RESEARCH BRIEF

Microeconomic Heterogeneity and Macroeconomic Shocks

Based on BFI Working Paper No. 2018-44, "Microeconomic Heterogeneity and Macroeconomic Shocks," by Greg Kaplan, UChicago professor of economics, and Giovanni L. Violante, Princeton professor of economics

KEY TAKEAWAYS

- ✓ Macroeconomists build models to represent aggregate economic activity
- ✓ However, these models have traditionally not included such elements as inequality
- ✓ A new series of models incorporates inequality and, thus, offers a more realistic view of the economy
- ✓ These models provide important new insights into how policymakers could respond to economic shocks

Building a mathematical model of the economy is always difficult. But it becomes much easier if you assume that all households are the same – that they all earn the same wages, spend their incomes at the same rate, and all have the same amount of wealth. Abstracting from wealth inequality leads to simple assumptions about how households consider purchasing decisions. For example, in a world where everyone is the same, households put more weight on the future value of money, and less weight on their disposable income, than do typical households in reality.

Of course, we don't live in a world where everyone is the same. Yet for many years this was the world that economists created to understand economic fluctuations at a macro level. And the model of that world is still the most commonly employed model today. However, in their latest working paper, "Microeconomic Heterogeneity and Macroeconomic Shocks," Greg Kaplan, UChicago professor of economics, and Giovanni L. Violante, Princeton professor of economics, describe a new class of models that incorporate diverse behavior of households and include inequality.

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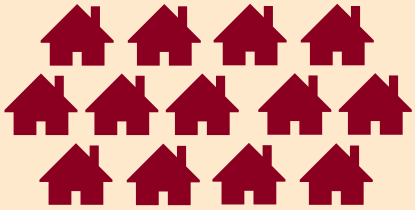
Representative Agent Models vs Heterogeneous Agent Models

Representative Agent Models
All households earn the same, spend the same, and have the same amount of wealth



Heterogeneous Agent Models
Households have different income levels, spend differently, and have varying levels of wealth, offering a better reflection of the economy

These models, which feature heterogeneous households, have been around for several decades, but only with an assumption of flexible prices—meaning that all prices (including wags and interest rates) adjust immediately to changes in economic conditions. This meant the models had limited use for understanding either business cycles or monetary policy. After the Great Recession of 2007-09, these heterogeneous agent models were enriched to incorporate sticky prices, greatly expanding their usefulness. These new models not only make for a more realistic model of what households do with their money and how those decisions impact the broader economy, but they also allow economists to explore such important issues as the impact that recessions have on inequality, and how different households are affected by economic downturns.

Better models = better policy

Economists have long recognized the value of adding diverse, or heterogeneous, households into their models. In recent decades, they have made strides in developing models that explore questions relating to household behavior, economic mobility, income distribution, and many other issues surrounding inequality. These models are known as HA (heterogeneous agent) models. However, for the study of business cycles, recessions, and monetary and fiscal policy, economists continued to employ models where all households are identical (known as representative agents, or RA, models). And then along came the Great Recession of 2007-09. RA models were not useful for studying many implications of the recession, such as its effect on wealth inequality, nor could they incorporate many of the recession's sources, like credit tightening and fear of unemployment.

Though this was a complex period, whose origins and implications will long be analyzed, most observers see the Financial Crisis and the Great Recession originating in the housing market. But the effects of the collapse in house prices and subsequent labor market deterioration were not uniformly felt:

- Depending on the size and composition of their balance sheets, some households lost more wealth than others.
- Depending on their access to liquidity and their general willingness to spend, some households cut spending more than others in response to the loss in wealth.
- As consumer spending declined and banks tightened credit availability for businesses, labor demand fell, throwing many people out of work. Depending on their occupations, age, education level and geographic location, these job losses more severely impacted some households than others.

And if that weren't enough to question the usefulness of RA models, this massive economic shock occurred at a time when income and wealth inequality were already rising. Thus, portfolio composition, access to credit and liquidity, consumers' willingness to spend additional income (or their marginal propensities to consume), unemployment risk, and inequality were all central to the unfolding of the Great Recession. Yet none of these factors are well captured by RA models.

