Research Programme
Introduction

Research at the Bundesbank aims to develop and consolidate academic expertise to support decision making and implementation of policies in its core business areas, primarily the Eurosystem’s monetary policy, financial stability, and banking supervision. At the current juncture the Bundesbank, like other central banks, faces important challenges in these areas. These challenges inspire and shape the Bundesbank’s research programme for the next several years, as laid out in the remainder of this document.

Despite an unprecedented degree of monetary accommodation and a pick-up in economic growth, inflation in the euro area has remained relatively low in recent years. Real interest rates have seen a long-lasting decline in developed economies, possibly reflecting changes in attitudes towards risk, low growth prospects, changes in preferences for savings and investment, demographic change and other trends. While world trade and economic integration through global value chains has been on the rise, the risk of international disintegration through new barriers to trade now appears to be increasing. Persistent differences in national competitiveness, but also gaps in the institutional framework present a continuing challenge for the euro area economy.

After the financial crisis of 2007-2008, extraordinary reform efforts have been made to stabilise the global financial system. Yet, potential vulnerabilities in financial markets remain, and rapid cross-border capital flows may amplify economic shocks. A range of new regulatory policies and instruments have been introduced, and their effectiveness as well as potential unintended consequences need to be assessed. Banking supervision and financial stability policies are challenged by rapid structural change in the banking sector accompanied by the emergence of new business models and technologies. The newly introduced monetary and financial stability but also fiscal policies likely interact in many ways, potentially generating tradeoffs which need to be understood.

This Research Programme gives you an overview of recently published, ongoing and planned research activities at the Bundesbank, organised around three research areas each containing three clusters of research projects (see figure). This website allows you to zoom in to the individual research projects that constitute these research areas and clusters.

Readers are most welcome to get in touch. Either with individual researchers whose projects you find interesting, via one of the many seminars, webinars, workshops and conferences that we organise throughout the year, or by visiting the Research Centre’s website for information about the various possibilities for cooperation and interaction.
Monetary policy in the euro area continues to be shaped by the massive interventions in response to the financial and economic crisis, with policy rates at exceptionally low levels, elaborate forward guidance communication and large asset purchase programmes in place, and the Eurosystem’s balance sheet unprecedented in terms of magnitude and composition. In keeping with its medium-term price-stability mandate, the Eurosystem evaluates its extraordinary crisis and post-crisis interventions primarily by their impact on inflation and inflation expectations. While longer-term inflation expectations from surveys have held rather steady, the crisis demonstrated vividly that existing theories and models fall short in predicting both the conditions under which longer-term inflation expectations temporarily decouple from official targets and the consequences of that for policy credibility.

Despite the stability of longer-term inflation expectations from surveys, actual inflation rates have persistently remained below the medium-term inflation target of close to but below 2 per cent in recent years. Standard approaches such as the Phillips curve have a hard time squaring this evidence with the pace of economic activity and inflation expectations. For the Bundesbank, this raises important research questions. They refer to the transmission of both conventional and unconventional policy to the euro area economy and the extent to which business-cycle fluctuations, secular trends, gradual adjustment to the crisis or hysteresis effects in labour or financial markets may mitigate the effects of monetary policy on inflation outcomes.

Policy makers and academics are evaluating the existing monetary policy framework in light of the crisis experience and the post-crisis policy challenges arising, among others, from below-target inflation, potentially long-lasting shifts in economic growth or the expected phasing-out of crisis measures. The Bundesbank contributes to this process with research on past policy performance, drawing monetary policy lessons from the crisis and assessing existing reform proposals. Against this background, Bundesbank research on post-crisis monetary stabilisation policy is organised around the following main themes: “Understanding inflation expectations”, “Economic fluctuations and monetary policy transmission” and “Monetary policy design”.

Research area 1: Monetary stabilisation policy in the post-crisis era
1a. Understanding inflation expectations

In the euro area, longer-term inflation expectations obtained from surveys have deviated only slightly from the official target in recent years; this is generally considered a success as well-anchored expectations are deemed to signal successful expectation management and hence credible monetary policy. However, characterising the dynamics of longer-term inflation shows how difficult it is to identify the conditions under which inflation expectations de-anchor. Bundesbank research examines the extent to which short-run inflation surprises determine longer-term inflation expectations, and whether repeated inflation surprises of the same sign can lead to de-anchoring. Also, given forward-looking price and wage setting, do changes in longer-term inflation expectations affect actual inflation? Furthermore, how do macroeconomic news and private beliefs regarding extreme inflation or deflation outcomes affect longer-term inflation expectations? And does divergence between the expectations of the central bank and the private sector undermine the central bank’s ability to stabilise inflation?

