Household and firm heterogeneity

Czech National Bank

This note responds to BIS questions regarding the process of monetary policy decision-making in the Czech National Bank (CNB). It specifically addresses how household and firm heterogeneity are incorporated. The first section describes the most important monetary policy transmission channels in the Czech economy. The transmission within each channel is affected by the actions of heterogeneous economic agents and the CNB uses various means to analyse the behaviour of important subpopulation groups of agents. The second and third sections document such analyses for household and firm heterogeneity, respectively, and present a selection of analytical work produced by the CNB over the last few years. The fourth section clarifies how this heterogeneity is linked to monetary policy decisions. The fifth discusses the distributional effects of Czech monetary policy. The sixth section presents the CNB's measures to address heterogeneity.

I. Monetary policy transmission channels

The Czech National Bank (CNB) takes into consideration all standard transmission channels of monetary policy when deciding on tightening or loosening monetary conditions. All of the channels directly or indirectly affect behaviour of agents to various extents and, thus, are important factors to analyse. Three transmission channels play a particularly important role in the Czech economy: the exchange rate channel, the interest rate and credit channel, and finally the asset price channel.[1] Within all of the transmission channels, the transmission effects are not homogeneous but rather heterogeneous, varying depending on individual and firm-level characteristics as well as other factors. The CNB carefully considers these heterogeneous effects in its analyses to better understand the overall effects on the economy. Examples of such analyses are presented in the subsequent sections of this note.

The exchange rate channel works both directly and indirectly. An increase in interest rates results in a higher demand for assets denominated in the Czech currency (the koruna), which is reflected in higher demand for the koruna and its appreciation against other currencies. The appreciation leads to lower prices of imported goods intended for consumption and subsequent production. This slows growth in domestic consumer prices. Along with this direct price effect, domestic and external demand for domestic products declines in favour of foreign products due to an increase in the price of the former relative to the latter ("intratemporal substitution"). This leads to lower growth in domestic economic activity and a cooling of the labour market, which also acts in the desired anti-inflationary direction. In a

[1] A complex analysis of Czech transmission channels, including the speed of transmission and the strength of individual channels, is presented in Babecká Kucharčuková et al (2013).

small open economy such as the Czech Republic, both the direct and indirect exchange rate channels play an important role in the transmission mechanism.

The interest rate and **credit channel** works owing to the interconnectedness of the CNB's monetary policy rates and market and client interest rates via the central bank's monetary policy operations, which affect the interbank money market. A rise in CNB monetary policy rates increases the price of money in the economy, which generally leads to a preference for future consumption over current consumption ("intertemporal substitution").[2] In practice, this means, among other things, that growth in monetary policy interest rates will be reflected in higher bank client rates on loans and deposits. In such conditions, firms revise their investment plans due to a decline in the profitability of the most risky and financially controversial projects. Their debt management costs will also rise. Thus, there is a decrease in corporate demand for investment and investment-financing loans. This will be reflected in lower production by domestic producers of capital goods. When the cost of money (ie client interest rates on deposits) increases, households start to favour saving over immediate consumption. At the same time, consumer credit becomes more expensive, which also results in lower demand for debt-financed consumption of goods and services. This further dampens economic activity and leads to a slowdown in wage growth and the taming of inflation.

The asset price channel acts through changes in the pricing of financial and non-financial assets such as securities and property. Other things being equal, a rise in interest rates causes asset prices to fall, because the higher interest rates reduce the expected rate of return. Assets therefore become less attractive than better remunerated bank deposits. The fall in current market asset prices represents a decline in households' perceived wealth, which will be reflected in a reduction in their consumption. Firms engage in more prudent investment activity. Overall, this leads to slower growth in economic activity due to lower demand and thus again to a slowing of excessive inflation.

There is a limited amount of literature that includes in-depth analysis of the Czech transmission mechanism.[3] The majority of research articles agree that the most important transmission channels are the exchange rate and credit channels. The relative strength of monetary policy transmission channels changes slightly over time based on current economic conditions but the importance of the two main transmission channels remains consistent.

[2] The pass-through from reference to client interest rates is documented in Hromádková et al (2023). They show that the pass-through from the reference rate to short-term client rates is almost immediate and fully transmitted.

[3] See, for example, Franta et al (2011), Babecká Kucharčuková et al (2013), Hromádková et al (2023), or Babeckáet al (2017).

