What have we learned from HANK models, thus far?

By Giovanni L. Violante[1]

Abstract

Heterogeneous Agent New Keynesian (HANK) models are emerging as leading frameworks to study the impact of monetary and fiscal policy on the macroeconomy. This article highlights four lessons learned, so far, from research on these models: (1) the transmission mechanism of monetary policy is starkly different from its representative agent counterpart; (2) several channels of amplification/dampening of the effects of monetary policy emerge that are linked to the income and wealth distribution; (3) monetary policy redistributes income across households, but it is a blunt instrument to promote income mobility or contrast income disparities; (4) an informed conduct of monetary policy requires rich micro data which can provide a comprehensive and high-frequency pulse of household balance sheets.

1 Introduction

Like all Central Banks, the ECB uses a suite of different models to inform monetary policy decisions. Some of these models are large systems of equations with a "reduced form" flavour that aim at a detailed representation of the complex relations among the many sectors of the economy. Others are lower-dimension Structural Vector Autoregression (SVAR) models where shock identification is often guided by economic theory. Others yet are fully structural dynamic stochastic general equilibrium (DSGE) models, usually estimated via a Bayesian approach.[2]

Each of these models serves its own purpose. The first two approaches are mostly designed for short-term or medium-term forecasting. While forecasting is a necessary ingredient of the policy decision process, it's by no means the only one. Central banks need to have a profound understanding of the economics behind the transmission mechanism of monetary policy and of its quantitative effects on the macroeconomy. DSGE models are a key tool in this respect, because they are fully micro-founded and forward-looking, and thus they allow to analyze counterfactual scenarios which provide an essential context to the policy choice.

[1] Princeton University, CEBI, CEPR, IZA and NBER. I thank Greg Kaplan and Ben Moll for useful comments.

[2] See the Review of Macroeconomic Modelling in the Eurosystem: Current Practices and Scope for Improvement, one of the background papers prepared by the ECB staff for the monetary policy strategy review.

The typical quantitative DSGE model currently used in central banks, however, features either a representative consumer or very limited heterogeneity on the household side (e.g. spender-saver or borrower-saver structures). Even these models are useful and informative, to some extent. The frontier in academic research, however, has recently shifted toward incorporating heterogeneity and distributional considerations in the household sector to a much fuller degree.

I was especially glad that one of the many excellent background papers prepared for the 2021 monetary policy strategy review advocates to take steps forward in this direction. Namely, the Review of Macroeconomic Modelling in the Eurosystem recommends that (page 14): *given the achievements in the academic HANK literature, central banks should venture into this area of modelling, possibly focusing first on households and labour market heterogeneity (notwithstanding other relevant dimensions) and advancing the empirical validation of those models*.

Heterogeneous Agent New Keynesian (HANK) models are born from the fusion of two workhorses of macroeconomic theory: (i) the New Keynesian approach to the study of business cycles and stabilization policies, and (ii) the incomplete-market approach to the study of the distribution of income and wealth, and of those policies that promote social insurance, income mobility and equality of opportunities and resources.

In this class of models, the production and monetary policy blocks are exactly the same as in the Representative Agent New Keynesian (RANK) model and, as in that framework, they are summarized by three aggregate equations: (i) the Phillips curve which specifies a relation between inflation and output dynamics; (ii) the Taylor rule which summarizes how the monetary authority operates its main instrument, the nominal interest rate; (iii) and the Fisher equation which links the real interest rate, the policy rate, and expected inflation.[3]

The crucial innovation lies in replacing the representative consumer, and hence the aggregate Euler equation (or the IS curve), with the modern theory of consumption and saving. The starting point of this theory is that households are heterogeneous ex-ante and ex-post and, because of financial market imperfections, these differences transmit to consumption, saving and welfare. Namely, consumers are subject to uninsurable idiosyncratic labor income risk (e.g., unemployment spells, demotions and promotions, job to job transitions, occupational and sectoral swings in demand, health and disability shocks, etc.) which they can smooth only by saving in a non-state contingent asset (e.g., a risk-free bond) and by borrowing up to a maximum credit limit. In equilibrium, the lack of perfect risk-sharing yields a non-degenerate cross-sectional distribution of income, consumption and wealth, as well as individual mobility dynamics across the distribution, both of whom resemble their data counterpart.[4]

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[3] See Clarida, Gali, and Gertler (1999) for a classical survey article on the New-Keynesian perspective on monetary policy.

[4] See Carroll (2001) for a comprehensive review article on consumption behavior in the so called 'buffer stock' model, and Heathcote, Storesletten and Violante (2009) for a review article on the heterogeneous agent incomplete markets approach to quantitative macroeconomics.

