

Research and Policy Notes — 1/2020

How to Organize Research in Central Banks: The Czech National Bank's Experience

Simona Malovaná



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How to Organize Research in Central Banks: The Czech National Bank's Experience

Simona Malovaná*

Abstract

This paper describes the Czech National Bank's experience with the implementation of a new research model, which was motivated by a weakened link between research outputs and their application. The changes implemented in 2017 represented a next step in the evolution of the Czech National Bank's research process and have helped increase the relevance of research outputs and the flexibility of the whole process. The paper also summarizes the remaining challenges under the new research model and describes the implementation of project management in the financial research area.

Abstrakt

Tato práce popisuje zkušenost České národní banky se zavedením nového modelu výzkumu, které bylo motivováno oslabenou vazbou mezi výzkumnými výstupy a jejich aplikací. Změny provedené v roce 2017 představovaly další krok ve vývoji výzkumného procesu v České národní bance a pomohly zvýšit relevanci výzkumných výstupů a flexibilitu celého procesu. Tato práce rovněž shrnuje zbývající výzvy v rámci nového modelu výzkumu a popisuje implementaci projektového řízení v oblasti finančního výzkumu.

JEL Codes: A1, A3.

Keywords: Central banking, Czech National Bank, challenges, project management, research model.

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1. Introduction

Research at the Czech National Bank (CNB) has undergone significant changes since 2017. The previous research model ceased to meet the needs of the CNB and therefore needed to be modified. This should be understood as a step in the evolution of the CNB's research rather than a simple criticism of the previous model. The main purpose of the proposed change was to bring the research closer to the CNB's core activities, i.e. to increase substantially the share of applied research while maintaining its high quality. The new organizational structure and the new research model have succeeded in that and much more. Research outputs are regularly used in the development of various analytical and forecasting tools and during policy discussions. The new research model has also helped shorten the preparatory (pre-research) phase, strengthen the demand-side orientation and improve overall project management. On top of that, research outputs are regularly used in the CNB's communications via various channels.

The purpose of this paper is not to suggest an optimal solution, but rather to provide the reader with the specific experience of a small-country central bank. The solution introduced at the CNB may provide some guidance for central banks which are facing similar issues as we did, although each central bank would need to tailor it to its specific needs.

First, I am going to describe the main characteristics of the previous research model, the motivation for the changes introduced and the implementation of the new model; this will include an overview of the CNB's research publication activity. Then, I am going to summarize briefly the remaining challenges under the new research model. In the last section just before the conclusion, I am going to devote some space to my experience as Director of the Financial Research Division with the implementation of project management and an agile approach into the CNB's research process.

2. A Bit of History – the Czech National Bank's Research Before 2017

Economic and financial research at the CNB has undergone several organizational changes over the last two decades (see Table 1). In 2000, a unit responsible for economic research was established. The unit was managed and overseen directly by the Governor. The following year the unit was upgraded to an Economic Research Department managed by an Executive Director and overseen by the Governor. Between 2004 and 2007, the path of economic research became entwined with that of financial stability and, in July 2004, a small Financial Stability Unit was established as a new part of the Economic Research Department. The importance of financial stability analyses increased over time and the CNB was given a secondary task of maintaining financial stability in 2006.¹ This led to an "upgrade" of the Financial Stability Unit, first through an increase in its responsibilities and authority within the Economic Research Department and then through the establishment of a stand-alone Financial Stability Department. As a result, the Economic Research Department became organizationally separated again from other departments in 2010. The most recent change occurred in 2017 (see section 3).

¹ The Act on the Czech National Bank was amended to include a more explicit financial stability task as of April 2006. Before that, the mandate to perform financial stability analyses was derived indirectly from the same Act.

Table 1: Organizational Structure of Research at the CNB – Historical Overview

Year	Organization form	Management and supervision
2000	Economic Research Unit	Managed and overseen by Governor
2001	Economic Research Department	Managed by Executive Director and overseen by Governor
2004	Newly established Financial Stability Unit becomes part of Economic Research Department	Managed by Executive Director and overseen by Governor
2007	Economic Research and Financial Stability Department	Individual management of the two activities, which share joint administrative infrastructure; overseen by board member
2010	Financial Stability Department split off and Economic Research Department becomes autonomous again	Managed by Executive Director and overseen by board member
2017	Economic Research Department divided into Economic Research Division within Monetary Department and Financial Research Unit within Financial Stability Department	Economic Research Division managed by division director and Financial Research Unit by department director; overseen by two different board members
2019	Financial Research Unit “upgraded” to Financial Research Division	Both research divisions managed by division directors; overseen by two different board members

2.1 The Previous Research Model

The research model before 2017 (henceforth referred to as the previous research model) was lengthy and inflexible. The research process under the previous research model consisted of six stages:

- i. formulating priority topics,
- ii. submitting extended abstracts,
- iii. preparing research proposals,
- iv. selecting research projects,
- v. working on projects,
- vi. peer-review process and publication.