According to economic theory, inflation expectations also play a key role for households’ savings and investment decisions. The Bundesbank examines German households’ expectations and financial decisions via the “Panel on Household Finances” (PHF) survey, which is conducted as part of a network with the ECB and other National Central Banks in the Eurosystem. Research using the PHF studies how inflation expectations are formed and how they affect households’ financial decisions such as saving or mortgage refinancing. This matters with regard to how monetary policy that seeks to steer real interest rates by controlling inflation expectations ultimately affects economy-wide savings and investment.

Survey participants often disagree about future economic conditions. While this makes it difficult to extract information on how market participants commonly perceive policy, the amount and variation of disagreement is also informative for monetary policy. Bundesbank research examines whether expectation disagreement matters for the efficacy of policy transmission at and away from the effective lower bound (ELB) on policy rates. A key question is whether monetary policy decisions transmit to the economy through their signalling effects about the future policy path or additionally by affecting agents’ views of the state of the economy? Which features make macroeconomic models fit with the evidence on the extent of disagreement at various horizons? Furthermore, does staggered policy lift-off between economies, such as the US versus the euro area, also lead to diverging inflation expectations with potentially important exchange rate effects?

In addition to surveys, inflation expectations can also be extracted from financial market data. Bundesbank research develops novel approaches to estimate inflation and interest rate expectations at the European level. These approaches decompose the market data into expectations and risk premiums trying to account for the ELB, which can bias expectation measurement especially at shorter horizons.
Actual inflation rates have persistently remained below official targets in recent years, and standard business-cycle approaches such as the Phillips curve face challenges squaring this evidence with measures of economic activity and inflation expectations. Given the key role of this relationship for policy transmission, Bundesbank research considers a host of factors potentially affecting this relationship. Among them are the role played by commodity, energy and house prices; the contribution of global versus domestic inflation drivers; labour market developments and wage stickiness; firm and product entry and exit dynamics affecting competition, mark-ups, and productivity; the impact of economic uncertainty on investment and consumption; the post-crisis evolution of labour productivity; the role of financial frictions for firms’ price and wage setting; the effects of cross-country heterogeneities (see also research area 2); and the possibly diminished efficacy of unconventional monetary policy.

Another set of candidate explanations for the low inflation rates refers to longer-term, secular trends. These trends can imply long-lasting changes in the inflation process and result in difficulties in assessing the neutral stance of monetary policy. Identifying such trends with sufficient reliability and precision is an important goal for central bank researchers. Explanations refer to changes in the neutral interest rate driven by how savings respond to demographic change; disruptive technological innovation; digitalisation, expanding global supply chains and accelerating structural reforms in labour and product markets; unintended side effects of the massive monetary policy interventions during the crisis that incentivised excessive risk-taking; or historically low policy rates that compressed firms’ marginal costs and hence product prices.

Bundesbank research on economic fluctuations and monetary policy transmission also relies heavily on and contributes to advances in methodologies. Quantifying the structural role of economic uncertainty and risk premiums in the economy requires computationally efficient, higher-order solution and estimation techniques for DSGE models. Accounting for the effects of the ELB on policy rates and forward guidance requires fully non-linear, global model solutions. Econometric approaches must be flexible enough to cope also with the ELB, with multiple policy instruments, state-dependent transitory and permanent structural changes and the economic effects of time-varying shock uncertainty. In addition, accounting for spill-overs across countries, sectors, regions and agents often requires estimation and solution techniques that are applicable to large-scale models. Finally, research projects with a methodological focus, including but not limited to inflation forecasting, provide important contributions to this cluster.
In debating the lessons from the crisis and the post-crisis challenges, academics and policy makers regularly review current monetary policy frameworks. Bundesbank research contributes to this debate by evaluating past policy performance and current reform proposals. One immediate post-crisis challenge lies in the phasing out of crisis measures in a time-consistent, expectable and non-distortionary way. How should policy sequencing proceed? How does policy communication affect market volatility? And how does forward guidance affect risk premiums and the economy in times of lift-off? While the US lift-off experience is instructive in this regard, a deep understanding of these issues requires further analysis.

