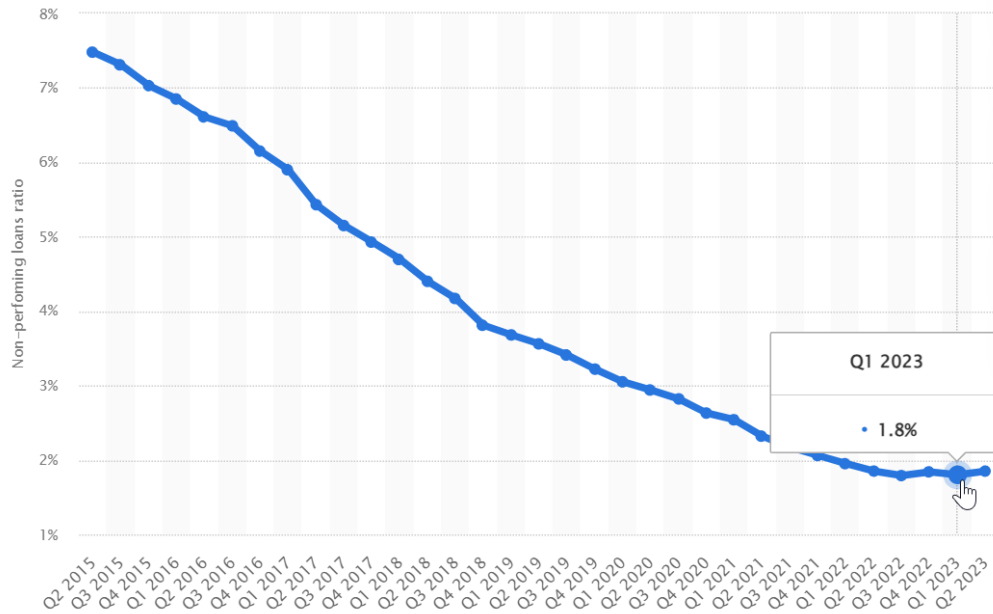
Key takeaways for these drivers in 2023

- Prolonged economic downturn and increase in Non-Performing Loans (NPLs⁷⁷): With the disruption that came of the pandemic crisis and the inflationary pressures after QE, because⁷⁸ of capital and liquidity buffers the banking sector in EU looks resilient with the NPL ratio being low. This metric differs per Member State with their economies being more sensitive in macroeconomic changes.
- Geopolitical tensions: With the heightened tensions in northern Europe since 2022, the impact on economic activities is present due to sanctions and inflationary pressures. Developments in energy markets significantly influenced macroeconomic trends in the EU and continue to exert a substantial impact on risks within financial markets. The resulting energy market volatility poses a notable challenge to financial stability. The wholesale prices of gas exhibited remarkable fluctuations, affecting not only the wholesale gas market but also exerting an impact on retail gas and electricity prices.

⁷⁶ <https://www.bankingsupervision.europa.eu/ecb/pub/ra/html/ssm.ra2021~edbbea1f8f.en.html>

⁷⁷ These are loans on which the borrower has failed to make scheduled payments for a specified period, typically 90 days or more. Non-performing loans are considered a financial risk for banks as they can impact profitability and the overall stability of the banking sector.

⁷⁸ European Financial Stability and Integration Review 2023, European Commission, Chapter 2.3 Challenges for EU Banks



Non-performing loans and advances (NPL) as a share of gross loans in the euro area from 2nd quarter 2015 to 2nd quarter 2023⁷⁹

- Climate change as a risk cannot be ignored and it will manifest strongly⁸⁰ in the years to come as other risk categories, e.g. credit, market, reputation. In more detail⁸¹, research has shown that the vulnerability or resilience of a nation to climate change is correlated positively with its creditworthiness and cost of borrowing, as well as its 10-year government bond movement.
- Disruptive digital innovation and non-bank competition: Distributed ledger and blockchain technology is not something new, it exists for over a decade and although it was received as an alternative outside the banking system and used as an investment vehicle by decentralized “niche” communities, it has been well documented and initiatives like CBDC are in pilot mode. Therefore there is not an excuse to leave unsupervised institutions that work so closely to the financial system and have a direct impact on its health. With the collapse scandal of FTX⁸² in late 2022, the lack of supervision became clear, and systemic banks that were in the tech start-up industry or had crypto-risks were exposed to vulnerabilities that would eventually make them default.

⁷⁹ [statista.com/statistics/1122984/non-performing-bank-loans-in-europe/](https://www.statista.com/statistics/1122984/non-performing-bank-loans-in-europe/)

⁸⁰ European Financial Stability and Integration Review 2023, European Commission, Chapter 4.2 Climate change and financial stability

⁸¹ International Monetary Fund (IMF) (2020), Feeling the heat: Climate shocks and credit ratings, IMF Working Paper 2020/286, December 2020

⁸² <https://www.bankingsupervision.europa.eu/press/blog/2023/html/ssm.blog230405~03fd3d664f.en.html>

Mind the gap: we need better oversight of crypto activities

In the European Central Bank's framework for credit management, the institution plays a pivotal supervisory role in maintaining financial stability and overseeing credit risk within the Eurozone. This role is in line with its mandate to ensure efficient and safe payment systems and to contribute to the stability of the financial system. The ECB employs various tools and regulatory frameworks to monitor and manage credit risk, ensuring that banks within the Eurozone adhere to high standards of creditworthiness and risk management. Tools such as the Markets in Financial Instruments Directive (MiFID II), AnaCredit reporting, and Know Your Customer (KYC) regulations are integral to this process, each serving a specific purpose in enhancing the transparency, efficiency, and security of credit management in the banking sector. This chapter will delve into how these tools facilitate the ECB's credit management strategies and its broader role in safeguarding the financial health of the Eurozone.