At the cost of oversimplifying, one might say that there are three groups of households in this economy, each one important in its own way for monetary policy analysis. The first group is composed by those who have very low liquidity and, therefore, high marginal propensities to consume (MPC) which are called `hand-to-mouth' households in this literature. They derive their income from wages and government transfers. The second group could be thought of as comprising a `middle class' of households which have a strong precautionary saving motive (i.e., `saving for the rainy day') determined by their desire to stay away from the borrowing constraint. The bulk of their income comes from labor. The third group contains high net worth individuals, sufficiently rich that the precautionary saving motive is trivial for them. These are households with low MPC, like the consumer in representative agent models. Because they hold the bulk of the wealth in the economy, a substantial share of their income comes from capital, and they are especially exposed to capital gains and losses from fluctuations in asset prices or private equity values.[5]

Over the last few years, this new class of models has proved itself to be a rich framework to investigate the impact of macroeconomic shocks, fiscal and monetary policies on aggregates and on the distribution.

In the rest of this article, I will reflect on four main lessons, especially relevant for Central Banks, which we have learned from this new synthesis, so far.

2 Lesson I: Transmission mechanism of monetary policy

The most important lesson we have learned from HANK models is about the transmission mechanism of monetary policy.

It is useful to start from the canonical representative agent model. There, a cut in the nominal rate induces a rise in consumption expenditures through intertemporal substitution via the aggregate Euler equation. This is the *direct effect* of a monetary policy shock. Such rise in expenditures, in turn, leads to an expansion in the demand for labor and, because of nominal rigidities, to an additional round of increase in expenditures. The size of these *indirect* general equilibrium effects linked to the Keynesian multiplier are proportional to the magnitude of the aggregate marginal propensity to consume which, in RANK models, is tiny (approximately equal to the discount rate). As a result, in the standard RANK model, the transmission of monetary shocks to the real economy occurs almost entirely through direct intertemporal substitution.

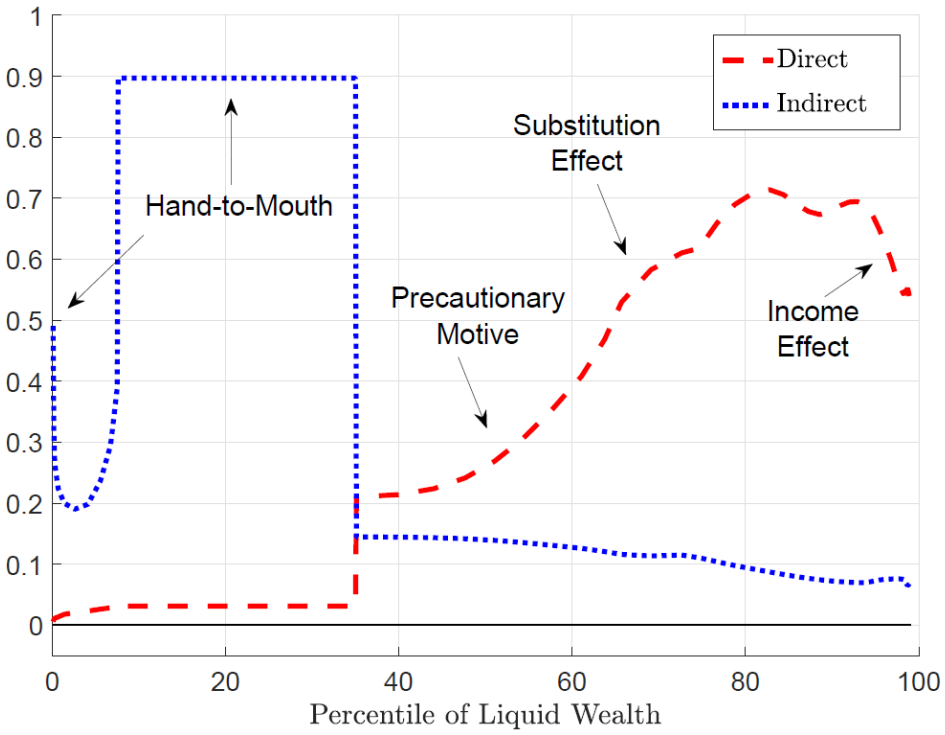
Thus, somewhat paradoxically, the channel by which monetary policy affects aggregate output in the standard New Keynesian model differs markedly from the ideas typically associated with John Maynard Keynes (namely, the equilibrium

[5] One reason why this distinction is somewhat of an oversimplification is that in the data there exist households with almost no liquid wealth, but sizable illiquid net worth (e.g. housing or retirement accounts). These so called *wealthy hand-to-mouth* households have a portfolio composition similar to the middle class, but their consumption behaviour is more alike to the poor hand-to-mouth. See Kaplan, Violante (2014) and Kaplan, Violante and Weidner (2014).

spending multiplier). For these reasons, as suggested by John Cochrane, it would be more appropriate to call this framework the *sticky-price intertemporal-substitution model*.