The academic debate also considers whether the current inflation-targeting framework that many central banks follow is sufficient to stabilise the economy in the face of adverse shocks and in a context of low policy rates and low, but highly imprecise estimates of the neutral interest rate. Some researchers have suggested changing the inflation target or adopting targets for the price level or nominal GDP as potentially superior approaches. In this context, the following questions are important: Does the inflation targeting framework ensure policy remains robust to natural rate uncertainty? What are the side effects of changing the current inflation target or introducing price-level targeting? Are neo-Fisherian policy responses a realistic option? How effective would further unconventional measures be in light of the magnitude and composition of the current central bank balance sheet? Even more ambitious and possibly transformative monetary policy reforms consider central bank digital currencies or deposit accounts for individuals at the central bank.

Recent years have shown that the economic spill-overs among policy areas are not negligible. For example, financial instability during the crisis likely impacted inflation, economic activity and fiscal positions. More generally, fiscal, financial stability and monetary stabilisation policies interact with each other in many ways. The Bundesbank continues to research these spill-overs and interactions as well as their impact on the respective policy objectives. Research efforts are coordinated with other institutions, among them the Swedish Riksbank and the Federal Reserve Bank of New York, in the Trinity of Stability research network. Bundesbank research also studies heightened risks for currency competition in the global economy and their implications for international policy cooperation and coordination.
Research area 2: Understanding and addressing the impact of heterogeneities in an integrated world

Growing world trade and rising global investment have contributed to a global upswing in recent years but crisis legacies still weigh heavily on many countries, not least within the euro area. The size of government debt and the deleveraging of households and firms have caused diverse developments of current account balances in the aftermath of the financial crisis. With vulnerabilities in financial markets potentially building up again, cross-border movements in capital flows may give rise to amplification effects. This and the existing gaps in national competitiveness positions continue to pose risks to the euro area and the world economy as a whole and require close monitoring of current account balances, capital flows and international investment, and competitiveness positions. Persistent external imbalances could also entail a risk of moving towards more inward-oriented policies in countries such as the US. The financial crisis has left a legacy of debt across governments, corporates and households in advanced and emerging economies. Balance sheet repairs and the strengthening of fiscal buffers remain particularly important tasks in the low-interest-rate environment, especially in the euro area. The heterogeneity of the euro area’s capital markets and the incomplete banking union require continuous work on a robust financial and fiscal architecture to allow the full benefits of monetary integration to unfold and to support private risk sharing in the euro area. Bundesbank research strives to contribute to the debate on how to design policies which improve risk sharing frameworks in the European economy, for example by completing the capital market union. In particular, this line of research aims at providing novel analytical and empirical frameworks to study limitations and potential improvements of the institutional design of the European economic and monetary union (EMU).

To address the economic implications of the above issues, Bundesbank research is clustered around three main themes: “International finance, trade and firm activity”, “Household behaviour”, and “The institutional design and imbalances in the euro area”. 
The sustainability of current account balances is essential to circumvent sudden capital flow reversals which may have major real and financial repercussions. For the Bundesbank it is therefore important to analyse the various origins of imbalances in capital flows. To improve the understanding of imbalances, research at the Bundesbank addresses the following key questions: What are the fundamental drivers of capital flows across countries? What role do gross capital flow and asset positions play in explaining those current account imbalances? And how important is international competitiveness to overcome imbalances?

Identifying ex ante whether capital flows are sustainable is not a trivial task. Bundesbank research analyses the extent to which capital flows and current account dynamics are driven by fundamental factors such as relative growth expectations across countries. Attention is also paid to innovations in payment technologies as a potentially important driver of exchange rate and capital movements. Large capital flows are not only a source of distress. They can also act as buffers against macroeconomic risk. Could strong variations in country-specific income streams explain pro-cyclical capital outflows over the business cycle as observed in the data? Research at the Bundesbank assesses the extent to which precautionary savings in response to higher output growth volatility explain the build-up (and subsequent reduction) of net foreign asset positions across countries. An important question is also the extent to which gross asset and liability positions affect current accounts due to balance sheet mismatches and counterparty risk in international capital markets.

