Monetary policy decision-making: how are household and firm heterogeneity incorporated?

Questionnaire for the meeting of Emerging Market Deputy Governors on 17-18 March 2025

Please return the completed questionnaire to depgovs@bis.org by **15 November 2024**.

Your overall response will not be made public. However, specific answers may be quoted or reported in graphs in the BIS background paper with attribution to your central bank. The BIS background paper will be published on the BIS website after the meeting. In case any specific answers need to remain confidential, please let us know. For any answers that your central bank marks as confidential, we will make sure that these are not attributed to your central bank and are only mentioned in the background paper as part of aggregated information.

Please also provide contact details of the colleague in your central bank who could answer any queries about the responses provided to this questionnaire. In case of any questions regarding the questionnaire itself, contact Tirupam Goel (Tirupam.Goel@bis.org).

Central bank:

Name:

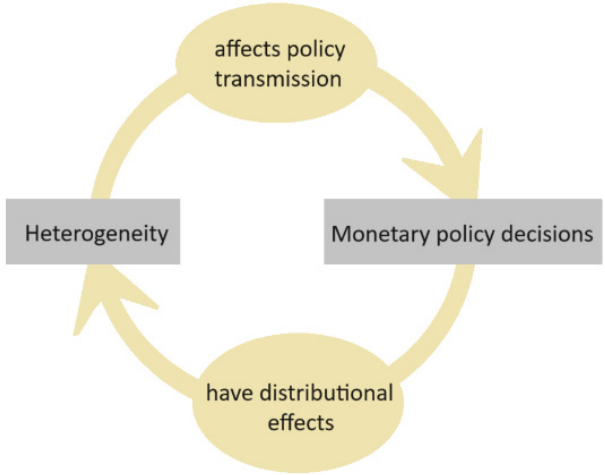
Title or department:

Email:

Phone:

Introduction

Heterogeneity among households and firms can matter for monetary policy decisions in two broad ways. First, different economic agents may react differently to policy actions. This can affect policy transmission and ultimately its effectiveness. As a result, a different policy decision may be required relative to a scenario where heterogeneity across agents is ignored. Second, monetary policy can have distributional effects. For example, to the extent low interest rates boost economic activity, they can benefit poorer/unemployed households more. Taking these distributional effects into account may also justify a different policy decision depending on the mandate of the central bank.



The goal of this questionnaire is to understand whether, why, and how heterogeneity features in the monetary policy decision making process in EME central banks. It raises both qualitative and quantitative questions, building on the proposed set of issues for discussion at the meeting (also circulated along with this questionnaire).

We are aware that answering some of the questions may be difficult (eg due to the lack of statistics). Please provide whatever relevant information you can in these cases. The data collected will help to provide a first detailed overview of this topic from an EME perspective.

We also appreciate that for some central banks the monetary policy framework may be different (eg interest-rate versus exchange-rate focused). In these cases, please feel free to interpret the question in a way that suits the context in your jurisdiction and answer the question accordingly. Feel free to also provide explanatory comments as needed.

Finally, you are asked to include a list of relevant references at the end of the questionnaire. This includes (but is not limited to) reports, speeches, or research papers from your central bank and papers written by academics.

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Part 1: Monetary policy transmission channels

Question 1A: Consider the main monetary policy tools in your economy. What are the channels through which these tools transmit to households and non-financial firms and what is their relative strength? For each cell in the table below, please choose the option that best reflects the reality in your jurisdiction.

Channel	Strength / relevance of the channel for households	Strength / relevance of the channel for non-financial firms	Most channels affect a host of decisions by households and firms, including those related to **activities** (eg consumption, savings, investment) and **prices** (eg wage setting, product pricing). Provide comments on which aspects are most affected. Feel free to provide any other comments too.
Savings-investment channel (also called the interest rate channel): Interest rate changes directly affect incentives to save and invest by households and firms.	Select	Select	
Cash-flow channel: Interest rate changes affect the amount of cash available to economic agents (eg higher deposit rates can increase cash-flow, but higher interest repayment on debt can lower disposable cash-flow).	Select	Select	
Balance sheet channel (also called the wealth channel): Interest rate changes can affect the value of assets and liabilities (via present discounted value of future flows) and thus strengthen or weaken households' and firms' balance sheets.	Select	Select	
Bank lending channel: Changes in the supply of bank loans can affect households and firms differently depending on the availability of alternative sources of credit.	Select	Select	
Exchange-rate channel: Interest rate changes can affect the value of the currency, which can impact demand for exports and imports. Currency movements can thus impact household decisions (eg purchase of imported goods) and business decisions (eg pricing, investment, debt profile, and hedging) and also reinforce the balance sheet channel.	Select	Select	