In response to these limitations, a new framework has emerged that introduces heterogeneous households into macroeconomists models. These HA models, which still aggregate to deliver a realistic representation of the macro-economy, also offer a more realistic approximation to what really happens to individual households when an economic shock occurs. How do households' savings respond? Do their consumption patterns change? How are income and wealth redistributed and what is the impact on household balance sheets? And which households are most affected by broad changes in the economy, like fluctuations in aggregate demand? These questions and more can be addressed in these new models.

These new HA models can address questions like these because they incorporate inequality into their economies, rather than ignoring it. This is key, according to the authors, because while some abstraction is necessary when building a model of macroeconomic behavior, ignoring inequality leads to assumptions about household behavior that contrast with reality. For example, in an RA model, economists assume that when households decide to make a purchase, their most important consideration is the level of interest rates; that is, they don't consider whether they have the funds to buy the product, but rather whether interest rates are high enough to justify investing those funds instead.

Of course, in the real world, most households are more likely to worry about their own disposable income rather than some future return on savings. In other words, the biggest factor in determining whether they buy something is whether they have the money.

> These new tools not only make for a better model of what households do with their money and how those decisions impact the broader economy, but they also allow economists to explore such important issues as the impact that recessions have on inequality, and how different households are affected by economic downturns.

However, this is not how RA models operate. This is important because those models are employed by policymakers, including the Federal Reserve, which sets monetary policy for the US economy. For example, consider again the Great Recession and the Fed's classic response to the downturn—lower interest rates to stimulate spending. In an RA world, this is what happens:

Consumers will see that it doesn't pay to save and they will be induced to spend and, in the aggregate, this spending will kickstart the economy and get it growing again.

But in a HA world, it is much more tenuous whether lower interest rates will indeed stimulate spending. Many households, like retirees, rely on interest income from their savings and so may cut spending rather than increase spending in response to a rate cut. And most working age households will only be induced to go shopping if and when their labor income increases, which is a much less direct route from the original rate cut – and much further from the Fed's direct control.

Whereas RA models offer few alternatives to monetary policy in an attempt to boost consumption, HA models suggest that options that would more directly impact household worth, like fiscal stimulus, or targeted forms of quantitative easing, may also be useful policies.

Bottom line: According to the authors, when you incorporate inequality into these models, you get micro outcomes that are more consistent with real households' spending behavior, and macro outcomes that are useful in understanding events like the Great Recession. The goal of their research, then, as well as others investigating heterogeneous agent models, is to bring a better description of spending behavior—along with the production side of the economy—into their macroeconomic models. Such models should deliver better policy.

Conclusion

As the monetary policy example illustrates, the abstract world of economic modeling has a real-world impact on households and businesses. Policymakers must make important decisions based on the analytical tools available to them. Those tools should be realistic in relevant dimensions; household spending and saving behavior is one such key dimension.

CLOSING TAKEAWAY

Policymakers' decisions not only influence the size of the pie, but also the size of the slices and who gets which piece. Once inequality is inserted into macroeconomic models, the authors suggest, it is hard to go back to a world where it doesn't exist.

For policymakers, this means more than just focusing on monetary policy in reaction to economic downturns. For example, HA models suggest that fiscal policy plays a bigger role than previously thought and can have a more powerful impact when dealing with an economic downturn. The reason is that fiscal policy—involving tax rates, income distribution, or government expenditure programs, for example—more directly impacts household income, and households' spending behavior revolves around income. Many US households, including those who are seemingly well off (they may own a home and have a retirement account), essentially spend all their available disposable income every pay period. These are households that, if you give them more money, will spend it.

By offering a more nuanced version of reality, HA models also challenge the classic premise that the job of macroeconomics is to worry about the size of the economic pie and how to enlarge it, and to leave dispersion of the pie to microeconomists, politicians, and philosophers. However, models that incorporate inequality into their economies suggest that such a view is wrong. Policymakers' decisions not only influence the size of the pie, but also the size of the slices and who gets which piece. Once inequality is inserted into macroeconomic models, the authors suggest, it is hard to go back to a world where it doesn't exist.

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