Another aspect of imbalances are the factors which promote a competitive environment across countries. Bundesbank research contributes to the policy debate on competitiveness by analysing the output and welfare effects of a reduction in firms’ fixed costs and entry costs in product markets. This also allows to evaluate how increased competition and new firm entry impact total factor productivity. However, there is as yet no consensus on how to measure external competitiveness. While traditional indicators, such as real effective exchange rates based on unit labour costs, are easy to communicate, they often have little power in explaining the export performance of countries. Bundesbank research thus also looks beyond the traditional indicators and takes into account that countries’ trade is part of a globally fragmented production process often referred to as global value chains. The following questions arise: What are the consequences of firms’ participation in global value chains? And does participation in global value chains affect the amount of exchange rate pass-through?

Despite its relatively low share in overall exports, service trade is increasingly important for the euro area, as nearly all sectors are engaged in cross-border service trade. Bundesbank research therefore investigates countries’ competitiveness by focusing not only on merchandise exports, but also on their ability to trade in services. Use of the Bundesbank’s firm-level data helps identify the characteristics, determinants and obstacles in service trade. How relevant are changes in trade policy, such as increased trade barriers for cross-border service trade transactions? Bundesbank research explores whether the abandoning of preferential market access to services can lead to a substantial drop in consumption by individual countries which are part of the cross-country value chain in service trade. Finally, projects with a methodological focus which study firm heterogeneities contribute to research in this cluster.
2b. Household behaviour

Understanding heterogeneity at the level of individual households is increasingly seen to be important, as aggregates disguise the distribution of assets, liabilities and other features of households’ financial situation and balance sheets. For the Bundesbank it is crucial to understand the heterogeneous behaviour of households with respect to saving and consumption decisions, as these are important elements in the transmission of monetary policy. A thorough theoretical and empirical understanding of household finances and their cross-border differences within the EMU are also indispensable when discussing the evolution of the financial system and financial stability.

To investigate households’ consumption, savings and investment decisions, Bundesbank research makes extensive use of its household-level data from the “Panel on Household Finances” (PHF). Based on this unique dataset, research at the Bundesbank analyses inter alia the drivers of changes in wealth and income, and the role of uncertainty on portfolio choice and retirement savings.

The current low-interest-rate environment has led to stronger demand for housing in some euro area countries. Yet our understanding of the housing market is limited: Do owner households save more than renter households? How is the debt burden distributed across households and how does it evolve over time? How resilient are indebted households to adverse shocks to income, house prices or interest rates? How can macro-prudential regulations affect the housing choices of households? Given the low-interest-rate environment, what are the redistributive consequences of interest rate changes on households’ balance sheets? Bundesbank research analyses these questions using its PHF survey and other data sources.

In addition to current interest rates, households’ expectations of future developments are also important for their economic and financial decisions. Bundesbank research thus seeks to gain a better understanding of households’ expectation formation process. Central banks can potentially steer the economy by influencing inflation expectations and thus real interest rates. However, the efficacy of using such tools likely depends on the respective central bank’s credibility. Making use of the granular information in the PHF and other surveys, research at the Bundesbank studies to what extent household expectations are influenced by trust in central banks and knowledge of central bank activities. It further analyses the effects of households’ financial literacy on their expectation formation with the understanding that financial literacy is an important pillar of economic and financial development and stability.
Deficiencies in the institutional design of the EMU became apparent when the financial crisis led to the European debt crisis. The institutional framework within the EMU failed to deliver the fiscal discipline envisaged in the Maastricht treaties, and sovereigns struggled to uphold financial stability. In this process, the increase in public debt levels coincided with higher sovereign debt holdings by domestic financial institutions, creating fragilities and spill-over risks. Ultimately, the stability of some sovereigns and national banking sectors came into question.

With this experience in mind, Bundesbank research continues to gain a deeper understanding of these institutional deficiencies and analyses the following key questions: Is the privileged regulatory treatment of sovereign exposures likely to lead to a mispricing of sovereign risks? And does it reduce the incentive for sound fiscal policies? Furthermore, Bundesbank research investigates how the regulatory treatment of government debt should be designed in order to build up resilience to large asymmetric shocks. It further analyses how the capital market union, a common deposit insurance and European banking supervision should be optimally organised. To develop a deeper understanding of these pressing issues, the Bundesbank participates in the Trinity of Stability network, which studies the interplay between fiscal and monetary policy as well as financial stability policies. This interplay is of particular relevance in a currency union.