II. Role of household heterogeneity in monetary policy transmission

The CNB considers household heterogeneity when preparing materials for informed decisions about setting monetary policy. The materials related to household heterogeneity and its role in monetary policy transmission are distributed both internally and for public use. The internal materials include presentations and various analytical documents that aim to communicate relevant information from the monetary department to the CNB Board. Household heterogeneity and its role in monetary policy transmission are discussed irregularly in periodical publications such as the Monetary Policy Reports (MPRs, previously Inflation Reports), Analyses of the Czech Republic's Current Economic Alignment with the Euro Area, Financial Stability Reports, and other outputs.[4]

The main dimensions of household heterogeneity are the following:

Household type: The CNB's core forecasting model, g3+ (see Brázdik et al (2020)), distinguishes between Ricardian and non-Ricardian households, often referred to as rule-of-thumb or hand-to-mouth households. This type of household heterogeneity is also used in the CNB's satellite analyses of the effects of fiscal policy and fiscal-monetary interactions (Ambriško et al (2015); Babecký et al (2018)).

Household income and wealth: Differences in income create variation in spending sensitivity to interest rate changes and inflation. Lower-income households are often more liquidity-constrained, impacting their ability to save and increasing their sensitivity to price fluctuations. Analyses supporting policymaking increasingly break down households by income and, more recently, by wealth groups as micro data on household finances become available. Household income and wealth data could also be employed in both empirical and semi-structural modelling frameworks to conduct stress tests and calibrate the CNB's borrower-based regulation, which helps to quantify the impact of monetary and macroprudential policies on different groups of households (Gregor (2024); Ehrenbergerová et al (2024)). Another recent CNB working paper (Junicke et al (2023)) investigates the heterogeneity in the effects of monetary policy shocks depending on household wage income using unique contract-level data from the Czech labour market. The results suggest that low-wage groups are hit more profoundly by monetary policy shocks than high-wage groups, and the effect of restrictive shocks is stronger in the manufacturing sector than in any other. Exploring other dimensions of the data offers insights into the heterogeneity of the the impact of monetary policy on different demographic groups. The paper shows that less educated and also young workers are more affected by monetary policy shocks.

Household age group, real and financial asset ownership, indebtedness: Other aspects of household heterogeneity include age groups, types and level of indebtedness, and real and financial asset ownership. Households with higher debt

[4] Full texts of the Monetary Policy Reports are accessible from: www.cnb.cz/en/monetary-policy/monetary-policy-reports/; Inflation Reports from: www.cnb.cz/en/monetary-policy/inflation-reports/; Financial stability reports from: www.cnb.cz/en/financial-stability/publications-on-financial-stability/.

levels, especially variable rate debt, are more affected by interest rate changes, which can lead to significant shifts in disposable income and consumption behaviour. These dimensions help assess both household resilience to unexpected shocks (CNB (2024)) and the general financial vulnerability of households (Babecký et al (2024)).

Household energy intensity in consumption: Audzei and Sutóris (2024) explore a new feature of household heterogeneity related to energy intensity in consumption. The authors employ a stylised heterogeneous agent New Keynesian model, calibrated with household finance and consumption data, to contribute to the debate on whether monetary policy influences the energy intensity of household consumption.

Household expectations: Brázdik et al (2024) extend the CNB's g3+ core projection model by incorporating endogenous expectation premiums that reflect elevated inflation expectations. The simulations underscore the importance and relevance of accounting for heterogeneity in inflation expectations across different groups such as households, firms and professional forecasters. On the empirical side, evidence suggests that households experience varying inflation rates depending on their consumption preferences, income levels and other characteristics (Sutóris (2023)). A related aspect of household heterogeneity – variation in perceptions or sentiment – is an important factor to account for when modelling consumer loans and, more broadly, in understanding the rational versus irrational motives underlying households' consumption and borrowing decisions (Gric et al (2022)).

Heterogeneity among households is increasingly being considered in the background analysis for monetary policy. The examples below show typical materials produced by the CNB that consider household heterogeneity.

Consumption, savings and wealth heterogeneity

From the viewpoint of monetary policy, a particular focus is put on heterogeneous **household consumption** and **saving** behavioural patterns. For example, the a box in the Summer 2023 *MPR*[5] describes the motives behind the surge in savings, the savings structure by income groups of the population, and the factors that can lead the saving rate to return close to its long-run average. The analysis shows that until 2019, the four lowest income quintiles together accounted for just 10–20% of total savings, with the poorest (first) quintile not saving at all (Chart 1).

Classifying households according to their income is fairly standard in materials provided by the CNB. A box in the Autumn 2023 *MPR*[6] presents some views on households' balance sheets from the perspective of the different degrees of asset liquidity and the distribution of assets by income group. The ratio of consumer expenditure to income (the propensity to consume) fell in 2022 relative to 2021, mainly in the case of food and non-alcoholic beverages, doing so across most income groups. By contrast, the ratio of housing expenditure to income rose among households in the first to third quintiles. The ratios of spending on transport and in restaurants also increased, although least of all for higher-income households.

[5] See Box 1 ("Reasons for households' current increased propensity to save") in the Summer 2023 *MPR*.

[6] See Box 2 ("Household savings, net wealth and consumption") in the Autumn 2023 *MPR*.

