Research Statement

Giovanni Sciacovelli

[Click here for latest version]

My research interests are in the fields of Macroeconomics and International Economics, with a focus on Monetary Policy and quantitative HANK modeling. In my work, I use quantitative models with heterogeneous agents to investigate both the transmission of macroeconomics policies and the diverse welfare effects that these policies have on households depending on their position in the income and wealth distributions. I am especially interested in the role of housing and mortgage institutions in shaping monetary policy transmission, which is the subject of my job market paper. In this statement, I provide an overview of my current research and of my ongoing projects. In particular, I plan to work on integrating heterogeneous agents into open-economy models in my future work, in order to deepen our understanding of international financial flows. An example of this research is *"Germany's Current Account Boom: The Impact of Housing Policies on Asset Demand and Household Investment"*, discussed below.

"Monetary Policy Transmission Through Adjustable-Rate Mortgages in the Euro Area" (JMP)

Monetary policy transmission varies significantly across Euro Area economies, and understanding the drivers behind this heterogeneity is essential. Mortgages represent a substantial component of household balance sheets (75% of total household debt in the Euro Area) and a large share of these mortgages are adjustable-rate (48% of total mortgages), making household mortgage payments highly responsive to interest rate changes. Consequently, differences in mortgage characteristics across Euro Area countries are likely to play a significant role in explaining the observed heterogeneity in monetary transmission. My job market paper focuses on this issue, studying the role of ARMs in monetary policy transmission in the Euro Area.

In the first part of the paper, I present empirical evidence showing that ARMs significantly enhance transmission primarily in economies with high shares of liquidity-constrained households. Using Euro Area survey data and panel local projections, I estimate the differential effects of monetary policy shocks depending on ARM prevalence and on the share of liquidity-constrained households. My analysis finds that the interaction between the share of ARMs and fraction of liquidity-constrained households is strongly correlated with the strength of monetary transmission: in Euro Area economies with high shares of liquidity-constrained households, the impact of ARMs on transmission is twice as strong as in economies with low shares of constrained households.

Building on this finding, the second part of the paper develops a quantitative heterogeneous-agent to (i) rationalize the empirical result, and (ii) quantify the extent to which differences in transmission through ARMs across Euro Area economies contribute to the observed heterogeneity in transmission. The model has three key features. First, households face idiosyncratic uncertainty, leading to income heterogeneity. This feature implies that a fraction of households is liquidity-constrained, allowing me to study their role in transmission through ARMs. Importantly, in the model, a higher share of liquidity-constrained households implies a higher marginal propensity to consume (MPC) in the economy. Second, households make decisions regarding the size of their housing stock and the amount of mortgage they want to take on. This allows the model to accommodate transmission through the mortgage channel. Third, a fraction of households have ARMs, implying that their mortgage payments fluctuate following changes in monetary policy. This feature allows me to use the model to analyze how different ARM shares influence the strength of monetary policy transmission.

The core intuition from the model on how ARMs and MPCs interact to shape monetary policy transmission through mortgages is as follows. When a monetary policy shock occurs, the mortgage payments of households with ARMs are immediately impacted due to the swift pass-through of short-term interest rates to mortgage rates, affecting their available resources for consumption. Wealthier households, whose mortgage payments constitute a small fraction of their overall income, hardly change their consumption choices. Poorer households, in contrast, with higher MPCs and more burdensome mortgage payments, need to make significant adjustments. As a result, powerful transmission through mortgages requires (i) a high fraction of households with ARMs, as they experience changes in mortgage payments, and (ii) a high prevalence of high-MPC households, as they make larger consumption adjustments. This mechanism rationalizes the empirical relation between the strength of monetary transmission and the interaction between ARMs and liquidity-constrained households highlighted in the first part of the paper.