Chart 1

The consumption response to a monetary policy shock across the wealth distribution



Notes: Reproduced from Kaplan and Violante (2018).

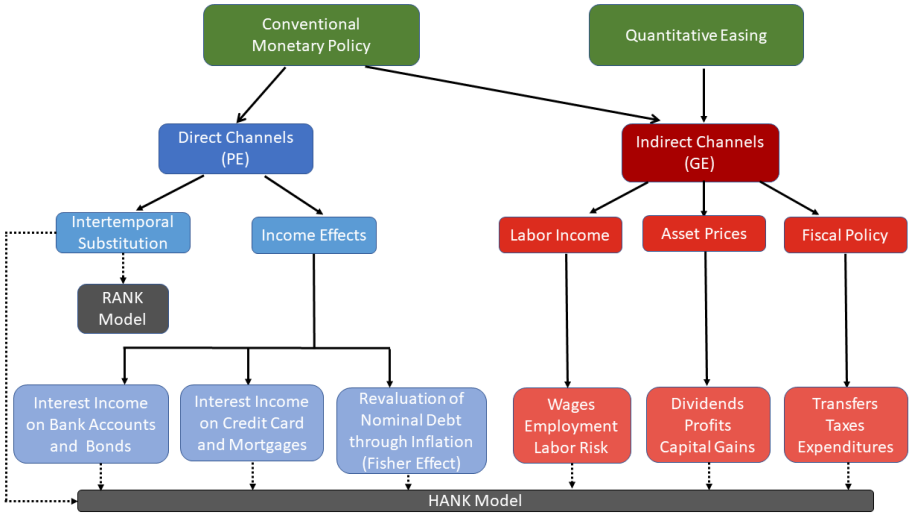
In HANK models, the channels of transmission of monetary policy are more complex, and vary across the income and wealth distribution. But, most importantly, the *indirect general equilibrium effects* become at least as important quantitatively as intertemporal substitution. The key reason is that in this class of models, in line with the empirical evidence, the aggregate MPC is at least 20 times larger: 15-20% over the first quarter, instead of 0.5-1%.

Chart 1 summarizes the transmission mechanism of a monetary policy easing in the HANK model of Kaplan, Moll, and Violante (2018). It plots the change in consumption at various percentiles of the distribution of liquid wealth, split between direct and indirect effects. Different forces play out at different points of the distribution. At the bottom, indirect effects operating through the rise in employment and wages, paired with a strong MPC, explain the strong consumption response of poor and wealthy hand-to-mouth households. Indirect effects fade away quickly, as we climb along the wealth distribution. The intertemporal substitution channel starts mattering, but around median liquid wealth the precautionary saving motive stifles this channel: households fear to receive negative income shocks that will put them against the credit limit and, as a result, they increase expenditures only moderately. For richer households the substitution channel dominates, but for the richest ones the lower interest rate induces a negative income effect.

This version of the model abstracts from a number of additional channels that are being incorporated in more recent work, such as nominal long-term debt and asset prices. Figure 1, a re-elaboration of Moll (2020), gives a more comprehensive list of all possible channels of transmission of shocks in this class of models. It also highlights how quantitative easing (i.e., asset purchase programs) affects aggregate consumption entirely through indirect channels.[6]

Figure 1

The transmission mechanism of conventional and unconventional monetary policy



Notes: A re-elaboration of Moll (2020).

In the last few years, a number of authors have leveraged micro data on consumption, income and household portfolios for various countries to estimate the size of these direct and indirect channels and how they vary across the cross-sectional distribution.[7]

What are the implications of these new findings that have emerged from HANK models for the conduct of monetary policy? Seen through the eyes of the representative agent model, the job of a central banker is relatively straightforward. In order to understand the impact of a change in the policy rate on aggregate consumption, all is needed are two ingredients: expected inflation to convert the nominal rate under control into the real one, and the aggregate intertemporal elasticity of substitution which measures the sensitivity of aggregate consumption to the real rate.

From the perspective of HANK models, instead, central banks face a much more complex task. First of all, the informational requirements about the household side of the economy are more exacting. To estimate the aggregate consumption response, one needs a full picture of the joint distribution of marginal propensities to consume, income composition, and the various elements of household balance sheets. We will

6 In frictionless representative agent models where "Wallace neutrality" holds, quantitative easing has no real effects. See Cui and Sterk (2020) for an analysis of QE in HANK.