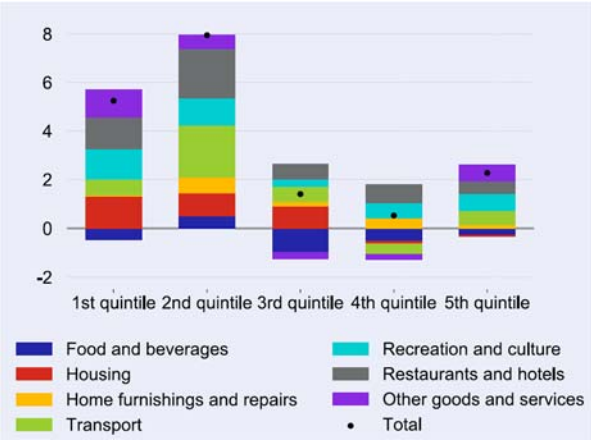
Overall, the propensity to consume is lowest among high-income households (see Chart 2).

High-income households are maintaining the highest saving rate; it did not change much even during the Covid lockdowns

Saving rate by income quintile in % — Chart 1

The propensity to consume fell mainly in the case of food and rose in the case of housing in 2022

Comparison of ratio of consumer expenditure to net money income between 2022 and 2021; differences in pp; CNB calculation based on data from Household Budget and Living Conditions Survey (CZSO) — Chart 2



Other CNB work dealing with heterogenous household consumption focuses on the period of high energy prices. A box in the Winter 2022 *MPR*[7] studies the heterogeneity in household consumption expenditures over time. The surge in

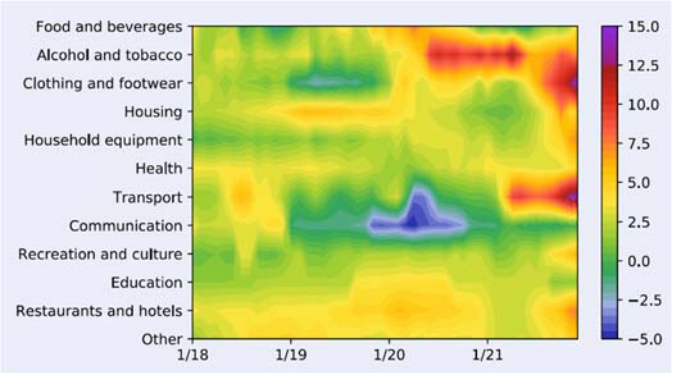
[7] See Box 2 ("How will the high energy prices affect household consumption?") in the Winter 2022 *MPR*.

housing-related energy prices had a significant impact on real household consumption in 2022. This analysis shows that a 20% increase in electricity, gas and heat prices implies a negative whole-year impact on real household consumption of almost 2.5%. According to PAQ Research, the absolute growth in housing expenditure was similar across all households. Therefore, low-income households were hardest hit. The share of housing costs in their total expenditure rose from 55% to 63%. Household consumption heterogeneity is also considered in relation to prices.

A box in the Winter 2022 *MPR*[8] shows inflation heterogeneity in the consumer basket. It concludes that the 2021–22 wave of price growth was not driven by just a few items but was broad-based and relatively intense. Chart 3 depicts the year-on-year price increases of the main categories of the consumer basket in the individual months of 2018–21. With the exception of the alcohol and tobacco category, which reflects a rise in excise duties on cigarettes, the price of the consumer basket increased at a moderate pace until the first quarter of 2021. Subsequently, however, inflation began to gather momentum across all categories except telecommunications. This was particularly evident in transport and in clothing and footwear.

Inflation rose significantly across consumer basket categories in the second half of last year

Annual inflation in %; the colour scale indicates the intensity of annual inflation — Chart 3



Mortgages

CNB analytical materials use individual-level data to analyse mortgage loans to households, which make up the largest part of households' debt burden. This is crucial because a substantial part of monetary policy transmission in the household segment takes place via the effect of interest rates on the volume of genuinely new loans for house purchase. An example of such material is provided in a box in the Summer 2023 *MPR*.[9] As the period since the CNB's policy rates (and subsequently also client

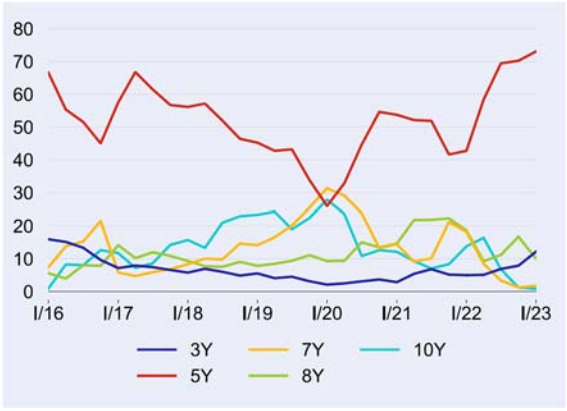
[8] See Box 4 ("Two phenomena of the current high inflation – intense and broad-based price growth") in the Winter 2022 *MPR*.