KYC

KYC, or "Know Your Customer," is a regulatory⁸³ and compliance process used by banks and financial institutions to verify the identity of their clients. This process involves collecting and verifying personal information, financial history, and other relevant details. KYC is crucial for mitigating various risks, like

- Money Laundering (ML) and/or Financing Terrorism (FT) risk, by due diligence and verifying customer identities and understanding their financial behaviors banks can combat these risks (AML & CFT⁸⁴)
- Fraud and identity theft risk, again with due diligence and adequate employee training the bank can potentially identify fraudulent activities by ensuring that the customers are who they claim to be
- Credit risk, by assessing the creditworthiness of customers the bank can make informed lending decisions and reduces default risks
- Operational risk, by using streamlined processes for customer onboarding and day-to-day monitoring any operational inefficiencies can potentially be identified and root out

MiFID II

MiFID II (2018), that introduced new KYC requirements, focuses on the categorization of financial instruments under its appropriateness requirements. It clarifies the classification of various types of financial instruments, including shares, bonds, money market instruments, and other forms of securitized debt, as either complex or non-complex^{85,86}. The goal is to prevent complex products from being sold on an 'execution-only' basis to retail clients who may not fully understand the risks involved. The most

⁸³ Harmonisation KYC procedures, 4th Debt Issuance Market Contact Group meeting 27 January 2021, Gergely Koczan

⁸⁴ ECB Banking Supervision's role in Anti-Money Laundering/ Combating the Financing of Terrorism (AML/CFT), Édouard Fernandez-Bollo ECB representative to the Supervisory Board, 09/2020

⁸⁵ It also addresses other instruments like subscription rights, callable and puttable bonds, and depositary receipts, detailing how these should be treated under the framework.

⁸⁶ MiFID complex and non complex financial instruments for the purposes of the Directive's appropriateness requirements, Q&A November 2009. The predecessor of MiFID II lists most instruments with appropriate questions

protection focus is for Retail clients, since Professional clients are knowledgeable with market expertise and can assess risk, and similarly eligible counterparties (e.g. investment firms, insurance companies) need no such regulatory protection due to their expertise and scale of operations. This categorization is critical for ensuring appropriate levels of investor protection and maintaining the integrity of financial markets. As a reminder, part of puzzle's problem as witnessed in the aftermath of the great Recession was that clients would purchase instruments with high return profiles without understanding what they were and the risk they were carrying, and when the tower crumbled these toxic assets went with it.

The bank has to assess the investment profile of the client (in order to protect) before allowing him to purchase any financial instrument. The criteria to base this decision are

- The client's knowledge and investment experience
- His risk tolerance
- His ability to cope with potential losses
- His investment goals and needs
- His financial situation

And the profile type of the client can be conservative, balanced or dynamic. According to the criteria and an appropriateness test, he may be suitable or unsuitable for the investment instrument.

Overall MiFID contributes to a more secure, transparent and integrated financial market in the EU. Its upside is the enhanced investor protection into making well-informed decisions, it mandates detailed reporting and disclosure of the nature of instruments improving transparency, and it promotes market integrity and efficiency reducing the likelihood of market abuse. MiFID primarily helps with managing market risk in banking. But it also indirectly aids in managing credit risk, as it ensures that banks and financial institutions conduct thorough due diligence before extending credit or investment services to clients.

AnaCredit Reporting

AnaCredit⁸⁷⁸⁸ reporting refers to the "Analytical Credit Datasets" mandated by the European Central Bank. A project initiated by the ECB to collect detailed data on individual bank loans in the euro area, focusing on credits extended by financial institutions to businesses and individuals. The goal is to enhance the ECB's capacity for analyzing credit risk, monitoring financial stability, and managing monetary policy effectively. This granular data collection allows for a more in-depth understanding of the lending activities in the eurozone and aids in the assessment of risk and stability in the financial system, aiding in monetary policy effectiveness.

AnaCredit aids the ECB in supervising financial institutions and the granular data allows for better oversight and understanding of the banks' credit exposures, contributing to more informed and effective regulatory actions. An example of AnaCredit

⁸⁷ https://www.ecb.europa.eu/stats/ecb_statistics/co-operation_and_standards/dialogue/shared/files/banking_industry_dialogue_statistics_20180316_presentationIV.1.pdf

⁸⁸ <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op187.en.pdf>

reporting in action could be a commercial bank in the Eurozone that provides a variety of loans to businesses and individuals. Under AnaCredit this bank would be required to report detailed information on each loan, including the amount, duration, type of borrower, and collateral involved. This data would then be used by the ECB to analyze credit risks within the Eurozone's banking system, assessing potential vulnerabilities and trends in lending, such as a sudden increase in high-risk loans or sector-specific credit exposures. This information could then inform monetary policy decisions or regulatory measures for appropriate actions towards maintaining financial stability.