7 See Cloyne and Surico (2020) for evidence on the US and the UK, Holm, Paul and Tischbirek (2021) for evidence on Norway, and Andersen et al. (2021) for evidence on Denmark, for example.

return on this point in Section 5. Second, the importance of indirect equilibrium channels means that the transmission of monetary policy is crucially mediated by all those mechanisms that contribute to price formation in goods, inputs, credit, housing and financial markets. It is then essential for a central bank to have a deep comprehension of market structure, market frictions as well as of those institutions and actors that play major roles in these settings (i.e., local governments, unions, regulatory bodies, etc.).

Overall, from the perspective of HANK models, it is much harder for monetary authorities to fine-tune policy interventions because so many elements of the transmission mechanism are entirely outside their control and depend on the complex dynamics of many different markets.

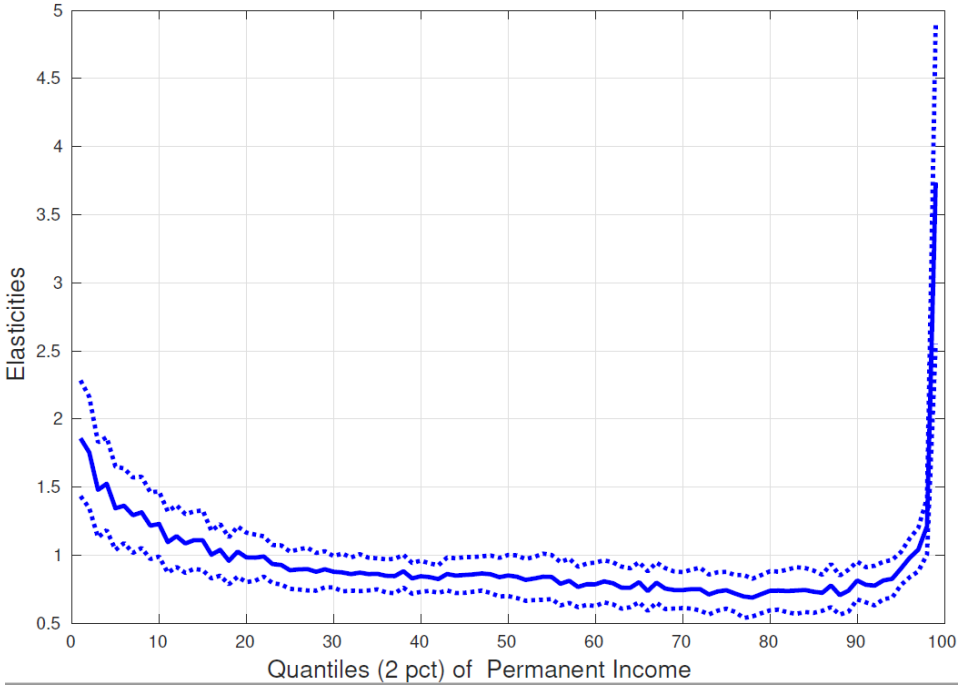
3 Lesson II: Economic forces leading to amplification and dampening

Besides modifying the transmission mechanism of shocks, household heterogeneity and market incompleteness also alter the strength of their propagation through the macroeconomy. There exist at least three separate sources of amplification/dampening relative to the representative agent counterpart.

The first source is the *redistribution channel*. Chart 2 reproduced from Guvenen et al. (2017) plots the elasticity of earnings to aggregate GDP across the distribution of (permanent) labor income. Exposure to aggregate fluctuations is highest at the extremes of the distribution. At the bottom, the reason is that those households are more likely to become unemployed during a recession (or to find employment along an expansion). At the top, instead, labor compensation is largely based on performance, and thus linked to the aggregate state of the economy.

Chart 2

The elasticity of earnings to GDP across the distribution



Source: Guvenen et al. (2017).

The bottom line is that, in general, households are unequally exposed to aggregate shocks. In HANK models, this heterogeneous sensitivity is a source of amplification of shocks to the extent that income is redistributed from low MPC to high MPC households (Auclert 2019; Bilbiie 2020, Patterson 2021, Slacalek, Tristani and Violante 2020). A new literature that emphasizes the role of heterogeneity in risk-taking among households, points out that amplification occurs also when income is redistributed from households who have a low marginal propensity to take risk to those with a high such propensity because aggregate investment would increase and, as a result, aggregate demand would expand as well (see, in particular, Kekre and Lenel, 2020).