Channel	Strength / relevance of the channel for households	Strength / relevance of the channel for non-financial firms	Most channels affect a host of decisions by households and firms, including those related to **activities** (eg consumption, savings, investment) and **prices** (eg wage setting, product pricing). Provide comments on which aspects are most affected. Feel free to provide any other comments too.
Expectations channel: Changes in policy stance (eg a change in the policy rate) as well as communication regarding the policy path can change expectations of inflation and other macroeconomic indicators. These can affect activity as well as pricing decisions of agents.	Select	Select	
Any other channels that affect households or firms in your economy (please specify)	Select	Select	

Other comments for part 1, if any:

Part 2. The role of household heterogeneity

Question 2A: Is data on household heterogeneity currently used in your monetary policy analysis?	Select	Comments (if any):
If no, is it something under consideration?	Select	

Please answer the below questions on how various household characteristics are used in monetary policy analysis. Note that some characteristics may be correlated (eg spending patterns and thus inflation experiences may be explained largely by age, income and wealth).

Household characteristics	**Question 2B:** Which of these characteristics are used in the background analysis for monetary policy at your central bank? For example, as a dimension of cross-sectional heterogeneity in DSGE or VAR models.	**Question 2C:** If the characteristic is used, select the type of the primary source. • Surveys (such as those conducted for household expectations) • Administrative (eg tax disclosures) • Market data (eg online spending) • Other sources (please specify in comments column)	**Question 2D:** Based on your analysis and/or experience, what is your understanding regarding the degree to which these characteristics matter for monetary policy transmission (eg how important is each characteristic in shaping a household's reaction to a change in policy)	**Question 2E:** Which transmission channel is affected in particular? If other channel, please specify in the comments column.	**Comments (if any)**
Household specific inflation experiences (eg from credit card spending patterns)	Select	Select	Select	Select	
Heterogeneity in inflation expectations	Select	Select	Select	Select	
Heterogeneity in sentiments (eg pessimistic or optimistic)	Select	Select	Select	Select	
Level, composition and/or riskiness of income (eg wage versus business income vs interest income)	Select	Select	Select	Select	

Household characteristics	**Question 2B:** Which of these characteristics are used in the background analysis for monetary policy at your central bank? For example, as a dimension of cross-sectional heterogeneity in DSGE or VAR models.	**Question 2C:** If the characteristic is used, select the type of the primary source. • Surveys (such as those conducted for household expectations) • Administrative (eg tax disclosures) • Market data (eg online spending) • Other sources (please specify in comments column)	**Question 2D:** Based on your analysis and/or experience, what is your understanding regarding the degree to which these characteristics matter for monetary policy transmission (eg how important is each characteristic in shaping a household's reaction to a change in policy)	**Question 2E:** Which transmission channel is affected in particular? If other channel, please specify in the comments column.	**Comments (if any)**
Level and composition of wealth (eg whether in bank deposits, foreign currency holdings, stocks or housing)	Select	Select	Select	Select	
Level and composition of debt (eg fixed or floating rate mortgage, maturity structure) and/or debt burden (eg debt service to income ratio)	Select	Select	Select	Select	
Share of hand-to-mouth household, one that consumes all their current income	Select	Select	Select	Select	
Financial inclusion (eg those with a bank account may be more affected by an interest rate change)	Select	Select	Select	Select	