From a supervisory standpoint, AnaCredit manages credit risk successfully and enables regulators to analyze and assess the credit risk profiles of individual banks and the broader banking system. This detailed information allows for early detection of risk concentrations and potential vulnerabilities. On the other hand as a downside, it is a necessary cost for banks keeping up with the increased reporting burden.

Chapter 3: Opportunities and Threats

In the intricate landscape of the financial sector opportunities and threats coalesce to shape the trajectory of monetary institutions. Among the most pivotal considerations are the inherent risks that can disrupt the equilibrium of economic systems. The financial sector is particularly susceptible to multifaceted challenges, ranging from market volatility and credit risks to regulatory uncertainties. Within this milieu, central banks emerge as linchpins, wielding substantial influence in mitigating and navigating these risks. Their role extends beyond the conventional realms of monetary policy, encompassing vigilant surveillance, crisis management, and the formulation of adaptive strategies to fortify the stability of financial institutions. As custodians of economic resilience, CBs play a pivotal role in interpreting the nuances of risks, thus contributing significantly to the overall health and sustainability of the financial sector.

Assessing risk

Mitigating systemic risks in the banking sector is a complex yet imperative task, demanding proactive measures to fortify financial stability. Institutions can employ several strategic initiatives to diminish the impact of systemic risks. Diversification of assets and portfolios is a fundamental approach, as spreading investments across various sectors and geographies can mitigate concentration risk. Rigorous stress testing, where banks simulate adverse scenarios to assess their resilience, allows for preemptive identification and rectification of vulnerabilities. Enhanced regulatory frameworks and stringent oversight mechanisms further bolster risk mitigation, fostering an environment of prudential governance. Collaboration and information sharing among financial institutions and regulatory bodies also play a pivotal role in early detection and containment of potential threats. Additionally, maintaining robust liquidity buffers provides a crucial first line of defense, ensuring that banks can weather unforeseen challenges without compromising their solvency. Ultimately, a multifaceted and adaptive risk management strategy is essential for banks to navigate the intricate web of systemic risks and contribute to the overall resilience of the financial system.

The composition of a bank's loan portfolio is a pivotal element in its risk mitigation strategy. A well-diversified loan portfolio involves a judicious mix of loan types, industries, and borrower profiles. By avoiding over-concentration in a specific sector or with particular clientele⁸⁹, the bank minimizes sector-specific risks and spreads exposure across various economic segments. Furthermore, a balanced distribution of loan maturities helps mitigate interest rate risk, ensuring that the bank is not overly sensitive to fluctuations in interest rates. Rigorous credit risk assessment and continuous monitoring mechanisms are integral to maintaining a healthy loan portfolio. Regular stress testing, coupled with proactive risk management practices, enables the bank to identify vulnerabilities and adjust its lending strategies accordingly. Overall, a thoughtfully composed and diversified loan portfolio is a key component in a bank's

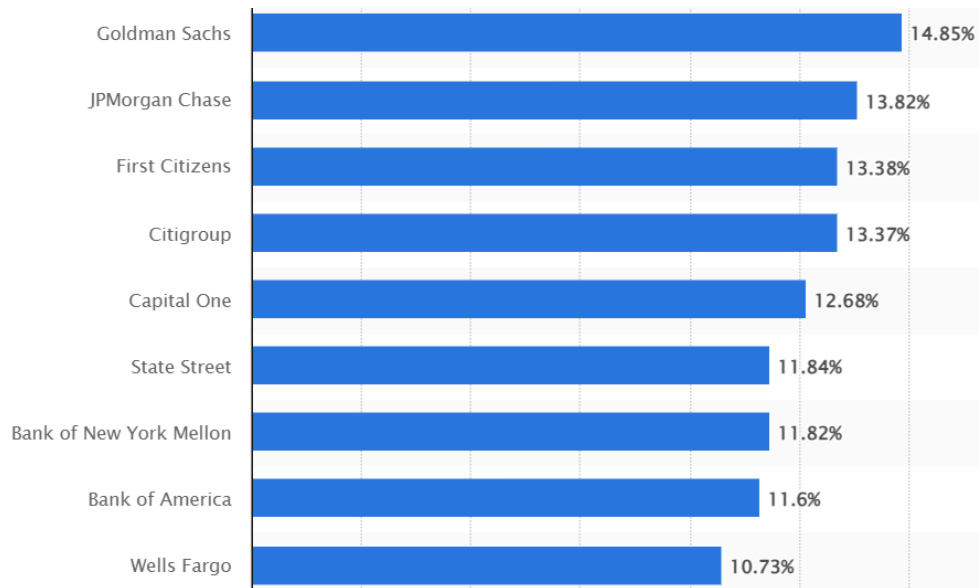
⁸⁹ <https://www.bloomberg.com/news/articles/2023-03-16/why-did-svb-fail-arrogance-and-incompetence-both-at-fault#xj4y7vzkg> “..Silicon Valley Bank’s clientele of tech startups drew down their balances as the industry struggled to raise fresh funding..” Note that this was only part of the reason of the collapse. Lack of supervision, risk mitigation, an over-concentrated asset portfolio and other reasons in parallel paint a fuller picture of the “why”

arsenal for navigating uncertainties and fortifying its resilience in a dynamic financial landscape.