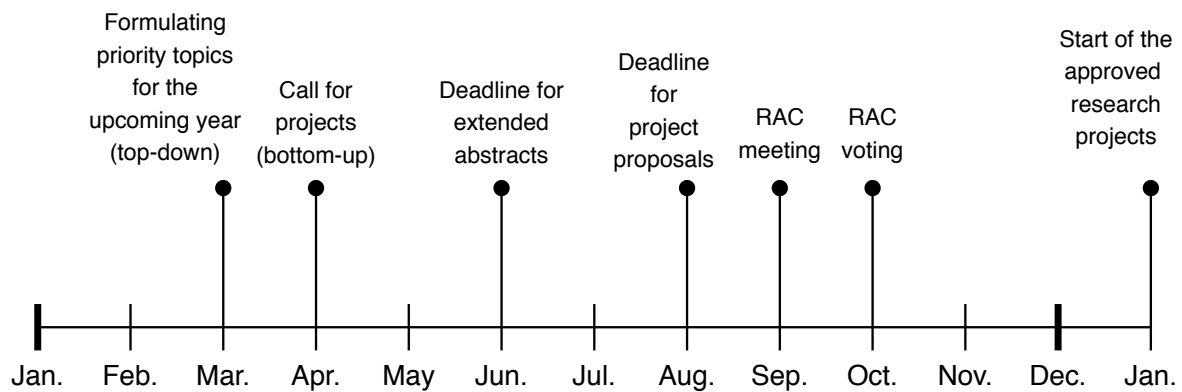
The whole process from formulating priority topics to approving research proposals (see bullet points i.–iv.) took at least nine months, and in some instances up to a year (see Figure 1, Panel A). The work on research projects then usually took an additional two years.

Priority research topics were formulated very broadly; this, together with the supply orientation, weakened the relevance of the research projects submitted. Priority topics were always formulated at the beginning of a given year for the next year by top management in cooperation with the Economic Research Department. Even though these priority topics were already quite general, they were based on even more general research priorities formulated for a period of five years (see Table 2, Panel B). Once the list of priority topics was finalized, it was disseminated as a Call for Projects within the CNB. CNB staff were asked to prepare and submit extended abstracts of up to two pages, which then served as a basis for feedback from the Economic Research Department. The model was supply-oriented, i.e. staff came up with their own topics and questions within the general priorities. After that, the authors of the extended abstracts were asked to prepare project proposals of up to ten pages summarizing the existing literature and describing the data, methodology and hypothesis. The research proposals served as a basis for

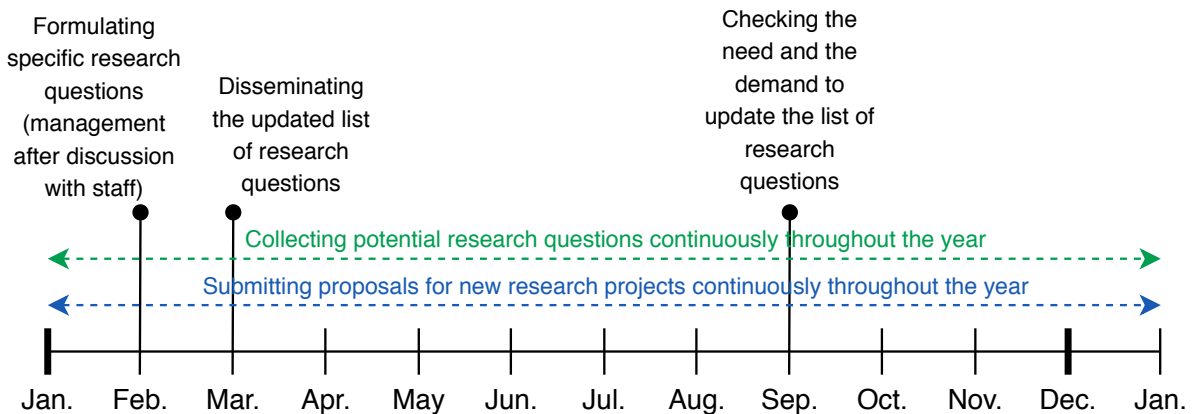
discussions at the Research Advisory Committee (RAC) meeting in September. The RAC was a body consisting of internal and external experts from the CNB, foreign central banks and domestic and foreign academic institutions advising the CNB Board members whether to approve or reject the research projects. The formal voting of the Board then took place about a month later, in October or November.² Formally, it was possible to start working on approved research projects in January of the following year.

Figure 1: Timeline of the Preparatory (Pre-research) Phase of Research Projects

(A) Before 2017



(B) 2017–present (as of mid-2020)



Note: RAC – Research Advisory Committee

² The establishment of the RAC when the research function at the CNB was set up was motivated by the need to externally validate the quality of research proposals due to a lack of internal experience. Over time, the CNB was able to evaluate the quality and relevance of the proposals itself as it gained more experience.

Table 2: Example of Research Priorities and Specific Research Questions in the Area of Financial Stability

(A) Before 2017

Research priorities 2013–2018

1. The impact of new regulatory measures on financial institutions
2. Macroprudential policy for small open economies
3. Systemic risk and risk of interconnectedness
4. Sovereign risk

Priority topics for 2017

1. Studies analysing the impact of new regulatory frameworks on the financial sector, monetary policy transmission and the real economy (e.g. impacts of the regulation of banking resolution and new capital and liquidity regulations, analysis of interaction and conflict between different types of regulations, both micro and macroprudential)
 2. Projects quantifying the transmission channels and impacts of newly implemented macroprudential policy instruments for both the Czech and other EU economies (LTV/LTI regulations, countercyclical capital buffers, systemic buffers, etc.)
 3. Studies focusing on the effects of relaxed monetary policy, low short and long-term interest rates, new monetary policy measures and the easing of credit standards on financial stability (behaviour of agents and different types of financial institutions, bank risk-taking, efficiency of financial institutions, impacts on different financial sectors, insurance and pension schemes, asset markets, real estate pricing)
 4. Empirical studies on the cross-border transmission of shocks that are important for macroprudential policy in the EU
 5. Projects assessing the sustainability of the indebtedness of different sectors of the economy (households, enterprises, public sector, new forms of non-bank credit)
-

