Luis de Guindos: Benjamin Moll's contribution to macroeconomics

Remarks by Mr Luis de Guindos, Vice-President of the European Central Bank, on the occasion of the award of the Bernácer Prize to Benjamin Moll, Professor of Economics at Princeton University, organised by the Bank of Span, Madrid, 23 November 2018.

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It is a pleasure for me to celebrate with you the award of the 2018 Bernácer Prize to Benjamin Moll, Professor of Economics at Princeton University. Benjamin's work — on cross-country income differences, misallocation of resources, and the role of income and wealth distributions in macroeconomics — has quickly gained the influence and recognition that other researchers can only hope to achieve much later in life. This makes him the perfect candidate for the Bernácer Prize, which is awarded to an outstanding young European economist working in the fields of macroeconomics and finance.

The prize has specifically been awarded for Benjamin's "path-breaking contributions to incorporate consumer and firm heterogeneity into macroeconomic models and use such models to study rich interactions between inequality and the macroeconomy." Traditionally, much of the macroeconomic research disregarded the role heterogeneity across households plays in macroeconomic outcomes, such as aggregate output or inflation. Under the "representative agent" paradigm, it was assumed that microeconomic heterogeneity was not important to understanding aggregate outcomes.

While this assumption enabled a convenient approximation to be made, for a couple of decades we have known that it is clearly at odds with reality. For example, extensive empirical literature has documented that differences in disposable income, the available stock of wealth, or the exposure to unemployment risk have quantitatively important effects on households' choices, including how much they consume and save and how much labour they supply. This literature was, however, unable to assess the implications of household heterogeneity for macroeconomic outcomes.

And this is where Benjamin's research comes in; it provides a unified theoretical framework for modelling interactions between individual households and the macroeconomy, and also accounting for the role of economic policies, including monetary policy.[1] In this framework, which he developed jointly with Greg Kaplan and Gianluca Violante, macroeconomic outcomes result from the interaction of a large number of households characterised by a realistic degree of heterogeneity in their income, and in their consumption and saving decisions.

Benjamin's framework allows for various channels through which monetary policy can affect personal consumption – that is, how a change in the central bank policy rate propagates through the economy and how it affects individual households depending on the structure of their incomes and portfolios. These channels include the standard intertemporal substitutional channel, which has long been the sole monetary policy channel in the representative agent models often used for policy analysis. The intertemporal substitution channel suggests that, following a cut in the policy rate, households increase their consumption and reduce their saving because the return on saving falls. But empirical evidence on the relevance of this channel, especially evidence based on household-level data, has been rather mixed.

Benjamin's work also reveals new channels for monetary policy transmission. Changes in policy interest rates also affect households via an "indirect" channel, which operates as follows. Any initial aggregate demand stimulus created by a cut in the policy rate propagates through the economy and results in an increase in output, with ensuing upward pressure on employment and wages. In turn, the increase in employment and in wage income stimulates aggregate demand further, leading to additional increases in output, further upward pressure on employment and

wages, and so on and so forth.

Importantly, and in line with established empirical evidence, it turns out that while the intertemporal substitution effect is modest, the indirect effect of monetary policy drives the bulk of the economy's total output response. The key reason for the large size of the indirect effect is that many households' consumption reacts strongly to transitory shocks to income arising mainly from higher employment – a result that ties in nicely with separate independent and consistent evidence from micro data.

These results have important implications, not only for monetary policy theory but also in practice. First, the modest size of the intertemporal substitution effect implies that the macroeconomic effects of monetary policy cannot be studied in isolation. Instead, the strength of the indirect effect suggests that the transmission is always shaped by factors which can be taken as given in analyses based on the representative agent assumption. A key example is fiscal policy, which can change aggregate outcomes depending on how it uses the proceeds from the lower cost of servicing the government debt induced by a reduction in policy interest rates.

Second, Benjamin's work provides us with a framework for the public debate on the effects of monetary policy on inequality. This debate has highlighted, for example, that net debtors and net savers will be affected in different ways by monetary policy easing. This observation has led some people to draw hasty conclusions on the effects of monetary policy on inequality. Under Benjamin's framework, however, the savers versus borrowers split is only one of the many dimensions of heterogeneity which characterise the data. Other important dimensions are related to households' holdings of liquid assets and their ability to borrow, both of which enable them to absorb the impact of temporary income shocks. In addition, the borrowers versus savers difference is not crucially important if the indirect channel plays a dominant role in the transmission of monetary policy.

The framework's capacity to model interactions between heterogeneous households and the macroeconomy in the way I have just described hinges on Benjamin's innovative and extensive work on mathematical and computational methods to solve models in continuous time. As these techniques have substantially enhanced the set of economic problems that we are able to address, we are now able to rapidly solve and analyse models that have realistic and quantitatively important features, such as illiquid assets and adjustment costs.

In addition to analysing the monetary transmission mechanism, the continuous-time solution techniques Benjamin pioneered can be used to study a wide range of economic questions. For example, Benjamin and his co-authors[2] recently investigated which theories can explain the substantial rise in inequality in the top tail of the US income distribution in the 1980s and 1990s. While most established theories have difficulties in accounting for this development, theories allowing for "superstar" phenomena are consistent with it. Superstar phenomena arise, for example, when changes in technology make it possible for entrepreneurs or managers who are a little better than others at any given task to capture a much higher share of the market and of income.

I have spent much of my time today talking about the aspects of Benjamin's work that are particularly relevant for monetary policy. However, he has expanded our knowledge in an impressive range of other areas which I did not have time to discuss, including determinants of incomes across countries, the allocation of resources, human capital accumulation, and saving and wealth inequality.

Please join me in congratulating Benjamin on receiving the 2018 Bernácer Prize. Benjamin, I wish you continued success and look forward to following your future work.

[1] For a seminal contribution to this topic, see: Kaplan, G., Moll, B. and Violante, G. L. (2018), "Monetary Policy According to HANK", *American Economic Review*, Vol. 108(3), March, pp. 697–743.

[2] Gabaix, X., Lasry, J.-M., Lions, P.-L. and Moll, B. (2016), "The Dynamics of Inequality", *Econometrica*, Vol. 84, No 6, November, pp. 2071–2111.