Big part of the profitability of retail banking hinges on the interest rate differential between loans and deposits. In a low or zero interest rate environment, the profit potential from traditional retail banking diminishes as the spread narrows. This financial landscape may incentivize larger banks to explore more lucrative activities such as derivatives trading. Banks play dual roles in derivatives markets – acting as intermediaries in over-the-counter transactions, earning commission fees, and directly participating as end users. They use derivatives to hedge risks inherent in their operations. For instance, banks may purchase interest rate futures to shield themselves from losses due to changes in interest rates. Additionally, banks might engage in derivatives to take on risks, offering products like put options to investors seeking protection against potential price declines. Another example, Credit Default Swaps (CDS) for Mortgage-Backed Securities (MBS) serve as financial instruments designed to manage risk in the realm of housing finance. In this context, a CDS acts as a form of insurance against the default of borrowers underlying a pool of mortgage-backed securities. Essentially, the buyer of the CDS pays a premium to the seller in exchange for protection in the event of mortgage defaults within the MBS portfolio. If a default occurs, the seller compensates the buyer by covering the losses incurred. This financial tool provides investors and financial institutions with a mechanism to hedge against the credit risk associated with MBS, contributing to a more resilient and stable housing finance market. However, this involvement in derivatives exposes banks to regulatory capital requirements. While derivatives trading may compensate for regulatory capital needs, losses in these markets can erode a bank's capital buffers, leaving it vulnerable (thinning its cushion) to financial system shocks, as witnessed during the Great Recession financial crisis with the intricate interplay of CDS & MBS.

Liquidity buffers, particularly in times of uncertainty, play a crucial role in fortifying the financial resilience of banks, and a high Common Equity Tier 1 (CET1) ratio exceeding 10%⁹⁰ serves as a robust first defense mechanism. The CET1 ratio, representing a bank's core equity capital as a percentage of its risk-weighted assets, acts as a key indicator of financial strength. Maintaining a CET1 ratio above 10% ensures a substantial cushion against potential shocks, allowing banks to withstand economic downturns, market volatility, or unforeseen crises without compromising their stability. This surplus capital not only bolsters a bank's ability to absorb losses but also enhances its capacity to meet liquidity demands during periods of heightened uncertainty or even a crisis. The ample liquidity afforded by a high CET1 ratio empowers banks to continue lending and supporting economic activity, thereby contributing to overall financial system resilience in challenging times. In the US, the systemically important banks, like JP Morgan, Wells Fargo or Bank of America, fair adequately in this domain

⁹⁰ The minimum ratio of capital to risk-weighted assets was 8% under Basel II and 10.5% under Basel III



Common equity tier 1 capital (CET1) ratio of largest banks in the United States in Q2 2023

Source: <https://statista.com/statistics/1097633/cet1-ratio-large-banks-usa/>

The importance of maintaining a healthy diversified loan portfolio should be explored with stress testing and different case scenarios, an example would be an unstable housing finance market where the housing asset bubble bursts and a highly leveraged portfolio would suffer the consequences, along with any other institutions that take part in a bigger domino effect as seen again during the Great Recession. Another scenario would be a portfolio heavily relied on long-term (10 year or more) maturity bonds, since held to maturity assets are recorded on the balance sheet at their amortized cost rather than their market value, in the case of sudden liquidation or market volatility, the market value of these assets may deviate from their amortized cost, resulting in unrealized losses - impact a bank's financial position including its profitability and CET1 capital. Thus, a parallel calculation for the held to maturity portfolio, the derivatives risk hedging and their notional (not on par with market) value compared to the total assets (as a percentage) and the impact on CET1 is a great indicator to track the liquidity risk of the bank.

Another point of reference for the years to come in the evolving landscape of financial services, Artificial Intelligence (AI) will play a pivotal role, particularly in enhancing loan prediction and risk management capabilities of banks. AI algorithms, powered by machine learning and data analytics, can analyze vast amounts of data from various sources to predict loan defaults with greater accuracy. These sources include traditional credit scores, transaction histories, and even non-traditional data like social media activity or (formality on) utility payments. By identifying patterns and anomalies that might indicate a higher risk of default, AI helps banks to make more informed lending decisions, tailor their credit offerings, and manage risk more effectively. Furthermore, AI-driven models continuously learn and adapt, improving their predictive power over time and providing banks with dynamic tools to navigate the complex, ever-changing financial landscape. This not only minimizes the risk of bad loans but also enables banks to offer more personalized financial products to their customers aligning with the evolving demands of modern banking.

Of course, there will be obstacles in the road ahead regarding AI, data quality and biases will be an issue since models are as good as the data they train on, hence the phrase “garbage-in-garbage-out” is king in this case. In the landscape of AI where regulatory compliance is only newborn there will be much debate what can and cannot the algorithms collect and train on. Another issue would be our over-reliance on the decisions made by AI, and since untangling these highly complex decisions may be close to unfeasible, the human judgment in the lending process would (but shouldn’t) be overlooked. And so ethical considerations will rise, not about if it can be done but how it should be done, to ensure fairness and avoid discrimination. And lastly, the cybersecurity risks in handling a vast amount of sensitive data, and potential “holes” found that could “trick” the model in making biased decisions.

