

# **DNB Research Agenda**

## ***1. Introduction***

This Research Agenda outlines the ambitions for DNB research for the upcoming years. It aims for a more top-down approach in establishing the DNB annual research program, thereby contributing to the implementation of one of the Research Review Committee's recommendations. The Research Agenda has been approved by the "Regiegroep", consisting of the directors of several policy divisions, and has been discussed with DNB Governing Board members. It offers guidance for the formulation of individual research projects. As a rule, new projects will only be approved if they fit into the longer-term views as outlined in the DNB Research Agenda.

The proposed Research Agenda identifies eight themes: the effects of unconventional monetary policies, the new normal for monetary policy, the dynamics of inflation, credit supply, financial stability and financial regulation, trust, sustainability, and payments and market infrastructure.

## ***2. The Agenda***

### ***2.1 Monetary policy***

The global financial crisis had a profound impact on the practice of monetary policy in a range of countries. The crisis challenged important elements of the pre-existing dominant view that monetary policy should be aimed at price stability and should use just one instrument: a short-term policy interest rate. Being confronted with a massive financial crisis and its repercussions as well as stubbornly low inflation rates, central banks resorted to a large number of unconventional policy tools. When they encountered the effective lower bound (ELB), central banks extended the set of assets they were willing to purchase, these operations being known generically as Quantitative Easing (QE). This changed the composition and vastly increased the size of their balance sheets. In light of these changes, four sets of important questions arise:

**1. Effects of unconventional monetary policies.** Although a substantial amount of research suggests that unconventional policies have contributed to increasing output growth and inflation, less is known about their impact on the exchange rate and how this in turn affects the macro economy (changing exchange rate pass-through to inflation). In addition, more research is needed on the (unintended) consequences of unconventional monetary policies on: housing markets, risk taking by financial institutions and markets, zombie-lending (misallocation of capital), and the behaviour of (different types of) consumers (e.g. due to shortfalls in the pension system). With interest rates still at or close to the ELB the effectiveness of unconventional monetary policies going forward increasingly depends on fine-tuning the fiscal-monetary policy mix while controlling sovereign risk.

**2. The new normal for monetary policy.** Important changes in the economy, notably the low level of inflation and sluggish economic growth, created new challenges for monetary policy decision-making. A major issue here is that some key variables (like the natural rate and expectations) are non-observable, while they play a key role in theoretical models. Important questions include: how reliable are estimates of the natural real rate of interest and its drivers; can monetary policymakers influence the natural rate, and if so, how? What is the role of expectation formation in relation to wage and price dynamics? To address these issues, a proper theoretical framework is needed, in which the uncertainty about key variables is taken into account. If and when economic conditions turn more favourable, how should monetary policy be normalized (exit from QE; should central banks eventually return to the traditional mode of intervening at the short end of the market; what is the optimal size and composition of the central bank balance sheets) and what operational framework is best suited to effectively and efficiently transmit the desired monetary stance?

**3. Dynamics of inflation.** It seems that the dynamics of wage and price inflation has changed. This raises several important questions: do we need new theories to explain (wage) inflation, what is the role of (expected) fiscal policy in this regard, what is the role of technological developments (ICT), globalization and changes in market structures (platforms, contestability), how do changes in labour market composition affect wage growth, is central bank independence enough to deliver price stability? Has the relationship between the output gap, unemployment and (wage) inflation dynamics fundamentally changed? If so, how should the Phillips curve be modelled? What determines the equilibrium labour income share on the macro and sectoral level? How are (inflation) expectations formed? What is the role of inflation expectations in wage and inflation dynamics? What are the implications of these issues for the ECB's monetary policy – and in particular for the appropriateness of its current strategy?

**4. Credit supply.** In the aftermath of the crisis, credit supply by euro area banks dropped. This raises several issues: Why are banks not lending (demand or supply constraints)? What can monetary policy do to stimulate bank lending? What is the relationship between capital and liquidity requirements and bank lending? What are the consequences of lower access to bank credit for small and medium-sized enterprises in the euro area? What impact does a distressed banking sector have on productivity growth? For the last two questions: what can be learned from the US where banks were recapitalized much faster after the crisis?

In order to address several of these questions, high priority will be given to develop theoretical models for realistically modelled monetary policy in which debt overhang of firms and/or banks is combined with demand shocks. Such models can also be used to analyse asymmetric effects of monetary policy in a heterogeneous monetary union and can give guidance for identification in empirical work on several of the issues raised above.

## *2.2 Financial stability and financial regulation*

The financial crisis has also led to major changes in financial sector supervision. Micro-prudential requirements have become stricter, although there is also a tendency (at least in some countries) towards less regulation. Within the euro area, the SSM has become responsible for banking supervision, but not for supervision of other financial institutions. Nowadays most central banks have become responsible for maintaining financial stability. A wide array of macro-prudential instruments can be applied, but so far, there is only limited experience. Early detection of (systemic) risks is important to successfully use both micro- and macro-prudential instruments. This calls for a further development of quantitative tools (using granular data) that can inform policymakers on (systemic) risk both in the banking and non-banking financial sector, such as early warning indicators, financial or credit cycle models, contagion mechanisms, and stress test models. As residential and commercial properties make up a substantial part of non-financial private sector assets, and relate to a significant share of financial sector lending and investment, developments in these markets have a profound impact on economic and financial stability. It is important to better understand the strong boom-bust pattern in the housing market, the causes of the slow reaction of the supply side of the housing market, and the relationship of the housing market with the business cycle.