(B) 2017–present (as of mid-2020)

Research questions for 2020

1. Stress testing and satellite models
 - How heterogeneous is income growth across households in CZ?
 - Modelling the spread between the 3M interbank rate and the lending rate
 2. Analysis of risks to financial stability and tools for quantifying them
 - Analysis of the use of derivative transactions and money market operations by domestic financial institutions and risk assessment for financial stability
 - How to model the conditional distribution of the probability of default of households and non-financial corporations for the purposes of setting the CCyB?
 - A debt sustainability model for non-financial corporations
 - What would be the impact of a global shock to the risk premium in financial asset markets on the domestic economy?
 3. Microprudential supervision, regulation and resolution
 - What would be the impact of the potential conversion of domestic banks into branches (so-called branchification) for the whole banking sector and its regulation and supervision?
 - What would be the impact of TLAC on lending rates?
 - How could the loss-absorbing capacity of the domestic banking sector and the ability to influence it change after joining the banking union?
 4. Macroprudential policy and its interaction with microprudential and monetary policy
 - What is the impact of credit cycles on debt service, financial stability and monetary policy transmission?
-

A clear advantage of the previous research model was its structured approach, with feedback from different sources at different stages of the whole process. The aim of the new research model has been to preserve the aspects of the previous model that proved successful over time. Therefore, most of what is described in this paragraph has been maintained in the new research model. Each approved project is assigned a research coordinator, who is responsible for providing feedback on interim results and organizing interim seminars and the peer-review process. Interim seminars are used to present interim results within the CNB and to obtain feedback from experts and management before finalizing the manuscript. Once the manuscript is finalized, it is submitted into the peer-review process to obtain a formal report from internal and external reviewers. The peer-review process at the CNB is comparable with that at high-quality scientific journals. First, a committee is formed, consisting of the research coordinator, the director of the department to which the project thematically belongs, at least one internal reviewer and at least one external reviewer (from academia, another central bank or a supervisory institution). Manuscripts are refereed internationally. Once the opponents' reports are finalized, the committee meets. During the meeting, which is open to all internal staff, the research team presents its findings and responds to opponents' reports. Then there is an open discussion followed by a closed part of the meeting. During the closed part, the committee decides on whether to accept or reject the manuscript for publication and on changes which have to be incorporated. The revised manuscript is then published in one of the CNB's research series – the Working Paper Series or the Research and Policy Note Series.³

The previous research model ceased to meet the needs of the CNB and was therefore modified. As indicated above, the aim of the new research model has been to preserve the aspects of the previous model that proved successful over time. In addition, it was necessary to remove the aspects that no longer met the needs of the CNB and to introduce some new features that would increase the relevance and applicability of research outputs. This can be understood as a step in the evolution of the CNB's research rather than a simple criticism of the previous model. As such, the new research model also faces some challenges which need to be addressed in the future (see subsection 3.5). A significant disadvantage of the previous research model was its inflexibility in three main areas. First, there was a considerable time delay between the moment when a research question arose and when the work on the project began (see Figure 1, Panel A). Second, any changes in an approved research proposal (i.e. changes to the method, data, hypothesis or research team) were subject to approval at different managerial levels and were heavily burdened by administration. Third, regular feedback from experts in the field was missing.⁴ This limited the applicability of research outputs in the policy-making process and discussions.

The long preparatory (pre-research) phase weakened the link between research outputs and their application. By the time of project completion, some research questions had become outdated. Moreover, near to the end of 2016, there was high share of delayed and cancelled projects for that very reason, i.e. during the work on the projects the topics had become less relevant or even irrelevant. More than 50% of the research projects approved in the last three years before the organizational change were cancelled. The average duration of a research project was more than two years. This reduced both the motivation of research teams to complete their projects and the motivation of management to give them time to work on these projects. Because research teams were aware of the length of the approval process, they often proposed a research project

³ The CNB Working Paper Series and Research and Policy Note Series aim to present original research contributions relevant to central banks. Both series are circulated publicly to stimulate discussion.

⁴ Research teams were asked to present their interim results once during the project. However, richer feedback was not required and was usually missing.

which was already finished or at least at an advanced stage. As such, the approved projects were not addressing current research and analytical needs. Consequently, the process became heavily supply-oriented and the policy relevance decreased significantly. This led the CNB Board to initiate a change at the end of 2016.

Completed research projects were awarded an explicit financial bonus, which, however, did not reflect the projects' relevance, contribution, quality or complexity. The previous research model provided certainty in the form of a budget allocated to individual projects. Each project was assigned a predetermined explicit financial bonus for its completion and additional funds for data, conferences and software. A project was considered completed if the resulting manuscript was accepted for publication in the CNB's research publications series after the peer-review process. The amount of the explicit financial bonus was related only to the number of co-authors (i.e. the same bonus was awarded to all completed projects with the same number of co-authors).