By calibrating counterfactual ARMs and MPCs to reflect Euro Area data, I use the model to show that 46% of the overall empirical differences in transmission across these countries can be attributed to differences in transmission through ARMs. Specifically, 9% of these differences are due to differences in ARMs, 26% to differences in MPCs, and 11% to the interaction between ARMs and MPCs. Given the substantial role played by differences in MPCs, these findings underscore the critical importance of accounting for household income heterogeneity to accurately capture transmission through ARMs in the Euro Area.

Overall, there are two key takeaways from this paper. First, MPCs play a crucial role in monetary policy transmission through ARMs, since they control the sensitivity of consumption to changes in mortgage payments. Second, differences in transmission through ARMs are important to understand the overall transmission differentials across Euro Area countries. As a consequence, policymakers in the Euro Area should pay particular attention to this transmission channel.

"A Monetary Policy Framework for Developing Countries" with Juan Passadore, Filiz Unsal, and Carlos van Hombeeck

Presented at the 2022 Lille-Reading Workshop, 2023 Annual Meeting of the Society for Economic Dynamics (SED), 2023 Annual Conference of the Banco Central do Brasil, 2023 WBG and IMF Annual Meetings

A significant fraction of low-income households in developing countries rely heavily on imported food items. The COVID pandemic and the Russian invasion of Ukraine have caused a terms-of-trade shock that has driven up food prices, presenting central banks in these countries with challenging trade-offs. One such critical trade-off is balancing inflation stabilization, on the one hand, with supporting household employment that enables income generation for purchasing essential subsistence goods, on the other hand. Thus, in countries with substantial income disparities, monetary authorities must carefully assess the trade-off between deviations in inflation from target and output stabilization due to distributional concerns. Well-intended aggressive monetary policy stances to tame inflation might have pervasive employment effects, and hurt the exact households that they are trying to protect in the first place. In this paper, we build a small open-economy HANK model with realistic features to capture low-income countries (LICs), and we use it to analyze how different monetary policy rules affect (i) the transmission of terms-of-trade shocks and (ii) the welfare consequences of these shocks on different households in the economy.

In the first part of the paper, we build a small open-economy HANK model following the framework introduced in Auclert et al. (2024), which we solve using the sequence-space Jacobian approach developed in Auclert et al. (2021). In order to capture LICs, we introduce two modifications to this framework. First, a fraction of consumers do not participate in the financial market. Hence, consumers are either financially included or excluded, on top of their productivity differences. Although a stark assumption, limited financial inclusion is pervasive in LICs, and captures the evidence of a persistently higher share of "hand-to-mouth" consumers in these countries. Second, we introduce a subsistence level of consumption of imported goods, which implies that preferences are non-homothetic in our setting. This feature of the model is crucial, as it allows it to match the empirical fact detailed in Cravino and Levchenko (2017): lower-income households have a larger fraction of their consumption basket composed of imported goods relative to higher-income households in LICs,and as a consequence, these households are disproportionately exposed to terms-of-trade shocks.

Our model is calibrated to a representative LIC: Ghana. A contribution of our paper is to use survey Ghanaian data (ECG-ISSER Ghana Socioeconomic Panel Survey[1]) to estimate the persistence and volatility of the income process of a typical LIC, which we use in the calibration of our model.

In the second part of our paper, we analyze how a negative terms-of-trade shock, in the form of an increase in imported goods prices, propagates through the economy and affects welfare across households. Our results show that households at the bottom of the income distribution are the most negatively affected by the shock. This result is the consequence of two main forces. First, rising import prices impose a heavier burden on these households, as a larger share of their consumption basket is allocated to imported goods due to non-homothetic preferences. Second, the inflationary nature of the shock prompts the central bank to raise interest rates, which induces a recession and suppresses wages. As a result, households at the lower end of the income distribution, with limited savings to buffer against income fluctuations, experience a disproportionate decline in welfare.

We evaluate the welfare effects under a broad set of alternative monetary policy rules and find that these policies offer limited improvement for low-income households. This suggests that central banks have little capacity to reduce the adverse welfare impact on these households solely through monetary policy adjustments. Consequently, we turn to fiscal policy, examining the impact of transfers targeted at low-income households, funded by increased taxes on wealthier groups. While this fiscal intervention hardly affects the response of macroeconomic aggregates, it significantly mitigates welfare losses for households at the bottom of the income distribution.