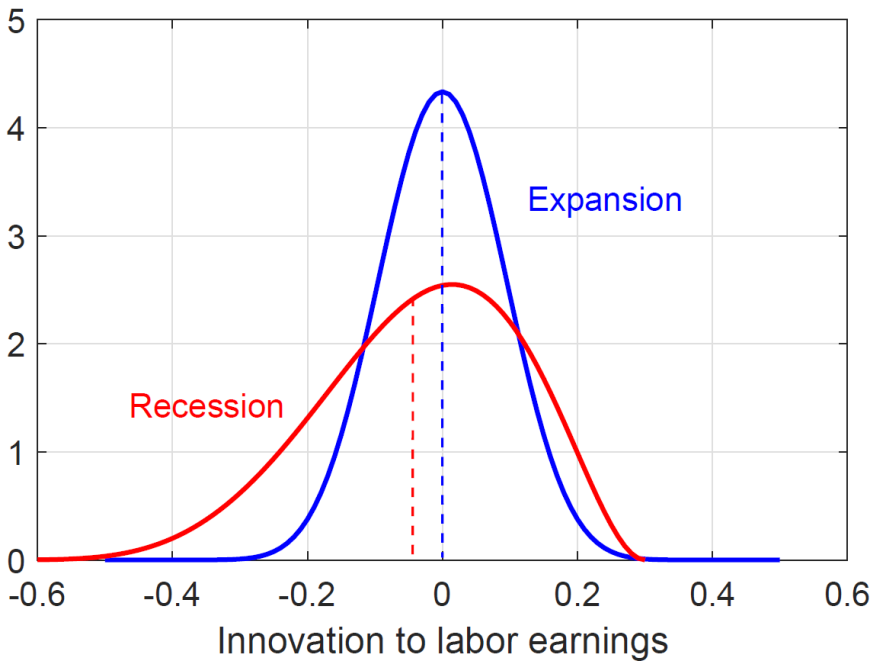
When assessing this channel, it is important to keep in mind that the main sources of income vary across the distribution: at the very bottom, households mostly live off government transfers; labor income is paramount for the middle class, whereas for the very wealthy, business and entrepreneurial income are dominant. This *uneven income composition* means that it is crucial to understand how these different sources of income respond to aggregate shocks in order to estimate the magnitude of amplification or dampening (see, for example, Alves et al. 2020; Broer et al. 2020).

The second source of amplification is related to the cyclicality of the precautionary saving motive. Chart 3 illustrates the cyclical shift in the distribution of earnings growth: left-skewness is countercyclical because unemployment risk rises in recessions. In response to this surge in risk, households become more cautious and start saving more in order to build a buffer in case their employment status worsens.

In HANK models, this *precautionary saving channel* amplifies the negative aggregate shock because the cut in expenditures to build the additional buffer stock of saving piles up onto the initial reduction of aggregate demand (see Acharya and Dogra 2020).

It should be emphasized that, in versions of the HANK model with capital, in equilibrium these extra saving would show up in investment, i.e. they would be redirected into a different component of demand, without much net effect. In reality, though, households who `save for the rainy day', want to compress their exposure to risk and strengthen their liquidity, and thus do not save in risky or illiquid assets, but rather into cash, bank accounts or government bonds. Only a two-asset version of HANK with liquid bonds and illiquid risky capital has predictions consistent with the data (see Bayer et al. 2019, and Kaplan, Moll and Violante 2018).

Chart 3
The countercyclicality of idiosyncratic labor market risk



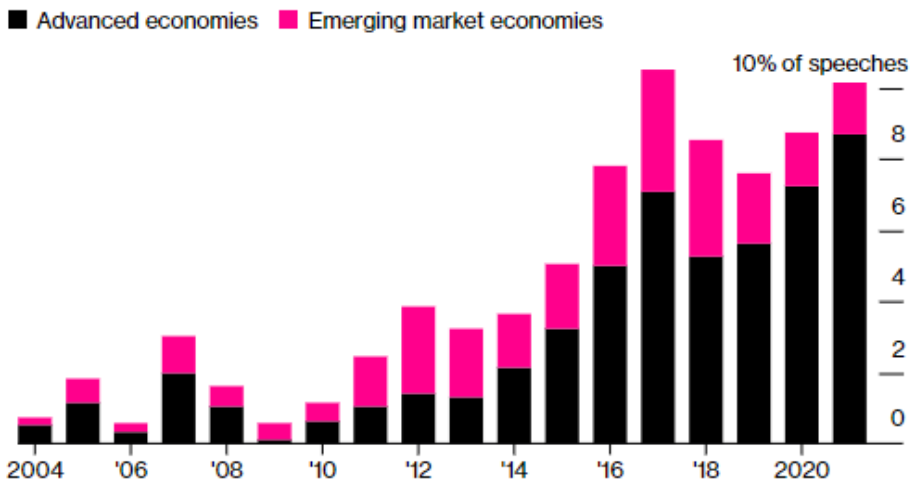
The third main source of amplification is the *fiscal policy channel*. When the monetary authority cuts the interest rate, borrowers gain. Governments are net borrowers and, as a result, they have extra resources in their budget. The extent of this inflow depends largely on the maturity structure of debt and on how rates at other horizons respond to a change in the short rate (Auclert, Rognlie and Straub, 2020).