Household characteristics	**Question 2B:** Which of these characteristics are used in the background analysis for monetary policy at your central bank? For example, as a dimension of cross-sectional heterogeneity in DSGE or VAR models.	**Question 2C:** If the characteristic is used, select the type of the primary source. • Surveys (such as those conducted for household expectations) • Administrative (eg tax disclosures) • Market data (eg online spending) • Other sources (please specify in comments column)	**Question 2D:** Based on your analysis and/or experience, what is your understanding regarding the degree to which these characteristics matter for monetary policy transmission (eg how important is each characteristic in shaping a household's reaction to a change in policy)	**Question 2E:** Which transmission channel is affected in particular? If other channel, please specify in the comments column.	**Comments (if any)**
Employment status (eg employed in formal or informal sector versus unemployed)	Select	Select	Select	Select	
Heterogeneity in preferences (eg discount rates or intertemporal elasticity of substitution)	Select	Select	Select	Select	
Age (eg pensioners may have different consumption-savings behaviour)	Select	Select	Select	Select	
Financial literacy, rationality and/or information (full vs limited)	Select	Select	Select	Select	
Others (please specify)	Select	Select	Select	Select	

Question 2F: Provide the following data on aspects of household heterogeneity. Please provide estimates or proxies if exact values are not available. In such cases, feel free to indicate this via a comment.

	Latest observation (eg 2024)	An observation from a decade ago (eg 2014)	Comments (if any)
Share of households that hold capital market assets (bonds and stocks)			
Share of hand-to-mouth households (ie those with limited liquid wealth of less than two months of income and tend to consume all their income). Please include both poor and wealthy hand-to-mouth households.			
Share of households with any type of debt			
Share of households that are homeowners (as opposed to renters)			
Share of homeowners with floating rate mortgages			
Share of homeowners with fixed rate mortgages			
Interquartile range of household's debt service to income ratios (or provide standard deviation if range is not available)			
Interquartile range of households' inflation experiences (or provide standard deviation if range is not available)			

Other comments for part 2, if any:

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Part 3: The role of heterogeneity among non-financial firms

Question 3A: Is data on firm heterogeneity currently used in your monetary policy analysis?	Select	Comments (if any):
If no, is it something under consideration?	Select	

Please answer the below questions on how various firm characteristics are used in monetary policy analysis. Note that some characteristics may be correlated.

Firm characteristics	**Question 3B:** Which of these characteristics feature in the background analysis for monetary policy at your central bank? For example, as a dimension of cross-sectional heterogeneity in DSGE or VAR models.	**Question 3C:** If the characteristic is used, select the type of primary source from the drop down. • Surveys (such as those conducted for household expectations) • Administrative (eg tax disclosures) • Market data (eg online spending) • Other sources (please specify in comments column)	**Question 3D:** Based on your analysis and/or experience, what is your understanding regarding the degree to which these characteristics matter for monetary policy transmission (eg how important is each characteristic in shaping a firm's reaction to a change in policy)?	**Question 3E:** Which transmission channels are affected in particular? Choose one channel from the list (insert any additional comments in the last column).	**Comments (if any)**
Size	Select	Select	Select	Select	
Leverage	Select	Select	Select	Select	
Age	Select	Select	Select	Select	
Business sector	Select	Select	Select	Select	

Firm characteristics	**Question 3B:** Which of these characteristics feature in the background analysis for monetary policy at your central bank? For example, as a dimension of cross-sectional heterogeneity in DSGE or VAR models.	**Question 3C:** If the characteristic is used, select the type of primary source from the drop down. • Surveys (such as those conducted for household expectations) • Administrative (eg tax disclosures) • Market data (eg online spending) • Other sources (please specify in comments column)	**Question 3D:** Based on your analysis and/or experience, what is your understanding regarding the degree to which these characteristics matter for monetary policy transmission (eg how important is each characteristic in shaping a firm's reaction to a change in policy)?	**Question 3E:** Which transmission channels are affected in particular? Choose one channel from the list (insert any additional comments in the last column).	**Comments (if any)**
Funding profile (own funds vs bank vs bond vs stocks)	Select	Select	Select	Select	
Domestic currency versus foreign currency debt	Select	Select	Select	Select	
Others (please specify)	Select	Select	Select	Select	

Question 3F: Please provide data on firm heterogeneity. For this question, SMEs are defined as firms with less than or equal to 250 employees. Please report estimated shares relative to the universe of all non-financial firms. Provide estimates or proxies if exact values are not available. In such cases, feel free to indicate this via a comment.