**5.** In light of this, several important questions arise concerning **financial stability and financial regulation** including: Which tools and policies can help to reduce the pro-cyclicality of the housing market? How do macro-prudential policy changes and regulatory reforms affect the transmission mechanism of monetary and macro-prudential policy? What is the impact of a country's financial structure (bank-based vs. market-based financing) on systemic risk? What is the impact of "fintech" and financial innovation (like CoCos) on the sustainability of the (successfulness of) business models of financial institutions and what are the implications for financial services provision, the sustainability of business models of financial institutions, financial markets, financial stability and micro- and macro-prudential supervision? How does financial criminality impact the reputation of financial institutions and prudential risks? Do developments like low interest rates, high levels of debt and leverage, and increasing protectionism threaten financial stability?

## *2.3 Trust*

Public trust in financial institutions and financial supervisors is vital because low trust may undermine financial stability and damage the financial services industry, which is detrimental for the well-functioning of the economy. It is important to know what drives consumers' trust in financial institutions and central banks, especially in turbulent times, and how to contribute to improving it. Moreover, good knowledge about the economic and social benefits of trust and the impact of a lack of trust is very valuable. Likewise, trust in the central bank may enhance the effectiveness of monetary policy. Furthermore, trust in the central bank is crucial for its political legitimacy. DNB will continue

researching trust in financial institutions, financial sector supervisors, and central banks in the upcoming years.

6. In light of this, regarding **trust** an important research question that arises is: How has the COVID-19 pandemic affected public trust in financial institutions and central banks? On the one hand, the economic downturn during the pandemic may have lowered public trust in financial institutions and central banks. On the other hand, the measures taken by central banks and financial institutions may have had a positive effect on consumers' trust.

#### *2.4 Sustainability*

The sustainability of economic growth has become a major issue, not only for monetary policy-making but also for financial supervision. Fundamental changes in the environment (e.g. due to the COVID-19 pandemic) could affect economic and financial stability and the safety and soundness of financial firms, with clear potential implications for monetary and supervisory policies alike. Changes in public policy to address environmental risks, as well as wider factors, such as technological innovation, may affect the economy and financial system. For instance, in view of the Paris Agreement, a major goal for governments is to reduce the emission of carbon dioxide which implies a transition towards more sustainable energy sources. This may affect the macro-economic environment for monetary policy. Likewise, it may affect the riskiness of portfolios of financial institutions (e.g. there may be a risk that carbon-intensive assets may become 'stranded' as part of a low carbon transition). These portfolios may also be affected by other possible environmental developments, such as climate change and the increasing adoption of sustainable investment practices. How can these risks be measured?

Sustainability also has a socio-economic aspect, reflecting the need for the fruits of sustainable economic growth to be shared among the population. For instance, the wealth and income distribution (between households but also between production factors) is often considered an important dimension of sustainability. Likewise, sustainability may require social security arrangements (such as pensions) to be self-financed so that the risks are not transmitted to future generations.

7. As to **sustainability**, DNB research will address issues like: how will the energy transition affect economic sectors? How will (sudden) changes in the energy transition affect exposures of financial institutions and financial stability? How are climate risks priced in at financial markets? How can the energy transition be implemented efficiently and effectively, given its international dimension and sometimes conflicting (short-term) interests of jurisdictions? What role do financial markets and new financial instruments have in financing the transition? How should the energy transition and the transition towards a circular economy be financed?

As pointed out above, sustainability is more than climate risk. From that perspective DNB research will also address issues like: What are the drivers of TFP-growth at the firm or sector level? What is the contribution of access to

finance, zombification, capital misallocation and inter-firm spillovers for TFP-growth at the aggregate level? How do monetary policy and macro-prudential policies affect wealth and income distribution? How does incompleteness of financial markets and the implied heterogeneity in terms of access to liquidity affect macro-economic demand? In view of several changes (like increasing share of temporary workers, reduced bargaining power of trade unions) another important issue is how will the future labour market look like. What is the relationship between income and wealth distribution and robust growth? How can the pension systems be designed (and reformed) in such a way that the risks are shared equally between generations (including future generations)?

### *2.5 Payments and market infrastructures*

Both innovation-driven developments and regulatory measures like PSD2 are transforming the payments ecosystem rapidly. Payment behaviour changes, e.g. there is a downward trend in the use of cash. New players enter the scene. The market structure can change. This will affect the way the central bank can pursue its goal of promoting the smooth functioning of the payment system as well as DNB's supervisory role. Fintech may also have an impact on monetary policy transmission. Moreover, financial market infrastructures may be affected by developments in potential new payment methods or financial instruments, such as crypto-currencies and the underlying technologies. It must remain possible for over-the-counter transactions to be settled in cash as long as consumers still want this.

8. In the light of the changing landscape, the following research questions on **payments and market infrastructures** are key:

Research on payment innovations, notably the block chain technology, is important, as well as research on the effects of new regulation. What drives the acceptance of traditional and new payment instruments? Is there a minimum level of cash usage below which commercial parties are not interested anymore in maintaining a good infrastructure for cash? How can we improve the banknote in terms of cost and usage? What is the impact of e-commerce on payment use? What is the influence of new regulation and "fintech" on retail payments? How much trust do people have in new and traditional payment instruments and payment service providers, and does it matter?

Market infrastructures such as TARGET2, TARGET2-Securities and central counterparties produce a lot of granular transaction data on a daily basis. How can we use that data to obtain information on a. the monetary policy implementation of the Eurosystem, b. risk indicators within an FMI and between FMIs, c. potential liquidity problems, and d. detect outliers?

Many innovations in this field are technology-driven, notably the distributed ledger technology. It is key to investigate their disruptive consequences (not only in the financial sector) and to gain detailed hands-on experience of such new technologies in order to answer questions that relate to their suitability of a potential implementation by central banks and how they need to be supervised.