Mergers and Acquisitions

The banking sector has witnessed a significant uptick in mergers and acquisitions (M&As) activity after the great Recession⁹¹. This trend is driven by various factors, including technological advancements, regulatory changes and the increasingly competitive global financial landscape. While M&As in banking can create substantial opportunities - they also present unique challenges and threats. A substantial opportunity can be the increased market reach and diversification it can give to the bank since M&As enable banks to expand their customer base and geographical reach. Acquiring smaller banks can provide access to new markets and customer segments. Also, economies of scale and scope since they potentially can lead to cost saving, reduce overhead costs and leverage shared resources. M&As allow banks to diversify their product and service portfolios, catering to a broader spectrum of customer needs. Some of these needs are covered usually by EMIs (although not banks since they cannot lend money, their money transmitter role in banking is significant) and their technological edge in handling e-money. Smaller banks, and particularly fintech companies, often have innovative technologies that larger institutions can benefit from. M&As can be a faster route to digital transformation than internal development.

But what are the threats of M&As. Regulatory usually is the first challenge, since banking is a highly regulated industry. M&As often face intense scrutiny from regulators concerned about issues like antitrust laws⁹² and financial stability. Another hurdle is the integration. Merging different corporate cultures, technologies, and operational systems can be complex and costly. In the recent merge of UBS with Credit Suisse, the technological risk on IT migration⁹³ was only one of the difficult challenges. Their different structure and culture as well. Their reported questionable ethics, falling profits, deposit hemorrhaging and damaged reputation have to be dealt with by the acquirer, and on-top the shareholders might not even be willing to if the price ain't right⁹⁴. There is also a customer retention risk due to concerns - if smaller banks are failing and a domino effect is predicted, customers might be incentivized to move their deposits to larger "too big to fail" institutions causing more widespread liquidity and solvency issues.

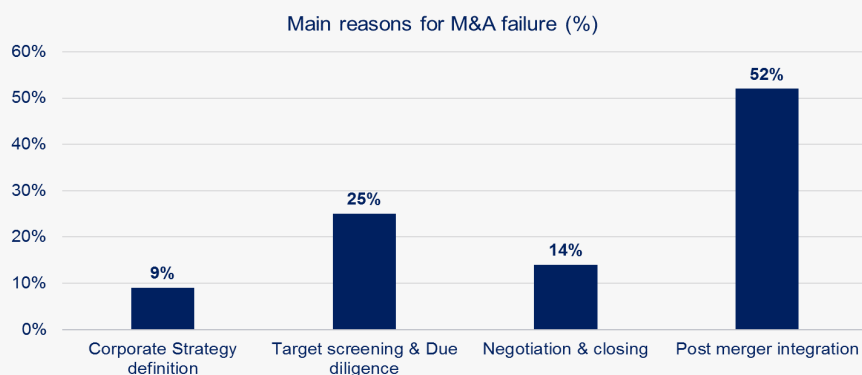
⁹¹ https://www.ecb.europa.eu/pub/financial-stability/fsr/special/html/ecb.fsrart202111_02~33910adb15.en.html

⁹² In the US it is law (Bank Merger Act) that a bank cannot acquire another bank if they represent >10% of US deposits, something overlooked in the recent acquisition of First Republic Bank by JP Morgan

⁹³ <https://www.bloomberg.com/news/articles/2023-11-15/ubs-says-it-migration-is-biggest-risk-in-credit-suisse-fusion>

⁹⁴ <https://www.bloomberg.com/opinion/articles/2023-03-20/ubs-got-credit-suisse-for-almost-nothing>

A poorly managed post merger integration phase is responsible for more than half of Mergers & Acquisitions (M&A) failures



*Consolidation of multiple surveys from New York Times, Harvard Business Review and Australia Financial Review

6

Mergers and acquisitions in the banking sector offer pathways to growth, innovation, and competitive advantage. However, they require careful strategic planning, astute financial management, and adept handling of regulatory, operational, and cultural integration. As the banking sector continues to evolve in the face of digital transformation and changing global economic conditions, M&As will likely remain a key strategic tool, albeit one that requires navigating a complex landscape of opportunities and risks.

Type and Quality of Securities

Every bank's balance sheet has both liabilities and assets and the composition of each is very important for its own health. Highly leveraged "bets" the bank has made can very well compromise its solvency. Its loan portfolio and the type and quality of assets in it must transparently represent the risk the bank is willing to take. The quality is decided by the Credit Rating each asset has, e.g. rating of AAA is considered (assigned by credit agencies) as high quality. By Marketability, i.e. securities that can be liquidated fast and at small discount are preferable, and by Volatility in that market – meaning that securities with low volatility are not expected to have valuation fluctuations as the time passes and thus preferable.

The most common types of assets, other than paper money the bank holds, are common real estate, stocks and bonds, and government securities. Real estate is straightforward as the collateral behind a loan, diversified stocks are considered good quality and relatively immune to market volatility but their value can fluctuate, and government securities are considered high quality since treasury bond payments are not met on government default. More complex instruments are collateralized debt obligations

(CDOs⁹⁵), mortgage-backed securities (MBS⁹⁶), asset backed securities (ABS⁹⁷), and derivatives. Derivatives, financial instruments whose value is derived from the performance of underlying assets and can be complex and risky particularly if the underlying asset performance is unpredictable, can include credit default swaps (CDS), between the most important in the post-pandemic crisis Interest Rate Swaps⁹⁸, Futures and Options.