When the government uses these resources to increase transfers or reduce individual taxes, additional income flows to households. Similarly, if government expenditures rise, the ensuing rise in labor demand would further favour households. In all these cases, fiscal policy amplifies the initial monetary impulse. The magnitude

of this effect depends, once again, on the cross-sectional covariance between the change in income and the marginal propensity to consume.

Chart 4

Central bankers' speeches mentioning inequality



Source: Bank of International Settlements
Note: Speeches of central bankers mentioning the keywords "inequality" and "distributional consequences/impact of monetary policy" expressed as a share of all central bankers' speeches in the BIS database.

4 Lesson III: Monetary policy as a redistributive policy

Questions on the distributional effects of monetary policy have traditionally been considered of minor importance compared to the analysis of its impact on the aggregate economy. Recently, though, there has been a significant shift. Chart 4, which shows the fraction of central bankers' speeches which contain a discussion of the relation between inequality and monetary policy, clearly illustrates this transformation.[8] Two main reasons are behind this trend. The first one is that, in many countries, the distribution of income and wealth has become ever more concentrated at the top. The fundamental reasons behind the secular rise in inequality are related to structural shifts in technology and globalization. Discussions around inequality dominate the press and have become common among the general public. Thus, even though inequality is not a monetary phenomenon in the long run, this subject has become hard to ignore for central banks.[9]

The second reason is more germane to central banks. In the aftermath of the Great Recessions, monetary authorities started adopting unconventional policy measures, some of which have the objective of supporting asset prices to strengthen the asset side of financial institutions and promote lending to households and firms in distress. As a by-product, however, these policies have generated capital gains mostly

[8] In particular, several recent speeches by top monetary policymakers focused on this issue, e.g., Borio (2021), Draghi (2015), Haldane (2014), Kuroda (2017), Mersch (2014), and Yellen (2015).

[9] Dolado, Motyovski and Pappa (2021) offer a different perspective where, by lowering interest rates and favouring investment in technologies which replace unskilled labor, expansionary monetary policy can have long-run effects on inequality.

accruing to the wealthy and, as a consequence, central banks have been accused of contributing to the rise in inequality. In reality, these policies have also sustained aggregate demand and therefore provided support for the most vulnerable groups. As put it by Bernanke (2015), monetary policy is a blunt tool which certainly affects the distribution of income and wealth, although whether its net effect is to increase or reduce inequality is not clear.

In this context, what can we learn from HANK models that can be useful for this debate?

The first lesson is that, in this class of models, every stabilization policy is redistributive to some extent, and every redistributive policy can either stabilize the economy or amplify the initial shock. It is, in essence, impossible to fully disentangle the two margins. As explained in Section 3, it is precisely because a shock or a policy intervention redistributes in a certain way that we see amplification or dampening. HANK models are useful because they offer a structure to shed light on the interplay between stabilization and redistribution.

From the normative perspective of optimal monetary policy, what is the balance of stabilization and redistribution that should be achieved according to HANK models? When plausibly calibrated, in these models the size of uninsurable individual labor market risk is at least an order of magnitude larger than aggregate risk, i.e. the risk of recessions.[10] In addition, the standard objective function of the monetary authority is typically assumed to be an equal-weight utilitarian welfare function that mechanically values redistribution toward the poor (i.e., those with high marginal utility of consumption). As a result, the social insurance and redistributive motives tend to dominate the price stabilization component of the welfare function.[11]

As an example, consider the optimal policy response to a positive mark-up shock. The analysis follows Bhandari et al. (2021). The standard RANK model prescribes to “lean against the wind”, i.e. a rise in the nominal rate to cut aggregate demand and tame inflation. In the presence of heterogeneous households and imperfect insurance, instead, an increase in mark-ups reduces the labor share in favour of the owners of capital. A rise in the policy rate which stifles aggregate demand would further hurt workers. In HANK, in fact, this latter force pushes optimal policy in the opposite direction, i.e. toward a cut in the nominal rate in order to foster the aggregate demand for labor and redistribute income back to workers. Unsurprisingly, in light of our previous discussion on the social welfare function, this channel quantitatively dominates in the numerical experiments. This is a stark example in which the optimal monetary policy prescription in HANK models is the opposite than in its representative agent counterpart.

It is immediately obvious from this result that the optimal design of monetary policy depends on the fiscal response to the aggregate shock already in place. If the fiscal

[10] As explained in Section 3, idiosyncratic and aggregate risk are not disconnected. In particular unemployment risk increases in recessions.