[9] See Box 2 ("Refixation and refinancing of mortgages and their effects on household expenditure") in the Summer 2023 *MPR*.

rates) went up increased in length, another channel was gaining in importance – the impact of the increased rates on current loan instalments, which are refinanced over time. According to the data from the *Survey of new loans secured by residential property*, the most popular fixed rate period is five years. It was agreed for 53% of total mortgage loans in the whole period under review (see Chart 4). However, the volume of loans with longer fixed rate periods rose significantly in 2019 – the share of 10-year fixes reached 28% and that of seven-year fixes 31%. This led to an increase in the average fixed rate period to 7.6 years. This can be explained by a decrease in banks' cost of funds at the time (see the five-year IRS rate in Chart 5) and an easing of banks' credit standards applied to loans for house purchase compared to 2017 and 2018.

Clients most frequently agreed a five-year fixed-rate period

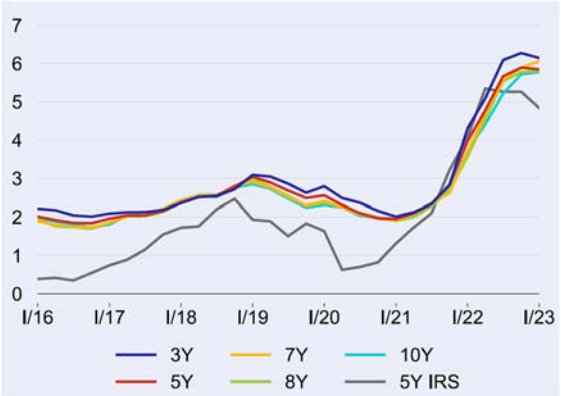
Share of loans by fixed-rate period; in % Chart 4



Note: The chart shows the five fixed-rate periods with the largest mortgage volumes. The rest of the fixed-rate periods account for 3% of all mortgage agreements on average.

Interest rates on new mortgages rose sharply for all fixed-rate periods in 2022

Interest rate on new mortgagesY IRS rate in %; by fixed-rate period Chart 5

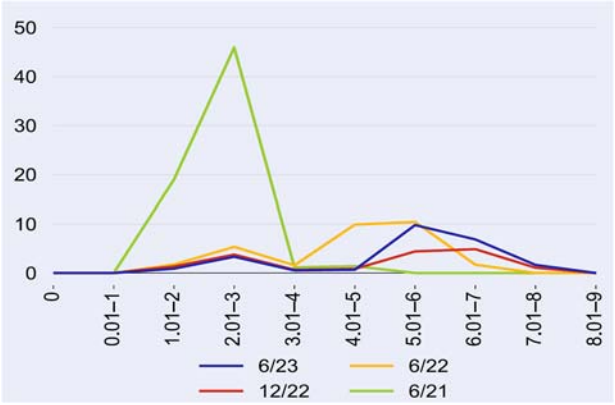


Deposit rates

The CNB regularly focuses on the distribution of household interest rates on loans and deposits (ie the heterogeneity in household rates). A box in the Summer 2023 *MPR*[10] shows how loan and deposit rates changed for Czech firms and households between the end of June 2021 and the end of June 2023. In mid-2021, the CNB started to raise its 2W repo rate from 0.25%. In the space of about one year, the rate increased to 7%, where it has stayed ever since (Charts 6 and 7).

Interest rates on new loans for house purchase are distinctly higher than in the past; volumes have fallen sharply

x-axis: interest rate band in %; y-axis: volumes in CZK billions; new loans — Chart 6



By actively seeking out higher interest rates, a large proportion of household deposits have been able to move to bands with a rate of over 5%

x-axis: interest rate band in %; y-axis: volumes in CZK billions; stocks of deposits — Chart 7

[10] See Box 3 ("How client interest rates on loans and deposits have changed over the last two years") in the Summer 2023 *MPR*.

The main sources of granular household data available in the CNB are the following:

Survey on income and leaving conditions (EU-SILC), Household Budget Survey (HBS), European Commission Business and Consumer Survey (BCS).

Household Finance and Consumption Survey (HFCS): This relatively new survey provides unique data on household finances, including assets, liabilities and net wealth. The survey does not include data on the wealthiest households, so the results must be interpreted with this limitation in mind.

IPSOS CZ and other specialised surveys: The CNB's pilot survey with IPSOS CZ, conducted from January to June 2024, captures household inflation expectations, providing insight into the heterogeneity of economic outlooks and sentiments. Previously, the CNB conducted several ad hoc surveys with STEM focused on evaluating monetary policy communication, with included questions on inflation perceptions and expectations.