Monitoring the market provides the answer as to what the bank has to do to mitigate risk. Central banks increasing interest rate might mean larger profitability as the spread widens, but it also means that now the bank holds older treasury bonds with low interest rate and coupon payments and it is losing money by not diverging to other options in the market (e.g. shorter term sovereign bonds). Monetary tightening means that zombie businesses that were not supposed to work out but did with all that excessive high-velocity money will go out of business, and they will need their deposits to meet their payments. At that moment, this will put a strain on the liquidity buffers of the banks and those with thinner cushions and non-diversified clientele and portfolios will be the first to crumble, initiating a domino effect that will need government intervention⁹⁹. The sovereign debt valuation reveals the ability of the government to meet its expected payments, and the default rates in retail (and banking) can reveal a coming recession as the cost curve (for government borrowing) takes a hike along the (10-2 year treasury constant maturity) yield curve – all the more so when GDP is sluggish or worse, contracting.

⁹⁵ Structured financial products backed by a pool of loans. The quality can vary significantly based on the underlying assets, making risk assessment challenging.

⁹⁶ Securitized mortgages that can be more complex when they include *subprime* mortgages. The risk depends on the payment reliability of the underlying mortgages.

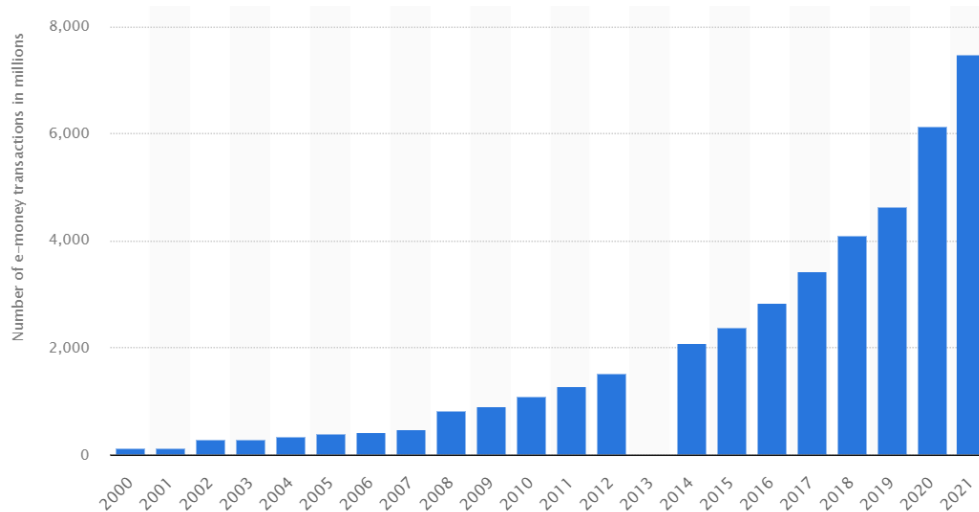
⁹⁷ Similar to MBS but backed by other types of assets like auto loans or credit card debt. The complexity and risk vary based on the asset quality and diversification.

⁹⁸ Contracts in which two parties exchange interest rate payments, typically swapping fixed-rate payments for floating-rate payments. These are used to hedge against interest rate fluctuations.

⁹⁹ As witnessed in the US with three banks defaulting on their payments and coming under FDIC Receivership

Modern Banking

The staggering growth in electronic money transfers and the prevalent use of mobile banking signify the ongoing shift from cash to electronic transactions. This change has been significantly accelerated by the Covid-19 pandemic, as consumers adopted digital payment methods and businesses transitioned to online operations to minimize physical contact.



Source: statista.com¹⁰⁰

Fintech firms leverage advanced technologies to innovate in the financial sector, offering services like mobile banking, peer-to-peer lending, and digital payments. They focus on enhancing customer experience and efficiency. They are revolutionizing the way financial services are delivered and cater to the modern consumer's preference for convenience and speed, offering personalized financial experiences and simplifying complex financial processes. ERP (Enterprise Resource Planning) firms, on the other hand, provide comprehensive business management software. They integrate various functions such as finance, human resources, and operations, facilitating streamlined and efficient organizational management. They play an instrumental role in the backend, optimizing the internal functions of financial institutions. They aid in critical areas like compliance management, financial reporting, and risk assessment, ensuring that these institutions function seamlessly and cohesively.

The disruptive capability of both is profound, challenging traditional banking and finance paradigms with more accessible, cost-effective solutions. They democratize financial services, making them available to a broader audience. They disrupt the traditional business models by automating and integrating various business processes, leading to more informed decision-making and operational agility. In the financial landscape, fintech and ERP firms introduce a spectrum of opportunities and threats. Opportunities include fostering innovation, enhancing customer experience, and driving efficiency in operations. They offer new avenues for financial inclusion and democratize access to financial services. However, these advancements also bring threats such as increased competition for established financial players, cybersecurity risks, and

¹⁰⁰ <https://www.statista.com/statistics/443399/electronic-money-payment-in-european-union/>

regulatory complexities. As they reshape the financial sector, these firms underscore the need for traditional institutions to adapt, innovate, and embrace new technologies to stay competitive and relevant.