3. How Did the Research Model Change in 2017?

As a result of the weakened link between research outputs and their relevance and application, the CNB Board decided to initiate a change in the organizational structure and the research model. As of January 2017, the Economic Research Department was divided into an Economic Research Division and a Financial Research Unit, later upgraded to a Financial Research Division. Each division was integrated into a different policy department (see Figure 2, Panel B). The purpose was to bring the research closer to the CNB's core activities which would most benefit from its outputs and to increase the applied research stemming from the needs of these departments. It was believed that this would help make the research more demand-oriented⁵ and increase its relevance. As part of this change, a new research model was proposed in late 2017 which was designed to reflect managerial demand and limit the previous model's shortcomings but maintain its positive aspects. The new research model was evaluated by the CNB Board in the first half of 2020. The overall feedback was positive and the changes implemented were considered successful, as the initial expectations were met and the desired impact was achieved.

The new model, in effect since autumn 2017, has helped to

- significantly increase the flexibility of the whole research process, reduce the administrative burden and shorten the time between formulating the research question and starting the research project,
- manage resources more effectively and shorten the time needed to complete the project,
- make the research mainly demand-oriented while maintaining aspects of the bottom-up approach,
- encourage and strengthen cooperation between researchers and experts at the CNB,
- foster regular presentation of interim results during division meetings, working group discussions and seminars and in the CNB's core publications.

The research process under the new research model consists of four stages (see Figure 1, Panel B):

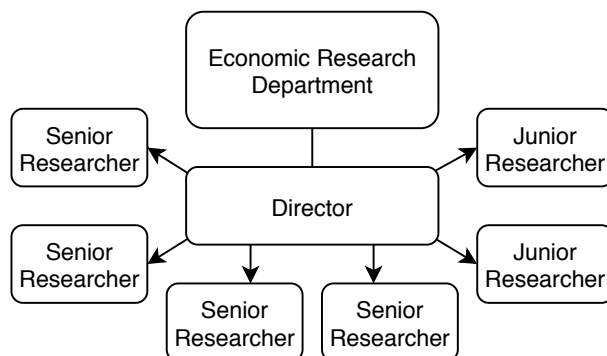
- i. formulating and updating specific research questions,

⁵ By demand-oriented, we mean a model meeting the research and analytical needs of the departments involved in the policy-making process (e.g. the Monetary Department, the Financial Stability Department and the Supervisory Department).

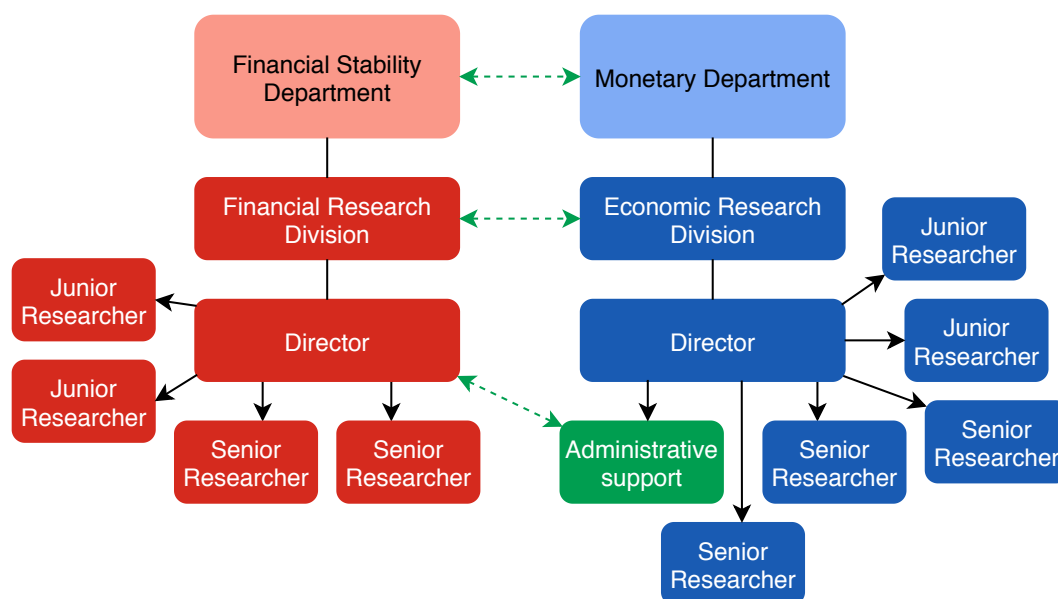
- ii. assigning research questions to research teams and preparing short proposals,
- iii. working on projects, getting regular feedback and finalizing manuscripts,
- iv. the peer-review process and publication.

Figure 2: Organizational Structure

(A) Before 2017



(B) 2017–present (as of mid-2020)



Note: Dashed green lines refer to cooperation and information sharing at different levels.

3.1 Formulating and Updating Specific Research Questions

The list of specific research questions is updated at least once a year by management after discussion with their teams and research divisions. This update usually takes place in the first quarter of the year. Throughout the year, potential research questions are continuously collected by the research divisions. In the third quarter, the need and demand for a second update is assessed; if the demand is not present, the list is updated again the next year. Staff input and ideas are strongly encouraged during the brainstorming sessions. The top-down element should maintain high policy-relevance of the questions identified, while the bottom-up element should bring expert knowledge and foster motivation. The list of research questions should be in line with the medium-term goals of the relevant policy departments and reflect any demand from the CNB Board. Unlike the general

priority areas, this list offers very specific research topics to examine (see Figure 2). The list then serves as a basis for research proposals.

The underlying documents used as a basis for discussing and updating the research questions are prepared by the research divisions. These documents include an overview of ongoing research projects, an indication of their current status and expected date of completion, the list of research questions from the previous period, and suggestions for potential new topics. “Non-research” divisions are then invited to propose new research questions and update existing ones with respect to the areas relevant to their activities. The final list is distributed and published on the CNB’s intranet site to be accessed by anyone within the institution.