III. Role of non-financial firm heterogeneity in monetary policy transmission

The CNB considers non-financial firm heterogeneity when preparing materials for informed decisions about setting monetary policy interest rates. Non-financial firm heterogeneity and its role in monetary policy transmission are discussed irregularly in periodical publications such as the MPRs), Analyses of the Czech Republic's Current Economic Alignment with the Euro Area, Financial Stability Reports and other outputs.[11]

The Czech Republic is a small open economy with heavy industry and a large share of exporting firms especially in the automotive industry. Apart from standard characteristics used to classify firms such as industry, firm size, new/old firm, non-/exporting firms, etc, an important aspect is whether a non-financial firm has access to loans denominated in euros. Primarily the exchange rate and credit channel in the transmission mechanism have potential to respond to non-financial firm heterogeneity to the largest extent.

Similarly to the case of households, the CNB monitors the evolution of firms' client interest rates. See Chart 8 for the distributions of interest rates on koruna-denominated loans in time and Chart 9 for the corresponding deposit rates.[12]

A standard characteristic to study firm heterogeneity – industry – is discussed, for example, in a box in *Inflation Report-IV 2018*[13]. This work discusses labour

[11] See, for example, Babecký et al (2017).

[12] For more details, see Box 3 ("How client interest rates on loans and deposits have changed over the last two years") in the Summer 2023 *MPR*.

[13] See Box 2 ("The effect of corporate investment on productivity") in *IR-IV 2018*. See also Galuščák and Sutóris (2016).

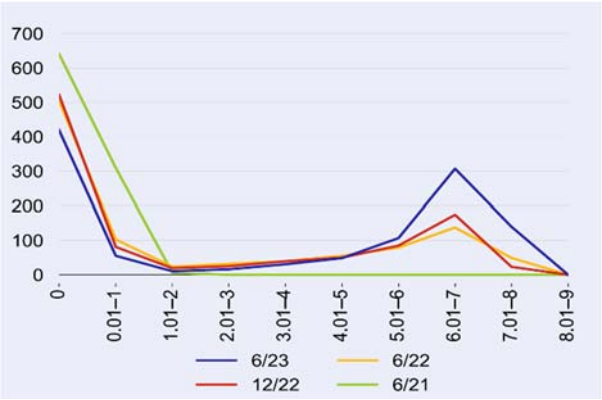
productivity and investment in the manufacturing sector as well as among large firms and is based on CZSO data on more than 800 large firms in this sector.

Interest rates on koruna-denominated loans to non-financial corporations respond almost immediately to monetary policy rates

x-axis: interest rate band in %; y-axis: volumes in CZK billions; stocks of koruna denominated loans — Chart 8

Firms are capable of attaining deposit rates close to the repo rate

x-axis: interest rate band in %; y-axis: volumes in CZK billions; stocks of deposits — Chart 9



Sectoral heterogeneity is for example studied in a box in *Inflation Report-II 2020*,[14] which focuses on how Covid-19 measures affected gross value added in different sectors, unsurprisingly with the strongest effect on services, especially tourism.

A CNB box in the Autumn 2023 *MPR*[15] uses firm-level and macro data to disentangle the Czech Republic's foreign trade relations and shows not only

[14] See Box 2 ("Direct impacts of the Covid-19 pandemic on the Czech economy") in *IR-II 2020*.

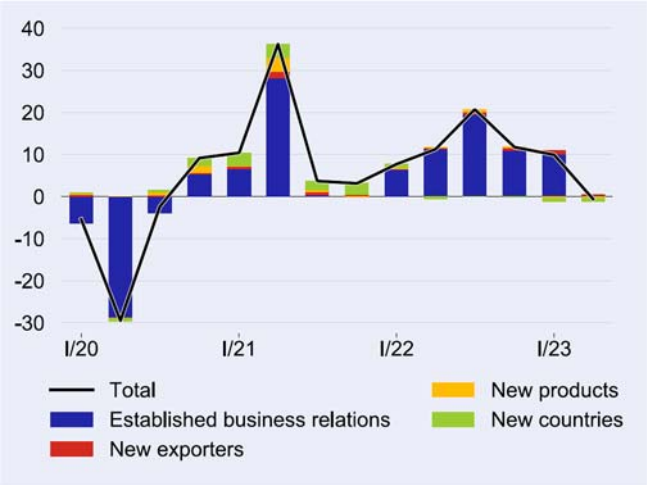
[15] See Box 1 ("The dependence of Czech exports on Germany") in the Autumn 2023 *MPR*.

Germany's importance to our economy, but also the specific nature of Czech exports in general. Czech goods exports are dominated by intermediate products such as metal products and machinery parts. An interesting characteristic to classify the heterogeneity among Czech non-financial firms is the existence of established business relationships. Chart 10 shows how much exports rise thanks to established business relations and how much thanks to new opportunities – due either to new firms becoming involved or to existing firms exporting new products or finding new markets for their goods.