Conclusions and recommendations for further Research

The present dissertation dealt with the role of CBs in the formation of economy in national and international level as well as revealed the interrelationships and interactions between CBs decisions.

The decisions of CBs throughout of their history had played decisive role in the reactions of economic agents acting in national and international markets.

The tools provided and employed by the CBs are more or less the same for all of them despite the different policies and interpretations they adopt.

In the present crossroad CBs have to look after in parallel their exaggerated balance sheet and the governmental debt which is acting antagonistic to the commercial markets of debt.

Businesses and households are affected directly and impulsively from CBs decisions which attempt to control unemployment, inflation, liquidity and regulating the banking system under their supervision.

Financial institutions in particular are facing a number of challenges which are the backfire results of CBs' decisions as has been depicted by a number of scholars and institutions.

Based on our analysis the role of the CB's, their interrelationships and the opportunities and threats faced by financial institutions are complex and not complicated issues and we believe that future interdisciplinary research in the field shall reveal the appropriate tools and strategies to be followed for mitigating systematic risks in national, regional and global levels.

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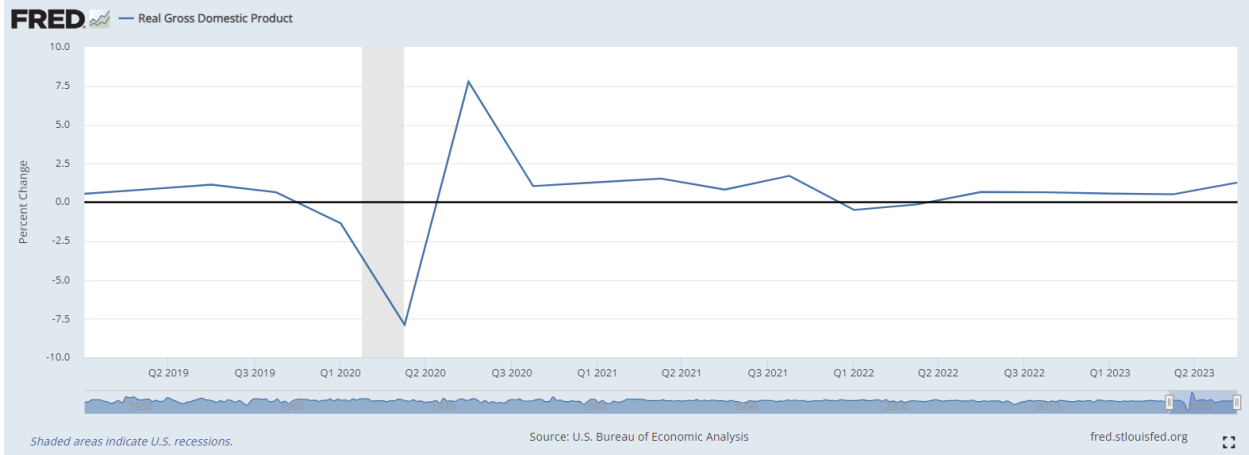
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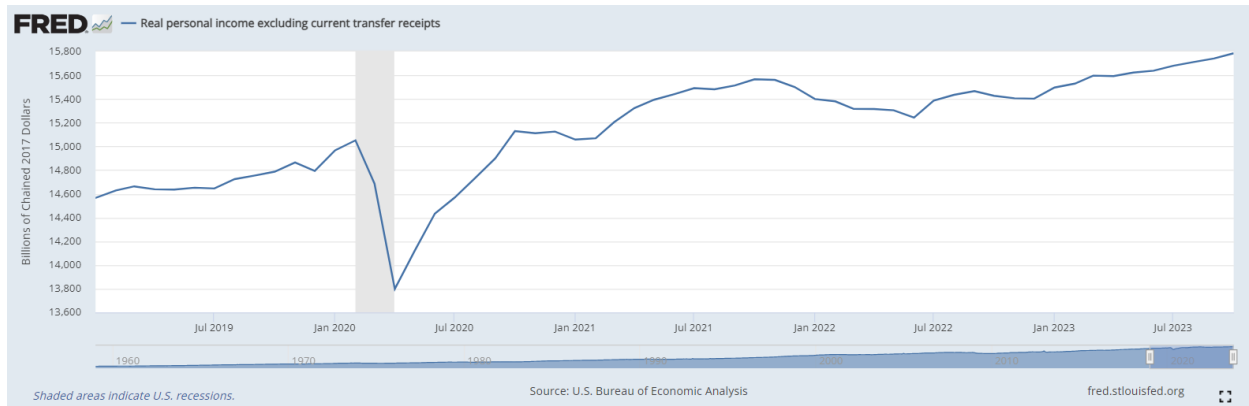
Educational Material and monographs of Dr. Cambis Dimitrios, on M&As, KYC, MiFID, Investment instruments and Risk analysis.