		Latest observation (eg 2024)	An observation from a decade ago (eg 2014)	Comments (if any)
Share of SMEs, in terms of:	revenue			
	employment			

		Latest observation (eg 2024)	An observation from a decade ago (eg 2014)	Comments (if any)
Share of publicly traded firms, in terms of:	revenue			
	employment			
Share of firms in commodity sector, in terms of:	revenue			
	employment			
Share of firms that export, in terms of:	revenue			
	employment			
Share of firms with unhedged financial FX exposure, in terms of:	revenue			
	employment			
Share of jobs where the wage contract is subject to indexation				

Other comments for part 3, if any:

Part 4: Data

Question 4A. If data on heterogeneities is used, which characteristics of such data make them most useful for monetary policy analysis? Rank the characteristics (1 = most useful characteristic, 6 = least useful characteristic).		Representative (eg large sample)
		Longitudinal (ie follow the same entities over time)
		Administrative (as opposed to surveys)
		Detailed (ie cover all relevant dimensions)
		High frequency
		Others (please specify)

Question 4B. What are the impediments, if any, in using granular data in monetary policy analysis? Rank the impediments (1 = most important impediment, 7 = least important impediment). If granular data are not used (because, for instance, they are understood to be not useful), choose "Not Relevant".		The ideal data are not available
		Data are available but central bank access is restricted
		Data are available but privacy concerns limit use
		Historical coverage is limited (eg survey started recently)
		Data are partial (eg not representative or infrequent)
		Reporting lag means that data are out of date
		Others (please specify)
		Not relevant

Other comments for part 4, if any:

Part 5: How is data on heterogeneity incorporated in models and analysis?

Question 5A: Do you use heterogeneous agent models in your monetary policy analysis that are then calibrated using granular data? Choose all that apply.		Yes, two-agent New-Keynesian (NK) / Dynamic Stochastic General Equilibrium (DSGE) model
		Yes, heterogeneous-agent NK / DSGE model (ie multiple or a continuum of agents)
		Yes, another type of model (please specify)
		No

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Question 5B: Do you use granular data in your empirical models for monetary policy analysis? Choose all that apply.	☐	Yes, Vector-Auto-Regression (VAR) models
	☐	Yes, other regression models using specific indicators of heterogeneity (please specify)
	☐	Yes, another type of model (eg machine learning, please specify)
	☐	No
Question 5C: In your monetary policy analysis, how important are data on heterogeneity relative to more traditional aggregate inputs (eg inflation, GDP, and unemployment)?	Select	
Question 5D: How do you think the use of data on heterogeneity would evolve during the next decade?	Globally	At your central bank
	Select	Select
Question 5E: If you expect an increase, what is likely to be the main driver? Rank the drivers (1 = most important driver, 5 = least important driver).		Advances in data availability
		Better methods and algorithms
		More computational power
		Research showing that heterogeneity matters
		Others (please specify)
Question 5F: In your assessment, is the importance of heterogeneity in models state dependent (eg more important during recessions than during booms)?	Select	
If yes, please elaborate.		

Question 5G: In your workhorse models, under the most preferred assumptions, would it be possible to quantify the difference between the ceteris paribus effects (i) of a 100 bp contractionary monetary policy shock on inflation within two years and (ii) of a domestic asset purchase of 10% of GDP (if your economy has such a program) on the yield curve with and without agent heterogeneity? If so, how large would that difference be (in p.p. terms for inflation and bps for yield curve)? If possible, explain briefly which heterogeneity/heterogeneities was/were considered for this example. Note: This question applies only if agent heterogeneity is already considered in modelling at your central bank.

Other comments for part 5, if any:

Part 6: How are policy decisions affected ultimately?

Question 6A: Has incorporating data on household and firm heterogeneity benefitted the background analysis for monetary policy? Choose one of the options from #1, #2, and #3.	☐	1. Data on heterogeneity is not used.
	☐	2. Data on heterogeneity has been considered in the past but its usefulness is limited or uncertain.
	☐	3. Data on heterogeneity is used and found to be beneficial.