Established business relations largely determine the dynamics of Czech exports

Annual growth rate of Czech exports and net contributions; CZSO firm-level data from residents on movements of goods; CNB calculations

Chart 10



Note: Weighted averages of year-on-year changes in exports at firm level, at product level under the six-digit classification of goods codes (Harmonized System) and at destination country level. Average exports in both periods are in the denominator.

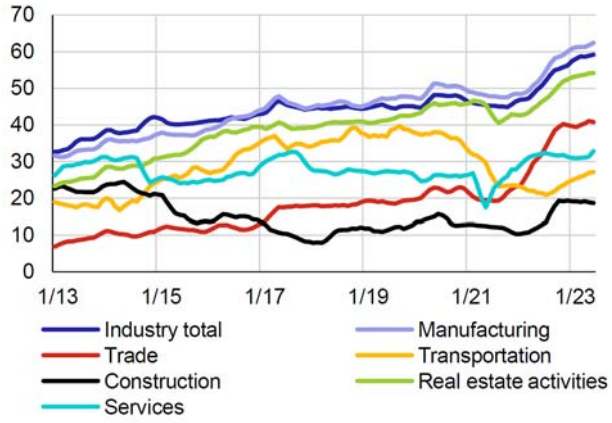
The CNB uses a standard set of granular firm-level data collected in the EU. For example, the Structure of Earnings Survey or Amadeus data are used on a regular basis. The CNB, however, uses other data sources for ad hoc analyses. A prominent example of such a data source is the AnaCredit data set, which collects information on all bank loans to non-financial corporations provided in the Czech Republic and is used in many analyses. A thematic chapter ("Euro financing of Czech firms"[16]) in an *Analyses of the Czech Republic's Current Economic Alignment with the Euro Area* report studies a situation when an increase in the differential between domestic and foreign interest rates due to a tightening of monetary policy by the CNB has been accompanied by a rise in the share of foreign currency (mostly euro-denominated) financing of Czech corporations. A higher share of foreign currency financing in the economy, ceteris paribus, weakens the monetary policy transmission mechanism. Using the administrative data from the AnaCredit database, the chapter examines the currency structure of corporate financing by domestic banks and from abroad, the

[16] Full text available in Analyses of the Czech Republic's Current Economic Alignment with the Euro Area 2023.

relationship between the share of euro-denominated loans and the interest rate differential, and the euroisation of the Czech economy (Charts 11 and 12).

Share of euro-denominated loans in selected sectors

% Chart 11

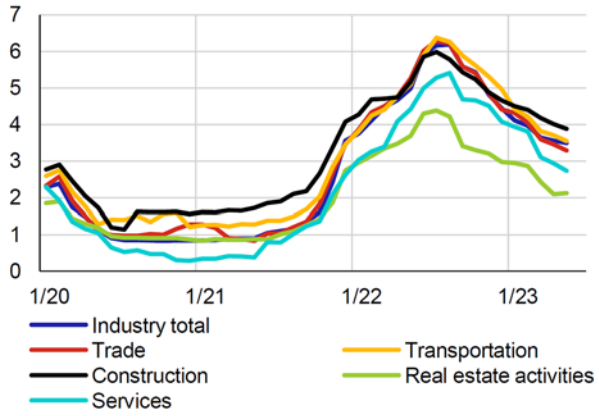


Note: 3M moving averages.

Source: CNB, CNB calculations.

Interest rate differential in selected sectors

From interest rates on koruna and euro-denominated loans; percentage points Chart 12



Source: CNB AnaCredit, CNB calculations.

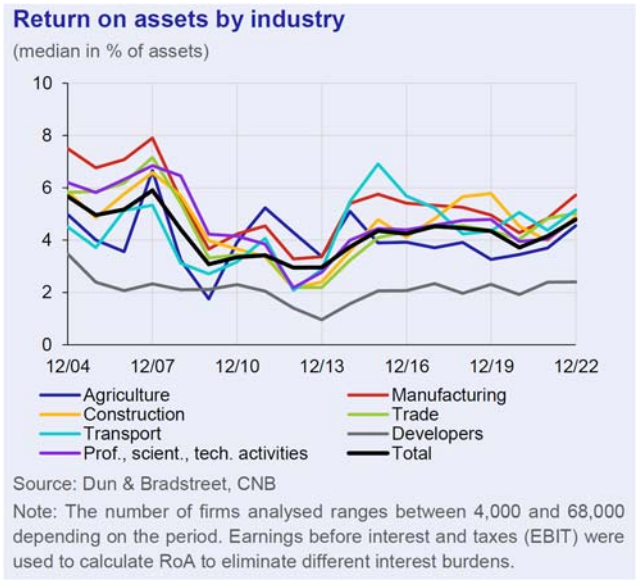
The CNB also uses data on balance sheets, covering up to 280,000 non-financial corporations operating in the Czech Republic.[17] The Spring 2024 *Financial Stability Report* box "Financial analysis of non-financial corporations"[18] analyses the situation in the corporate sector across industries and firm sizes, which is a novelty compared

[17] The data source is Dun & Bradstreet Czech Republic.