[11] The normative implications of the HANK approach to monetary policy are studied, e.g., by Acharya, Challe and Dogra (2019), Bhandari et al. (2021), Bilbiie, Monacelli and Perotti (2020), Gornemann, Kuester and Nakajima (2021), and Legrand, Martin-Baillon, and Ragot (2020).

authority intervenes in a timely manner by providing welfare-improving social insurance, then the monetary authority can focus on price and output stabilization. In general, fiscal policy is in a much better position to offer the desired degree of redistribution, because it can be tailored and carved much more finely toward the groups most in need of financial relief. This advantage of fiscal policy emerges very clearly in the numerical simulations of HANK models.[12]

In practice, though, fiscal authorities act with much delay relative to the aggregate shock because of the unavoidable political negotiations that precede the bill's vote in the legislative process. Moreover, the final product is often ---for the same reasons— a compromise that fails to be efficiently directed toward the hardest hit groups of the population. Consider the last downturn in the US. The recession and the lockdown started in mid-March, but it took at least another month before the first round of extra fiscal transfers (UI top-up and untargeted economic impact payments) were made to households. In this first month, the role of the Fed in "holding water" was essential. The ECB played a similar crucial stop-gap role in the Eurozone over that period.

Even when fiscal policy is ineffective, should central banks be concerned with inequality and redistribution? Opinions vary even among top policymakers, as witnessed by the different approach of the ECB and the Fed. The Fed has embraced many of these concerns explicitly aiming for "inclusive recoveries", whereas the ECB in his strategy review has remained focused on the narrower mission of price stabilization.

There are clear advantages to more narrowly defined institutional missions. Policy goals are more credible and transparent and communication is easier. The fact that the goal (e.g. price stabilization) is unique to the central bank reinforces its independence. At the same time, a central bank that appears to be completely oblivious to the defining issue of the new century –rising inequality-- can become the target of political attacks from special interest groups which might undermine its own independence. At the very least, it is then important that central banks use all the available empirical and theoretical tools to competently evaluate the impact of their policies on the distribution of income and wealth, in order to achieve a full understanding and, possibly, clearly communicate and disseminate the findings.

HANK models are a key tool in this sense. In particular, this framework can be used to choose the right policy instrument among the variety of tools currently available. Price stability can be achieved in many alternative ways, and the central bank can, for example, choose to meet this goal in the most equitable way possible.

5 Lesson IV: New data requirements

In Section 2 we argued that, in HANK models, changes in the policy rate transmit to aggregate consumption through the household sector in a variety of different ways. According to the theory, every element of the household budget constraint can be, in principle, affected: labor income through a GE change in labor demand, capital

[12] For an example related to the COVID-19 recession in the US, see Fu, Kaplan, Moll and Violante (2020).

income through the direct change in the interest rate, the value of asset holdings (e.g., bonds stocks and housing) through the effect of monetary shocks on asset prices, the real value of nominal liabilities through the change in inflation or refinancing, taxes net of transfers through the response of the fiscal authority to the monetary shock.

In order to assess the importance of all these channels empirically, it is therefore paramount that central banks have access to the right data. In the last two decades, central banks have made enormous progress in gathering rich micro data. Their research and policy units make excellent use of these databases to analyse the current state of the economy and inform the policy decision process.

Most of the efforts, however, have been directed to collecting granular administrative data on the financial system (e.g., bank balance sheets, lending to households and firms, etc.), and understandably so since many central banks also have an explicit regulatory role, and are deeply concerned about financial stability. Sufficiently rich data collection on the household sector has, however, lagged somewhat behind. The Household Finance and Consumption Survey (HFCS), a collective effort of central banks and statistical institutes of the Eurozone coordinated by the ECB, was an important first step in this direction. This repeated cross-section (in its third wave now) collects household level data on demographics, employment status, income and consumption expenditures, and households' balance sheets (assets and liabilities).[13]

Its main strength is that it contains a large number of harmonized variables for representative samples for each country in the Euro area. It is also a flexible survey and new questions can be added in every wave to study issues that are particularly relevant in the current macroeconomic conditions.

At the same time, this dataset, in its present form, has a number of shortcomings. First, its sample size is relatively small (usually observations are in the tens of thousands) which prevents analysing the data at the level of granularity that many of these models require. Second, the dataset lacks a longitudinal dimension. If one wanted, for example, measure the effect of monetary policy shocks across the wealth distribution, the panel dimension is essential to keep track of changes in employment status, income, wealth and consumption at the household level. Third, the HFCS, like most household surveys of this type, suffers from the inability to properly sample from the very top of the wealth distribution (e.g., the top 10%).[14] As explained earlier, these households are important for assessing the transmission mechanism of monetary policy because they hold most of the financial wealth in the economy and account for a sizable share of consumption expenditures. Fourth, the survey is currently triannual and the data are released only with a lag of two years after the survey date, which prevents a timely and high-frequency monitoring of the health status of household balance sheets.