If you choose #3 in the previous question, rank the benefits (1 = most important, 4 = least important).		It enhances the **understanding of the economic outlook** (eg knowing the distribution of household savings today may help improve the forecasting of aggregate demand).
		It improves the **understanding of the transmission mechanism** ie helps obtain more accurate predictions of how policy actions impact target variables like inflation (counterfactual scenario analysis).
		It helps **understand the distributional impact** of policy changes.
		Others (please specify)
Provide a recent example that provides context to the ranking you chose above (eg how data on heterogeneity helped with the analysis when inflation surged in 2023).		
Question 6B: Has incorporating heterogeneity in monetary policy analysis led to recent policy decisions in your jurisdiction that are likely **different** from those in a hypothetical scenario where heterogeneity is not considered?	Select	
Provide a recent example of how heterogeneity featured in the policy deliberations, if applicable (eg how heterogeneity mattered during the tightening decisions in 2023 or any pivots in 2024).		
Question 6C: If yes, rank the considerations in terms of what mattered more for the policy decision (1 = most important, 5 = least important).		Heterogeneity affected the transmission of monetary policy
		Distributional implications of policy decisions
		Public's expectations (eg higher inflation may hit the poor harder who may thus demand for more hawkish monetary policy; the unemployed may prefer that the economy runs 'hot' for a while as that may help the unemployed more)
		Considering heterogeneity is part of the mandate
		Others (please specify)

Question 6D: Does heterogeneity need to be considered in central bank deliberations as per law/mandate?	Select	Comments (if any):
If yes, is this a recent development?	Choose one option Select	
If yes, which aspects of heterogeneity need to be considered? (eg household income inequality, firm debt profile)		
Question 6E: If considering heterogeneity is currently not part of the mandate, could this change in the near future in your jurisdiction?	Choose one option Select	
Question 6F: Is the role of heterogeneity in monetary policy communicated to the public? This may include, for example, conveying how such data were used to improve economic projections, how distributional effects are managed, or why heterogeneity justified a bigger/smaller rate cut.	Choose one option Select	
	Please provide links to such publications, if available.	

Other comments for part 6, if any:

Part 7: Use of policy to address heterogeneity

Question 7A. Is addressing heterogeneity (eg reducing inequality among households or reducing financial constraints faced by certain types of firms) a direct objective when calibrating monetary policy?	Choose Select
If yes, which specific monetary policy tools are most used in this respect?	

Question 7B. Has your central bank adopted non-monetary policies with the goal to address household or firm heterogeneities (eg reduce differences in homeownership across households or credit constraints across firms)?	Choose Select

Measures	**Question 7C.** Which of these measures have been adopted with the goal to address household or firm heterogeneity? Choose all that apply.	**Question 7D.** Which of these measures help address heterogeneity indirectly (ie addressing heterogeneity is not the main goal of the measure but the measure has such an impact)? Choose all that apply.	**Question 7E.** If measure was adopted, was this temporary (eg in response to Covid) or was the adoption rather permanent in nature?
Promotion of financial inclusion, financial engagement (eg opening of bank accounts, incentives to use them)	☐	☐	Select
Fostering financial literacy and financial health (eg safe use)	☐	☐	Select
Easier and more relatable communication that can be understood by all stakeholders	☐	☐	Select
Facilitate the development of a robust and effective payment ecosystem	☐	☐	Select
Safeguarding financial stability, such as via macroprudential measures	☐	☐	Select
Special lending facilities for select business sectors	☐	☐	Select
Others (please specify)	☐	☐	Select

Question 7F. If possible, briefly elaborate on the measure from the above list that was considered most important during the last 10 years.

Other comments for part 7, if any:

Part 8: Additional comments

Please use the space below to add any other experience of your central bank regarding heterogeneity and monetary policy which was not already covered above.

Part 9: References

Please provide up to five important references that relate to heterogeneity and monetary policy in your economy (eg central bank research papers, speeches, policy notes or journal articles).