3.2 Assigning Research Questions and Preparing Short Proposals

The new research model has placed a greater emphasis on a top-down approach. There are three basic mechanisms for assigning research questions to research teams:

- the research question is assigned to a specific research team by the director of the division or department (top-down),
- the research question is offered to a wider range of potential experts and the most appropriate proposal is selected (somewhere between top-down and bottom-up),
- the research team proposes a collaboration on a specific research question (bottom-up).

Research proposals should reflect the list of questions identified; however, this list should not be a limitation. If a specific research question that has a clear benefit to the department’s activities is not reflected in the list, it may be given priority. This fosters greater flexibility, i.e. an ability to respond quickly to current issues. For each research project, a proposal is prepared. This should have the form of a short summary of the main hypotheses and possible methodological approaches. The project proposal is designed to be considerably shorter and less formalized than the previous model required. It should be a basis for discussion and feedback at the initial stage of the project. The project proposal can be submitted at any time during the year. The research division and the direct supervisor (usually the division director) give their feedback over the following few days or weeks. After the relevant comments have been incorporated, the proposal is submitted to the department director for approval. The direct supervisor must always agree to the participation of her employees in the research project. This is intended to strengthen the demand orientation, the relevance of the projects, and the motivation of the supervisor to allocate time to their employees to work on the project. This is especially relevant if the research team consists of experts from “non-research” divisions. The list of ongoing projects is always published on the CNB’s intranet site.

3.3 Working on Projects and Utilizing the Outcomes

The beneficial aspects of the previous research model have been preserved, ensuring high-quality research outputs. The role of research coordinators has remained very similar, i.e. they are responsible for providing feedback on interim results, organizing interim seminars and the peer-review process, and, with more emphasis than before, also for giving consultations on the further application of research outputs. The high quality of the CNB’s research is ensured to a large extent by a highly demanding peer-review process m with that at high quality scientific journals (see section 2).

The standard duration of research projects under the new model is one year. In justified cases, it is possible to submit a proposal for a longer period. Methodological changes to approved proposals are not burdened by administration or subject to approval. However, the direct supervisor and the coordinator should always be notified of such changes. Changes to the main objective or main hypotheses of a project need to be approved. Emphasis is placed on collaboration between researchers and experts in the given area in order to increase the relevance and applicability of the research outputs. The participation of external researchers from other central banks and from academia, including junior researchers and doctoral students, is encouraged too.

Researchers are encouraged to disseminate research outputs via various channels. These include blog posts, boxes in key CNB publications, thematic articles published on the CNB website, conferences, seminars and meetings with experts, submissions to scientific journals, and others. Communication of research outputs in a simple non-technical form should contribute to a better understanding of some of the CNB's complex areas of work (both internally and externally).

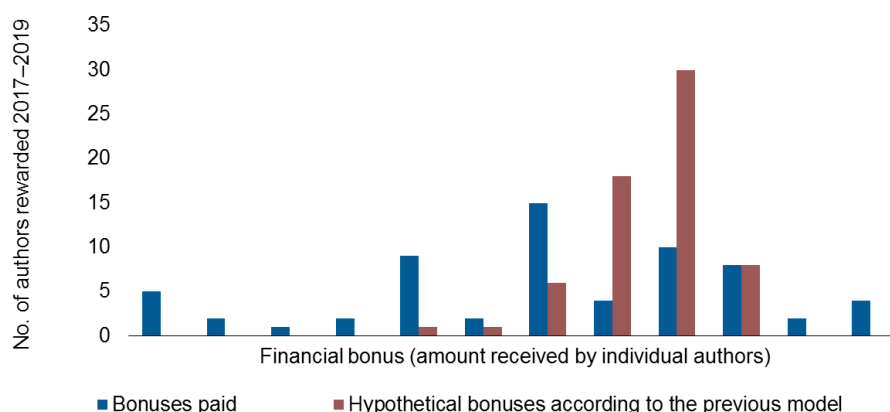
3.4 Pecuniary and Non-Pecuniary Incentives

Both pecuniary and non-pecuniary incentives can be important in motivating staff to actively participate in research projects and to finish them within the given time period in the form of publications. Finalizing research projects in the form of publications has important value added. First, before publication, manuscripts are subject to a peer-review process, which helps ensure that the research outputs are of high quality. Second, research publications allow for effective sharing of knowledge within the CNB and with other central banks, authorities and academia. Third, research publications increase the prestige of the central bank and enhance its transparency.

The CNB uses a number of pecuniary and non-pecuniary incentives. The non-pecuniary ones include time set aside for research (especially important for experts from “non-research” divisions), rich and timely feedback (from both staff and management) and publication in one of the CNB's research series. The pecuniary ones include coverage of publication fees, conference fees and travel expenses, an annual award for the best CNB research paper accompanied by a financial reward, and an explicit financial bonus for completion of the research project. Unlike under the previous research model, the amount of the explicit financial bonus is linked directly to the relevance, contribution, quality and complexity of research outputs. This is reflected in greater differentiation of financial bonuses relative to the previous model (see Figure 3). The explicit financial bonus for each completed project is proposed by the department directors after consultation with the research division directors, and approved by the CNB Board.