The financial and sovereign debt crisis has also had material implications for imbalances in current accounts across euro area member states. Research at the Bundesbank therefore assesses how monetary policy and fiscal policies as well as labour market developments affect the evolution of imbalances in the euro area. Bundesbank research contributes to the debate by addressing the following questions: Does the absence of nominal exchange rate fluctuations reduce the prevalence of imbalances in a currency union? Which role does the financing of regional imbalances through private or public capital flows play? To what extent does access to the central banks’ refinancing facilities and the redistribution of liquidity via TARGET mechanisms serve as a buffer against adverse shocks? Reversals in euro area capital flows are especially harmful to economic growth when economic distortions in goods and labour markets inhibit the necessary adjustment across member states. Structural reforms have been proposed to mitigate those effects. Bundesbank research investigates the implications of structural reforms in Germany, such as Hartz IV, on the labour market and the current account balance. Despite structural reforms, demographic developments influence savings and investment dynamics, the fiscal stance, pension systems as well as labour force participation rates. Those aspects raise new questions for Bundesbank research: What are the implications of aging and shrinking societies for external balances? And do the digitalisation of the economy and higher labour market participation help alleviate possible drags on potential output growth?
Almost a decade after the Global Financial Crisis, the events of 2007-09 continue to have a profound impact on how policy makers and academic scholars view the functioning of the financial system and the interaction between financial markets and the broader macro-economy. On the one hand, the crisis vividly illustrated that pre-crisis policies and regulations as well as their implementation and enforcement were insufficient, thus revealing a necessity to further reform the “rules of the game”. On the other hand, the failure to contain the build-up of risks pre-crisis and the ensuing fallout due to the dislocations in the financial system showed that policy makers lacked adequate tools and models prior to the crisis. In response, policy makers stepped up financial sector policy reforms and considerably expanded their set of instruments, strengthening existing regulations and introducing new capital, leverage and liquidity requirements as part of a general overhaul of the regulatory framework (eg Basel III). In addition, new policy institutions such as the Financial Stability Board (FSB) and the European supervisory and resolution bodies were created in order to improve international policy coordination and implementation.

In addition to these developments, the banking sector and broader financial system undergo rapid structural change accompanied by the emergence of new business models and technologies, posing additional challenges for regulators.

Against this background, pressing questions pertain to the evaluation of new policy measures and their effectiveness in sustaining the safety and soundness of banks and the economy’s overall financial stability. Therefore, the FSB has developed a framework for the evaluation of financial regulatory reforms. Supporting and complementing this initiative, Bundesbank research aims at developing new tools and methods for designing and evaluating microprudential and macroprudential regulations. Ultimately, our aim is a better understanding of how market microstructure, asset prices and financial linkages connect the individual parts of the economy and how new policies affect financial intermediaries and risk-taking in the economy.

Hence, Bundesbank research on the financial system is organised around the following main themes: “Financial intermediation and risk-taking”, “Market microstructure, asset pricing and financial linkages”, and “Designing and evaluating micro- and macroprudential regulation”.

Research area 3: The financial system in flux: challenges for banking supervision and financial stability
3a. Financial intermediation and risk-taking

In the euro area and especially in Germany, the banking sector rather than markets provides the bulk of external financing for the real economy. For the Bundesbank, it is therefore crucial to precisely comprehend new developments pertaining to financial intermediation and risk-taking in general, as well as to the German banking sector in particular.

The German banking landscape is characterised by a large number of savings and cooperative banks. Insofar as their business and management strategies differ from those of larger, internationally-oriented banks, they also exhibited significantly different responses to the dislocations in the financial system during the crisis. Improving the understanding of the causes and consequences of such differences in strategies and performance is warranted to further develop and adapt the supervisory strategy and to close potential regulatory gaps.

Banks’ credit supply and risk-taking decisions are of vital importance for the transmission of monetary policy to the real economy and for financial stability. Bundesbank research therefore identifies and analyses the behaviour of key factors that influence banks’ lending and risk-taking decisions in general and against the background of the current low-interest-rate environment in particular.