[18] For details, see Financial Stability Report Spring 2024, Box 2.

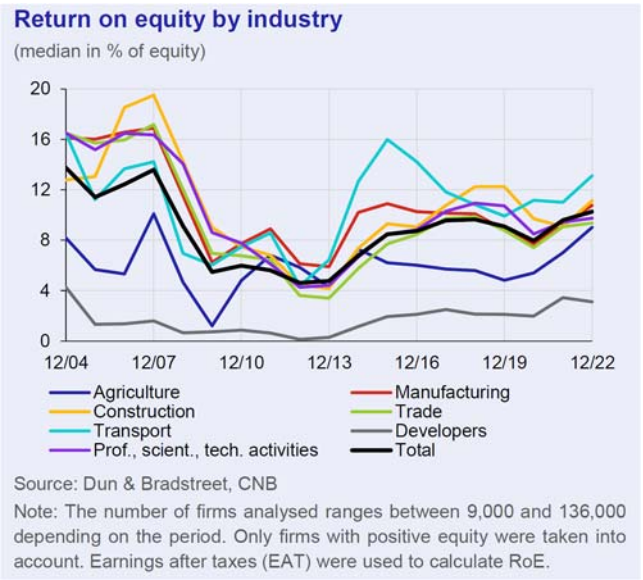
to the data sources used previously. The aim of this box was to introduce the key indicators monitored at the level of individual non-financial corporations. Knowledge of these indicators for a broad sample of firms will also allow the financial stability department to refine the stress testing of the non-financial corporations sector in the future (Chart 13).

Chart 13



Source: Dun & Bradstreet, CNB

Note: The number of firms analysed ranges between 4,000 and 68,000 depending on the period. Earnings before interest and taxes (EBIT) were used to calculate RoA to eliminate different interest burdens.



Source: Dun & Bradstreet, CNB

Note: The number of firms analysed ranges between 9,000 and 136,000 depending on the period. Only firms with positive equity were taken into account. Earnings after taxes (EAT) were used to calculate RoE.

IV. The link from heterogeneity to monetary policy decisions

The CNB implements heterogeneity of agents mainly in the form of expert judgments. These are applied mostly in ad hoc situations (eg increases in the minimum wage). Heterogeneous effects are judged based on the subpopulation distributions and their impacts are subsequently included in the core prediction model g3+. The model itself includes only two types of agents (agents with the possibility to save and hand-to-mouth agents) and, thus, the direct heterogeneity implementation is limited.

Qualitative inputs are much less involved in the prediction process and in supporting materials compared to quantitative inputs. Nevertheless, the CNB uses qualitative data occasionally. A prominent example is the European Commission Business and Consumer Survey, which focuses on inflation expectations. The qualitative answers are converted to one overarching index, which is further used for the sake of its simplicity.

Occasionally, the CNB initiates its own surveys on topics of interest. One recent example is a 2022 STEM survey that collected public opinion about trust in the CNB, the financial situation of households, and inflation expectations.

The CNB does not communicate heterogeneous effects on a regular basis. CNB Board members communicate the relevance of data on heterogeneity in specific situations, usually if some economic shock or event has a heterogeneous effect on non-financial firms or households. One example was during a high-inflation period, when CNB Board members repeatedly warned that high monetary policy interest rates disproportionally affect those non-financial firms that operate in korunas, as opposed to firms with access to financing in euros. For that reason, the CNB Board members stressed the importance of influencing the Czech economy through the exchange rate monetary policy channel.

In summer 2022, the share of business loans denominated in foreign currency (mostly euros) amounted to 55%. Loans denominated in euros were much cheaper than loans denominated in korunas. The reason behind this difference was the interest rate differential between the monetary policy rates, amounting to 6.5 pp in August 2022. Large companies and foreign-controlled companies benefited from cheaper EUR loans, while SMEs were hit hard by the tight monetary policy. Instead of tightening monetary policy rates further, the Bank Board decided to use the FX channel to tame inflation that peaked at 18% y/y in September 2022. The two-week repo rate (2W repo rate) was raised to 7% at the end of June 2022 and was expected to be raised further by some analysts. According to the Bank Board, further hikes would have only hit small and medium-sized companies hard, while large companies with access to EUR loans would have remained untouched. The question was: How to achieve a level playing field for all heterogenous agents? Instead of raising rates further, a kind of forward guidance has been used to support a strong CZK/EUR and thus to tame inflation. This strategy has proven to be successful, with the inflation target of 2% being achieved at the beginning of 2024.