[13] See https://www.ecb.europa.eu/stats/ecb_surveys/hfcs/html/index.en.html.

[14] A notable exception is the US Survey of Consumer Finances which oversamples the rich.

State of the art empirical analysis in economics is quickly shifting away from this type of data. The frontier is *administrative data* that are, originally, collected for some purpose other than research. For example, government agencies (e.g., social security or tax authorities) collect these data to keep a record of payments made or received. For private companies (e.g. financial firms, or payroll processing firms), these proprietary data are the essential input to provide their core services. Over the last decade, researchers have gained access to this type of data (often by teaming up with someone inside the institution) more and more frequently.[15]

Because of their administrative nature, measurement error –a primary concern in surveys—is minimized in this type of data. Their sample size is often 100 or even 1,000 times larger than surveys. As a result, they allow to analyze finely selected sub-groups of the population stratified by age, education, gender, race, income and wealth, as well as geographical location. In addition, they often contain a panel dimension which allows to keep track of individuals over time. Because of their administrative nature, the individual identifier in these datasets is the social security number which permits to link different sources of data together. Finally, many of these datasets record information at a relatively high frequency.

It is useful to briefly describe two examples of state-of-the art datasets with features that would be extremely helpful to central banks, one public and one proprietary.

The first one is a government dataset for Denmark recently used by Andersen et al. (2021). The main data source is individual-level records for the entire population in Danish tax registry. The data contain detailed information about income and balance sheets for roughly 70 million individual-year observations. The tax records contain all major items of households' disposable income (e.g., wages, dividends and interest expenses). Information on the main balance sheet components (e.g., housing, stocks and debt) is reported by third parties such as financial institutions and matched through personal identifiers. These data can also be matched to records on car purchases from the auto registry.

The second one is the proprietary database of the JP Morgan Chase Institute, the think-tank of the homonymous private financial institution. It contains the daily balances, inflows (e.g., direct deposits), and outflows (e.g., debit card transactions) of Chase personal checking and credit card accounts, nearly 30 million accounts. Administrative banking data provide a high-frequency lens into consumer finances, with transaction-level measures of income and expenditures. The bank has the ability to categorize transactions, and thus to identify inflows of labor income, capital income and government transfers (e.g. UI payments and economic impact payments). Similarly, it is able to separate outflows between spending and debt payments.[16]

Compared to the registry data from Denmark, this database has the advantage of the higher frequency and the direct observability of expenditures. The main

[15] See Vavra (2021) for an overview of how these data have been used in the context of the last US recession.

[16] See Cox et al. (2020) for a recent example of the use of these data to assess the efficacy of fiscal support to households during the COVID-19 recession in the United States.

disadvantages are two. First, the sample is not representative of the population along a number of dimensions. Second, the data originate from one financial institution only, while many households have financial activity in more than one bank or credit card company and thus, as a result, the data can underestimate assets and liabilities.[17]

To sum up, ideally the ECB and other central banks should have access to a variety of individual level datasets containing joint information on expenditures, income, assets and liabilities with the following characteristics: (i) *large*, to allow for granularity in the empirical analysis and ability to capture the top of the distribution; (ii) *longitudinal*, to follow the same individuals over time; (iii) *administrative*, to minimize reporting errors; (iv) *high frequency*, in order to uncover and track sudden changes in the economy, and warrant fast policy reactions. Only a dataset with these characteristics can provide a comprehensive and timely pulse of household finances in the Eurozone.

These considerations do not imply that the ECB should abandon the HFCS survey, quite the opposite. Surveys and administrative data are complementary. In particular, the survey design makes it representative of the broader population and this is essential in order to be able to benchmark proprietary administrative data –which, as explained, can suffer from serious selection problems—to the universe. Without this careful benchmarking, the information in proprietary data is not of much practical use for policymakers.

6 Conclusions

New theoretical and quantitative models trickle down from academia to policy makers with some lags. This is natural, and also efficient because only few among the newly proposed models end up surpassing the test of times. HANK models are in a phase of development where our understanding about their mechanics is already deep enough to make them useful to policy makers.

It is critical however that, alongside the investment in the model infrastructure (i.e., theory and computation), an effort be also made in collecting rich micro data that permit to draw a tight mapping from the many components of the model into their empirical counterparts.

References

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[17] Another example of administrative data originated from financial accounts is data made available by financial aggregators, like mint.com in the US, i.e. companies that offer financial planning services to their clients. These data have the advantage of combining all accounts at the individual level, but typically the sample is not representative of the universe.

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