Appendix

Appendix A, source: <https://fred.stlouisfed.org/>



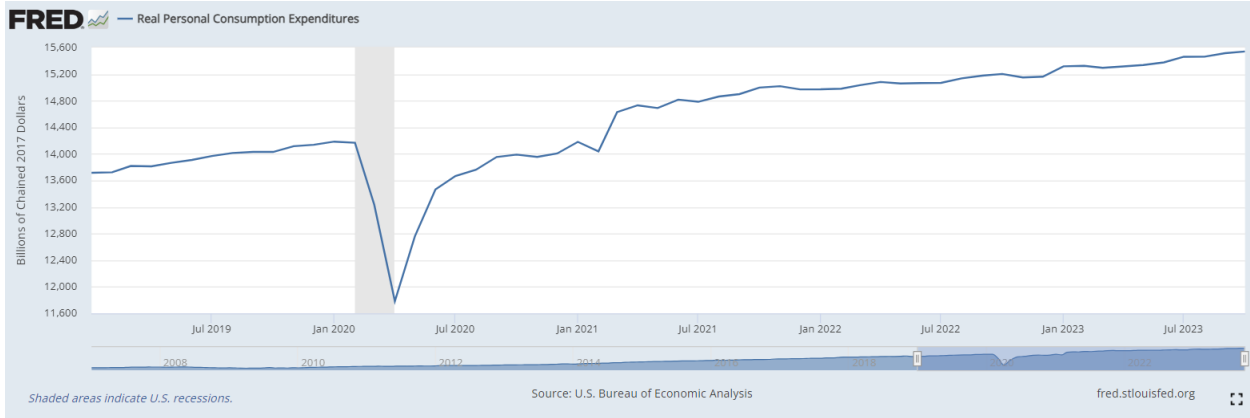
Real Gross Domestic Product, percent change



Real personal income excluding current transfers



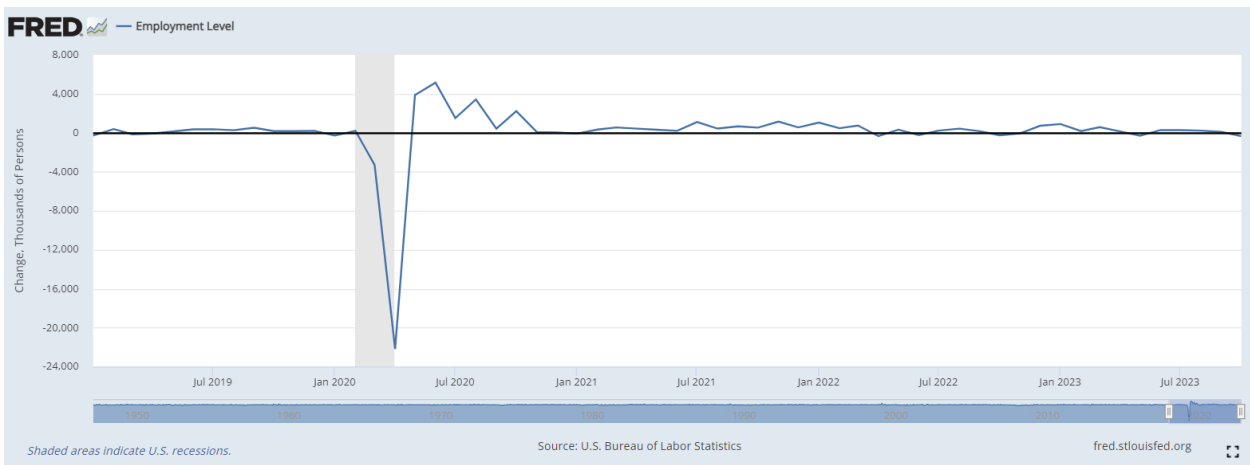
Nonfarm Payroll (does not include farm workers, private household employees, or non-profits)



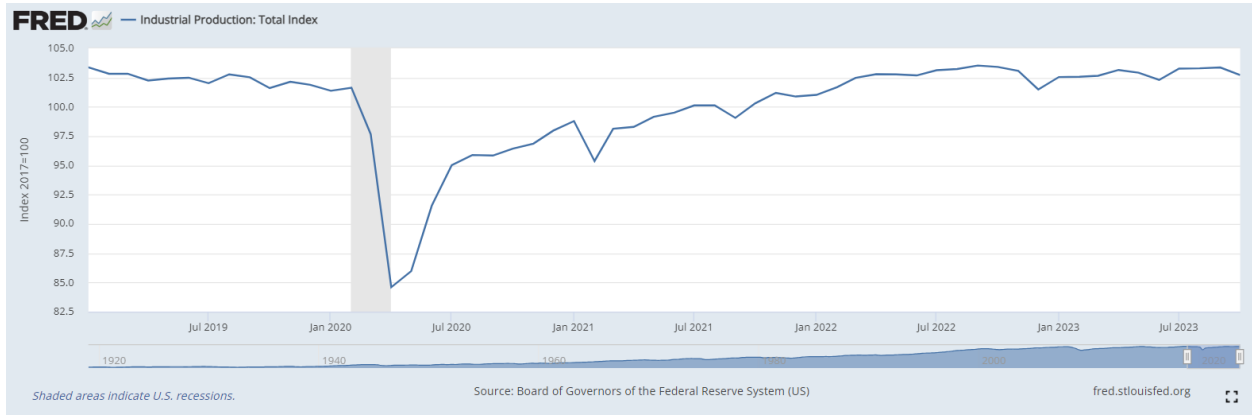
Real (adjusted for inflation) Personal Consumption Expenditures



Real Manufacturing and Trade Industries Sales



Employment Level, percent change



Index of Industrial Production