The explicit financial bonus has significantly motivated submissions of “off-projects”. Off-projects are a special category of research projects which are completed outside the model described above. These can include, for example, results of employees' doctoral or post-doctoral studies or an output from analytical work which matured into a research paper. Off-projects go through the same peer-review process as standard projects. They did not receive an explicit financial bonus under the previous research model, but they do under the new one. As a result, more off-projects have been submitted since 2017. For comparison, between 2014 and 2016 there were only 17 CNB research publications stemming from off-projects, while between 2017 and 2019 there were 32 (an 88% increase). This did not affect the number of project proposals submitted under the standard model: 32 between 2014 and 2017 vs. 28 between 2018 and 2019.

Figure 3: Distribution of Financial Bonuses – the New Model vs the Previous Model



Note: The distribution reflects the period of 2017–2019. Each pair of bars represents a specific financial amount paid to one author; the order is from left (the lowest) to right (the highest). Exact amounts are not reported.

3.5 Remaining Challenges Under the New Research Model

Although the implementation of the new research model has generated improvements in a number of areas, it continues to face some challenges. Addressing these challenges is the next step in the evolution of the CNB’s research model. The challenges can be summarized in several points (in no particular order of priority):

- delays with projects involving analysts from “non-research” divisions,
- effective communication of research outputs within the CNB and to the wider professional public in a simple and understandable form
- time devoted to applied research vs. basic research,
- collaboration with researchers from academia, other central banks and supervisory institutions,
- the career path for researchers who are not interested in joining management (i.e. a sound promotion system for non-managerial professionals).

Cooperation with experts from “non-research” divisions on research projects is strongly supported. Researchers can benefit from their expertise and take on board the specific requirements of the policy divisions concerned. As a result, the applicability of research outputs may substantially increase. Unfortunately, there is no clear separation of the time devoted to research and other, more operational, activities. Priority is usually given to non-research tasks, which can sometimes lead to substantial delays. Such delays complicate the work of researchers themselves as well as the planning of resources for other projects.

Effective communication of research outputs is a key aspect of their applicability and usability. It is also very important for expanding the knowledge base effectively and may be very useful as a marketing tool for promoting the CNB’s research. Although some improvements have been made in recent years, there is still room for additional steps and new tools, including better visual rather than textual summary of research outputs, and greater use of social media.

The new research model is oriented predominantly towards applied research, and not much space is left for fundamental research. However, the latter is also very important for central banks, because it serves as an incubator of innovative ideas and new perspectives on existing issues and frameworks; this cannot be delivered solely by applied research. Fundamental research in central banks can be supported, for example, by greater cooperation with academia, which may, in turn, create synergies stemming from sharing of information and expertise.

Collaboration not only with academia, but also with other central banks and supervisory institutions, can create synergies stemming from shared expertise and knowledge and from differing views on the same issue. However, it may be difficult for a small-country central bank to attract foreign researchers. The research questions in which such a central bank is interested may be too different, country-specific or even uninteresting from the perspective of academic researchers due to a lower probability of publication in a high quality scientific journal. It is no secret that it is much harder to publish a country-specific analysis, especially if the country under research is small. From the point of view of an academic researcher, it may be more reasonable to focus on multi-country analysis or country-specific analysis of larger economies.

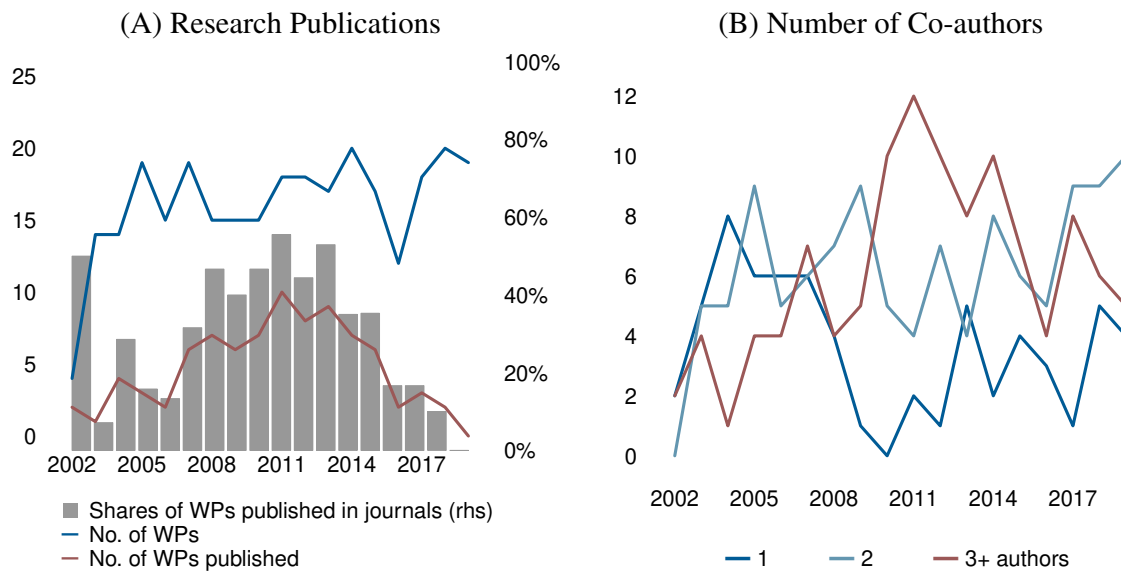
The current promotion system for non-managerial professionals at the CNB could do with some improvement, as it certainly could in other central banks as well. Creating a separate promotion path for professionals who are not interested in joining management would help the institution to retain its best senior researchers and experts with high professional knowledge. Such a system would allow them to devote more time to research and less to administration and management.