Germany's Current Account Boom: The Impact of Housing Policies on Asset Demand and Household Investment (in progress)

In this paper, I explore the impact of housing policies on the dynamics of the German current account. Since the early 2000s, Germany has experienced a remarkable expansion of its current account, marked by both a de-

[1]The survey is administered by the Economic Growth Center at Yale University, the Global Poverty Research Lab at Northwestern University, and the Institute of Statistical, Social, and Economic Research at the University of Ghana.

cline in national investment and a surge in national savings. Notably, a substantial portion of this investment reduction stems from the household sector, whose primary form of investment is in housing. Several significant housing policies were introduced by the German government in the late 1990s and early 2000s: (i) the 1997 German Tax Act raised the real estate transfer tax rate from 2% to 3.5%; (ii) the 2001 Tenancy Reform Act strengthened renter protections; and (iii) the 2001 Social Housing Reform abolished a longstanding housing construction subsidy in place since 1950. This paper investigates the extent to which these housing policies contributed to the German current account expansion. Did these reforms encourage greater household demand for liquid assets which, within the context of a newly-formed currency union with lower financial barriers, led to higher international lending?

To address this question, I am developing a small open-economy HANK model in which households choose between buying and renting to assess the effects of the above-mentioned policies on the household sector's current account. Specifically, households' decisions on home-ownership versus renting, as well as on the allocation of resources to liquid assets (which can be invested abroad in an open-economy context), vary according to their income levels. My objective is to determine whether these policies, by encouraging households to rent rather than buy, have led to a significant rise in household savings, explaining part of the recent increase in Germany's current account balance.

Fixed or Adjustable Mortgage? Endogenous Rate Choice in a Model with Idiosyncratic Uncertainty (in progress)

The prevalence of adjustable-rate mortgages (ARMs) varies widely across countries: in the Euro Area, for example, over 90% of mortgages in Portugal are ARMs, compared to only about 10% in France. This share also fluctuates significantly over time: in the United States, more than 30% of new mortgages had adjustable rates in the 1990s, whereas today that figure is less than 10%. What drives these patterns? To address this question, this paper develops a model with heterogeneous agents, where the choice between fixed and adjustable mortgage rates is endogenous, providing insight into the household characteristics that, in the absence of additional economic frictions, would make ARMs the optimal choice.

Following the framework of Campbell and Cocco (2003), the model includes three key features. First, ARMs initially offer lower interest rates compared to fixed-rate mortgages (FRMs). Second, ARMs carry uncertainty regarding future mortgage payments, deterring risk-averse households from selecting these mortgages. Third, consistent with empirical findings, periods of high interest rates often correspond with high inflation, which results in lower real wages. This last feature is particularly important, as it creates a negative correlation between interest rates and real wages, which is especially relevant for low-income households that depend more heavily on labor income to sustain their consumption levels.

Once developed, the model will be calibrated to various countries to assess the extent to which cross-country differences in mortgage-related variables (such as the average spread between fixed and adjustable rates and the historical volatility of ARM rates) can account for the observed differences in ARM prevalence across these countries.

References

Auclert, A., Bardóczy, B., Rognlie, M. and Straub, L. (2021). Using the Sequence-Space Jacobian to Solve and Estimate Heterogeneous-Agent Models, *Econometrica* **89**(5): 2375–2408.

Auclert, A., Rognlie, M., Souchier, M. and Straub, L. (2024). Exchange Rates and Monetary Policy with Heterogeneous Agents: Sizing up the Real Income Channel, *NBER Working Paper 28872* .

Campbell, J. and Cocco, J. (2003). Household Risk Management and Optimal Mortgage Choice, *Quarterly Journal of Economics* **118**(4): 1449–1494.

Cravino, J. and Levchenko, A. A. (2017). The distributional consequences of large devaluations, *American Economic Review* **107**(11): 3477–3509.