Global banks play a particularly important role in the international transmission of shocks and the spill-overs of regulatory policies across financial systems. The Bundesbank plays an important role in the “International Banking Research Network” (IBRN), in which central bank economists from around the world study issues pertaining to global banks.

Technological innovations, especially digitalisation in financial services such as deposit taking, lending and payment services, are transforming the traditional banking sector and have led to a surge in the creation of new, technologically advanced competitors (Fintechs). These new entrants into the financial industry challenge incumbent banks’ business models. As a consequence, these developments raise further questions for regulators and researchers alike: To what extent will these new institutions’ business models differ from those of more traditional banks? And how should their regulatory treatment be designed most efficiently and effectively?

A particularly important recent technological innovation, the blockchain technology that underlies crypto-tokens such as bitcoin, has the potential to back up a number of different innovative developments in the financial sector and further transform the banking industry. While the prevalence of crypto-tokens and whether or not they may constitute a challenge to the present monetary and banking system in the future is debatable, it is likely that blockchains will transform financial transactions, financial intermediation and even the market structure in general. Research on the direction and extent of this transformation is imperative for any central bank which – like the Bundesbank – is not only responsible for monetary policy, bank regulation and financial stability, but also provides and supervises the economy’s payment systems.
While the banking sector is of crucial importance for the German and euro area economies, capital market financing has gained in importance in the past decade. To foster this development, the European Commission’s initiative towards a Capital Market Union seeks to further reduce the economy’s dependence on bank financing and to foster the transition towards a more market-based financial system. This implies that the proper conduct of monetary and financial stability policies requires policy makers and regulators to gain a deeper understanding of the interactions between market microstructures, asset pricing and financial linkages.

One of the key determinants for the financial decisions of market participants is the term structure of interest rates. Understanding the key drivers of the term structure is therefore crucial for the financial system and its linkages to monetary and financial stability policies. Relevant questions which need to be addressed include, among others, the impact of unconventional monetary policy on term premiums, scarcity effects in collateralised funding markets, the effects of policy normalisation for the term structure, the interaction between the term structure and risk-taking decisions of market participants, and the effects of new regulatory policies on the determinants of the term structure through changes in the structure of financial markets.

Moreover, through various channels, the financial system can be a powerful amplifier of macroeconomic shocks. Research at the Bundesbank focuses on how such shocks propagate through financial institutions and asset markets. This is particularly important as the proper identification of the respective transmission channels allows detecting financial stability risks early on and helps trace out potential spill-overs to the provision of credit and other financial services. Similarly, how do regulations interact with asset market microstructures and market liquidity risk such as risks related to liquidity dry-ups and negative spill-overs across asset maturities and different market segments? Answers need to be found to these questions not least for an appropriate evaluation of the newly introduced regulatory measures. Lastly, Bundesbank research applies and develops new methods pertaining to the analysis of financial markets and intermediaries.
With a new international regulatory landscape in place, policy makers need to address unresolved open issues concerning the implementation and effectiveness of new financial stability policy tools and regulatory instruments. A careful design, calibration and evaluation of microprudential and macroprudential regulation are therefore of the utmost importance to guide future policy decisions and the proper use and calibration of the newly introduced policy instruments.

Resolution policies need to be complemented by tools that allow to monitor the resilience of financial intermediaries and to detect potential vulnerabilities. In this respect stress test models are of considerable significance for regulators and policy makers alike. Stress testing at the bank level has been refined over time. However, the vulnerabilities that result from an interplay between banks, other financial intermediaries, the real economy and the evolution of regulations are far more difficult to model and to detect. Research at the Bundesbank addresses this challenge by designing stress test models for non-bank intermediaries like insurers and central counterparties and by improving the aggregation of bank-level stress tests to take into account the relations between different financial intermediaries and feedback effects with the real economy.

Finally, the post-crisis regulatory landscape aims at enhancing markets’ and financial institutions’ transparency. While greater transparency may allow market participants to better gauge risks, it is not necessarily beneficial for the economy. Its effects crucially depend on the reporting design. In fact, the different ways in which regulators publish results from supervisory bank stress tests exemplify that the optimal level of transparency is elusive. Bundesbank research is in progress to obtain a better understanding of the effects of disclosure requirements for banks and the broader financial industry.