4. The CNB's Research Publications Over Time

The CNB publishes between 15 and 20 research papers each year. Most of these papers belong to the Working Paper Series, and the rest to the Research and Policy Note Series. Between 2002 and 2019, the CNB published a total of 245 Working Papers and 44 Research and Policy Notes. A significant share of these papers are then published in scientific journals (see Figure 4, Panel A). The curve of published papers has the expected concave shape – at the beginning there was a certain learning curve and at the end the curve reflects the considerable time lag between the completion of a paper and its publication in the journal. With the exception of the last three years, the average share of papers published in scientific journals was about 35%. Figure 4, Panel B shows a general upward tendency in the average number of co-authors. This may reflect the growing complexity of the issues researched in central banks in general, and also the tendency for more collaboration between researchers and experts.

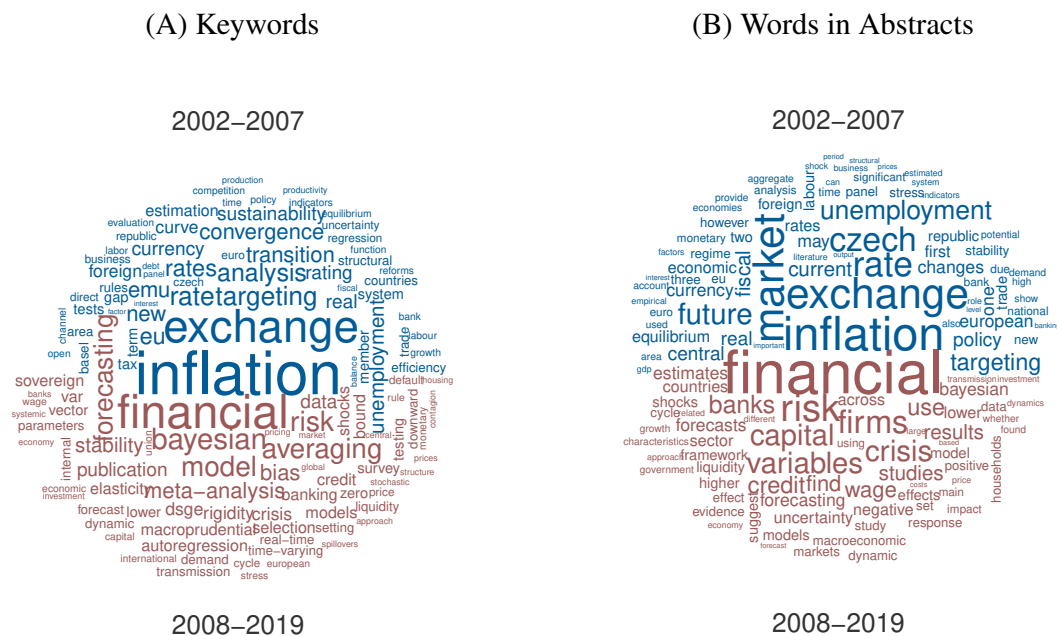
Following the Global Financial Crisis (GFC), financial stability has emerged as the leading research topic. A simple word cloud of keywords and words in abstracts shows that the CNB's research agenda *before* the GFC focused mostly on monetary policy issues and macroeconomic topics in general, such as inflation targeting, exchange rate dynamics, convergence and unemployment (see Figure 5, upper blue part). Following the GFC outbreak in 2008, the topics visibly changed in favour of the macro-finance area (Figure 5, lower red part). The leading research agenda *after* the GFC is related to financial stability policy conduct, with numerous papers analysing the role of credit dynamics and performing financial risk assessments. In terms of JEL codes, the focus remains fairly stable over time, reflecting the main research areas of the CNB in general (Figure 6).

Figure 4: Research Publications and Number of Co-authors

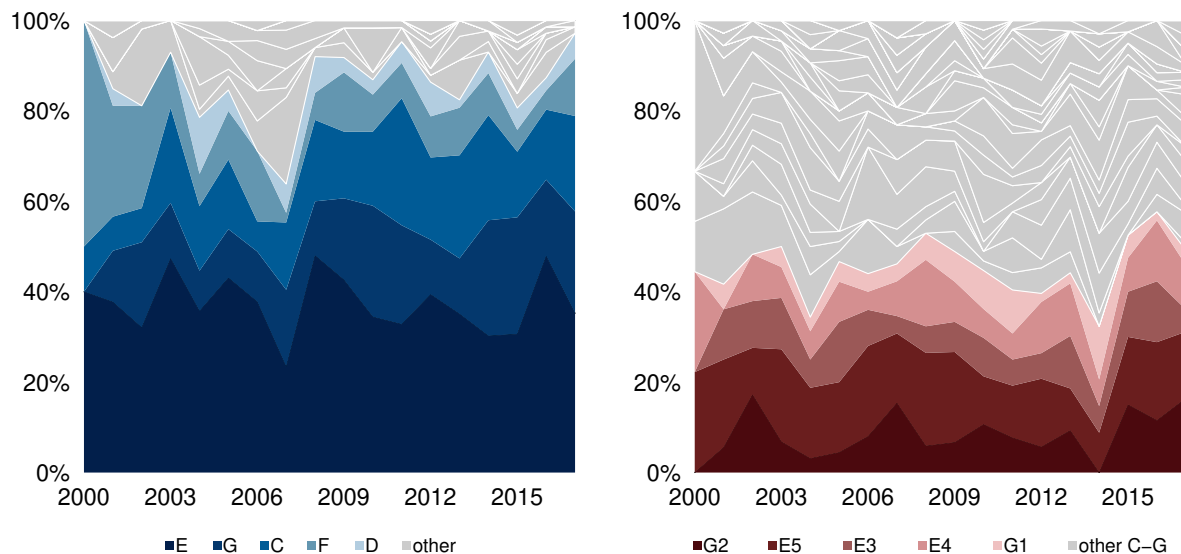


Note: WPs include both the Working Paper Series and the Research and Policy Note Series.