V. Distributional effects of monetary policy

Under the Constitution of the Czech Republic and in accordance with primary EU law, the CNB's primary objective, which is also enshrined in the Act on the CNB, is to maintain price stability. In pursuing this objective, the CNB uses inflation targeting, which is based on a publicly announced inflation target of 2% and open communication by the central bank. By maintaining inflation close to the 2% target, the CNB creates an environment conducive to the development of business activity and growth in household living standards. Therefore, the CNB considers distributional effects of monetary policy on households and firms. However, this cannot lead to a deviation from the primary goal of maintaining price stability.

The Act on the CNB does not explicitly state that distributional effects should be considered in addition to the focus on aggregate targets. If its primary objective is not compromised, the CNB supports the government's general economic policy aimed at sustainable economic growth.

Distributional effects have been mentioned in past policy communications.[19] For example:

Board member J Procházka on the DTSI indicator, which is dependent on the client's age: "…the DSTI indicator, which relates debt service to the client's income (determining the maximum size of the monthly payment relative to their net monthly income – editor's note), is indeed a topic of discussion. The question remains whether these indicators, which constrained the market during periods of low rates, function the same way when rates are high, especially since high rates themselves are a barrier. We review these criteria every six months, but we are currently trying to act in an anti-inflationary manner, and it doesn't make sense for us to relax mortgage regulations at this time".[20]

Vice Governor J Frait on foreign exchange interventions: "We indeed abolished the intervention regime because it is an unconventional step that potentially offers some protection to certain investors…".[21]

Vice Governor E Zamrazilová comments on heterogeneous financing of Czech non-financial firms: "The financing of the domestic corporate sector reflects a relatively high level of spontaneous euroization in the economy. At the end of 2022, less than half (44%) of the total debt of the domestic corporate sector was denominated in the local currency, while 56% of loans were denominated in foreign currency, predominantly in euros….".[22]

Vice Governor E Zamrazilová on the mortgage market: "Property prices in our country have more than doubled since 2015, with the growth being the second highest in Europe. This was truly not a healthy growth. It has caused significant social challenges that will persist, especially for young families who want to acquire their own homes, making housing unaffordable for them. At the beginning of all this were very low interest rates combined with active permitting".[23]

[19] A full overview of the communication of the CNB and CNB Board members can be found at www.cnb.cz/cs/verejnost/servis-pro-media.

[20] Full text available at: www.cnb.cz/cs/verejnost/servis-pro-media/autorske-clanky-rozhovory-s-predstaviteli-cnb/Pokud-mzdy-porostou-moc-rychle-sazby-muzeme-zvednout-uz-v-kvetnu/ .

[21] Full text available at: www.cnb.cz/cs/verejnost/servis-pro-media/autorske-clanky-rozhovory-s-predstaviteli-cnb/Jan-Frait-vysvetluje-menovepoliticke-rozhodnuti-pro-Ceskou-televizi/

[22] Full text available at: www.cnb.cz/cs/verejnost/servis-pro-media/autorske-clanky-rozhovory-s-predstaviteli-cnb/Struktura-financovani-firem-a-transmise-menove-politiky-CNB/.

[23] Full text available at: www.cnb.cz/cs/verejnost/servis-pro-media/autorske-clanky-rozhovory-s-predstaviteli-cnb/Vyvoj-inflace-je-rozkolisany.-Snizovani-sazeb-muze-pokracovat-ale-obezretne/.

VI. Measures to address heterogeneity

The CNB uses certain policies that have heterogeneous impacts on firms and households. These are mainly policies that relate to financial stability and macroprudential measures.[24]

An example of such a macroprudential measure is the LTV (loan-to-value) indicator. The CNB can set or recommend a cap on this credit indicator for providers of consumer loans secured by residential property. The current cap on the LTV indicator is 80% (90% for applicants under 36 years old purchasing their own housing). Above this threshold, banks can grant loans only by exception. Similar age-specific heterogeneity holds for the DSTI (debt service-to-income and) and DTI (debt-to-income) indicators.[25] Currently, there is no mandatory upper limit set for the DSTI and DTI.

The CNB has recently introduced the SyRB (systemic risk buffer; a capital reserve for covering possible systemic risk), which is used to strengthen resilience against identified but harder-to-measure long-term structural risks. In the case of these risks, there are very limited comparable historical experiences regarding their materialisation, and as a result, these risks are more difficult to quantify and require a significant degree of expert assessment. The CNB can set the SyRB broadly for the entire banking sector and for all types of exposures (so-called broad SyRB) or sectorally for a defined subset (eg exposures related to loans in the real estate sector) based on the nature of the identified systemic structural risks.

The duration of the above-mentioned measures is usually not limited by a defined time frame, but their parameters can be changed or they can be cancelled based on the decision of the CNB Board.

[24] More about the financial stability department and macroprudential policies carried out by the CNB can be found at: www.cnb.cz/cs/financni-stabilita/.

[25] More details about the credit indicators can be found at: www.cnb.cz/cs/financni-stabilita/makroobezretnostni-politika/stanoveni-horni-hranice-uverovych-ukazatelu/.

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