Figure 5: Word Cloud Before and After the GFC



Note: Keywords with a minimum count of 5 included. Abstract words with a minimum count of 30 included. The upper (blue) part of the clouds reflects the period 2000–2007 while the lower (red) part pertains to the period 2008–2019.

Figure 6: JEL Code Analysis

Note: E: Macroeconomics and Monetary Economics, G: Financial Economics, C: Mathematical and Quantitative Methods, F: International Economics, D: Microeconomics; G2: Financial Institutions and Services, E5: Monetary Policy, Central Banking, and the Supply of Money and Credit, E3: Prices, Business Fluctuations and Cycles, E4: Money and Interest Rates, G1: General Financial Markets.

5. Implementing Project Management with Elements of an Agile Approach

Prior to the organizational change and the implementation of the new research model, the CNB lacked a consistent and structured approach to managing the work on research projects. It was thus usually unclear what stage the project was at, how long it would take to complete it, and what the interim results were. This made it difficult to plan resources and implement research outputs into practice. Feedback was usually given at an advanced stage of the project. As a result, projects were frequently cancelled because research outputs were different from what was needed or expected, authors took a wrong approach and did not receive timely feedback, and demand for project outputs was weakened due to time delays.

The reasons described above led the Financial Research Division (see Figure 2) to implement project management with elements of an agile approach. What exactly does this entail?

- The main priority (quality, time or resources) is determined at the beginning of the research project, and its validity is verified in the course of the project.
- The research project is divided into specific interim achievable goals, which are further divided into individual tasks with deadlines.
- Each project is assigned a principal investigator and her research team, consisting of junior and senior researchers and experts. The principal investigator is responsible for organizing regular team meetings and meetings with the project manager (the division director), assigning tasks and checking their fulfilment.
- A kanban system facilitates the planning process. In our case, the kanban represents a shared file in which all tasks are listed. Each task is assigned to one or more researchers (including the

principal investigator) and categorized as either “to do”, “in progress”, “waiting for feedback” or “done”.

- Research teams meet every two weeks. At each meeting, the team members update each other on the assigned tasks and discuss the results and potential issues. Afterwards, the list of tasks is updated and the team members choose (or are assigned) tasks for the upcoming two weeks.
- Research teams meet at least once a month with the project manager of each research project. The purpose of the meeting is to inform the project manager about the progress made, to get timely feedback and to discuss potential issues.
- Regular feedback is given at different stages of the project. This may lead to a change in methodology, data or hypotheses, which is expected, acceptable and sometimes even desirable. The project proposal prepared in the preparatory (pre-research) phase should not pose a strict limit but rather serve as a starting point.
- The whole research team feels comfortable with the process. Regular feedback on the process from the whole research team is sought.

The process described above has yielded a number of benefits:

- a better overview of the current status of the research project, both within the research team itself and in the CNB as a whole,
- timely feedback, saving the time and energy of all involved
- more effective planning of resources; better organization of research activities overall,
- better application of research outputs, reflecting the timely feedback and no or limited delays,
- an expansion of the knowledge base of the CNB and training of junior analysts and researchers,
- better storage and retention of information related to research projects,
- greater motivation of research teams, which have a clear overview of what has already been done and what has still to be done.

Of course, this way of managing research projects may not suit everyone. It is always important for the whole team to find the best way to work together. In our experience, however, this particular system has generated a lot of improvements not only in the research process itself, but also in communication and relationships in general.

6. Conclusions

In this paper, I described the Czech National Bank's experience with organizational change and the implementation of the new research model, which was motivated by a weakened link between research outputs and their relevance and application. This should be understood as a step in the evolution of the CNB's research rather than a simple criticism of the previous model. So far, the new organizational structure and the new research model have succeeded in bringing the CNB's research closer to its core activities. Specifically, research outputs are regularly used

in the development of various analytical and forecasting tools and during policy discussions. The new research model has also helped shorten the duration of the preparatory (pre-research) phase, strengthen the demand-side orientation and improve overall project management.

Although the new research model has borne fruit, there are still some challenges remaining. Among other things, there is room for improvement in effective communication of research outputs within the CNB and to the wider professional public in a simple and understandable form. Further, the CNB might need to address the career path and promotion system for researchers who are not interested in joining management.

At the very end, I described my experience as Director of the Financial Research Division with the implementation of project management in the financial research area and the advantages it has brought. Project management has improved the allocation of resources and the overall organization of research activities. It has also led to a better overview of the current status of research projects, both within research teams themselves and in the CNB as a whole. On top of that, it has encouraged timely feedback and fostered greater motivation among researchers.

Finally, it is worth mentioning that the paper describes the experience of only one small-country central bank. However, I believe it may provide some guidance for central banks which are facing similar issues as we did, although each central bank would need to tailor the solution to its specific needs.

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