

# Introduction to the Special Issue on Modern Macroeconomic Theory

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**T**he great recession of 2007–2009 has generated significant external criticism of the way economists study and try to understand aggregate economic outcomes. Modern macroeconomic theory, in particular, has been criticized for its representation of the economy through highly stylized environments that abstract from distributional issues, ignore or minimize linkages between the financial and nonfinancial sectors of the economy, and, in general, rely too much on highly aggregative frameworks. This issue collects four articles that describe how modern macroeconomic research has dealt with some of these issues as part of a research program that has been ongoing for more than a decade.

The first article by Nobuhiro Kiyotaki provides a short history of modern business cycle theory and how it has evolved to potentially address the role of the financial sector in the aggregate economy. Kiyotaki starts with the neoclassical growth model as a reference point for most of modern business cycle theory. This modelling framework, originally known as “real business cycle” theory, starts with the stark abstraction of one representative household and one representative producer in a competitive environment without any frictions on the interactions of consumers and producers. From the perspective of this model, business cycles are driven by exogenous shocks, and the dynamics of the cycle essentially reflect the dynamics of the shocks. In other words, there is only a weak model-internal mechanism that propagates shocks. Kiyotaki then studies a sequence of well-defined deviations from this reference point and asks what deviations are more likely to affect the baseline interpretation of business cycles. Kiyotaki first shows how heterogeneity in consumption and production can be easily accommodated in this

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framework given the assumption of complete markets. In a second step, Kiyotaki shows how non-competitive markets, either because of market power or limitations on the interactions of agents, can be introduced into the baseline model. Neither of these modifications affect the interpretation of business cycles as being driven by shocks. Finally, Kiyotaki argues that restrictions on the set of available financial contracts significantly affect the way exogenous shocks are propagated in the model economy.

The second article by Vincenzo Quadrini elaborates on the role of financial frictions for production decisions. Quadrini illustrates these financial frictions in a simple example where entrepreneurs have to acquire capital to operate an intertemporal production technology. Again, financial frictions are introduced relative to the baseline complete markets framework. Quadrini discusses the two most popular models of market incompleteness—the costly state verification (CSV) model and the collateral constraint (CC) model. Both frameworks limit entrepreneurs to the use of two financial instruments: contingent debt (equity or net worth) and non-contingent debt. In the CSV model, non-contingent debt is the optimal response to a limited information problem, and an entrepreneur’s net worth limits his ability to issue debt and finance investment projects. In the CC model, posting collateral allows the entrepreneur to obtain credit despite his inability to credibly commit to the repayment of debt. The main question then becomes how these financial frictions can amplify the effects of shocks to the economy or be themselves a source of shocks to the economy. Quadrini illustrates the basic mechanism for amplification and propagation in the simple model, and surveys the results from more “realistic” models.

The third article by Fatih Guvenen surveys recent research on household heterogeneity in the absence of complete markets. We might be interested in household heterogeneity for two reasons. First, even though we assume in the baseline “real business cycle” model that aggregate consumption and labor supply decisions can be modelled through a representative household construct, we might worry that “distributions” of ability, income, or wealth do matter for the behavior of these aggregate outcomes. Second, observed inequality of income and wealth often gives rise to attempts to redistribute resources. In order to address the costs and benefits of such a policy, one first needs a theory that accounts for the currently observed inequality across households. If we care about inequality because of implied differences in “well-being,” then we should care about inequality in consumption and leisure, and we should care about income inequality only to the extent that it gives rise to consumption inequality. Much of the research surveyed by Guvenen studies how, in the absence of complete markets, income inequality gets translated into consumption and wealth inequality. If the level of income and its distribution are exogenous, the redistribution problem is simplified since any attempt to influence consumption and wealth inequality does not feed back into either the

level or the distribution of income. But economists are always worried about the labor supply effects of tax policies, that is that at least part of income levels and inequality are endogenous. In standard models, these labor supply effects show up as variations in hours worked or labor market participation decisions. In his survey, Guvenen emphasizes a different labor supply decision, namely the accumulation of human capital. Overall, Guvenen shows that accounting for heterogeneity of households in environments with incomplete markets is feasible, but it also requires the application of advanced computational tools. In the absence of controlled experiments, researchers are essentially compelled to construct artificial worlds with a population of heterogeneous households. Once the consumption and labor supply decisions of the households in the model mirror the observed behavior of households, we can ask how changes in the artificial environment will affect outcomes.

The fourth article by Diego Restuccia deviates somewhat from the immediate concerns of the U.S. economy and studies the issues of output determination in a global framework. During the “Great Recession,” U.S. real gross domestic product (GDP) declined by 5 percent from 2007 to 2009, and, as of 2011, real GDP is now arguably 10 percent below its long-run trend growth path. While these changes of real output are large, they pale in comparison to observed cross-country income differences: In 2005, the average per capita income in the richest countries was about 65 times that of the poorest countries. Restuccia first surveys the evidence on cross-country differences in per capita income. He shows that, although it appears that cross-country per capita income inequality has been increasing over the last 30 years, for individual countries there are success stories and then there are failures. The recent, most prominent examples for countries that have been catching up with the leading world economy—the United States—are China and India. However, there are countries such as Zimbabwe and Venezuela that have been falling behind the United States more and more. Restuccia then argues that the process of structural transformation, that is, the transition from a predominantly agricultural economy to an industrialized economy, and then to a service-oriented economy, can account for some of these differences. In particular, he points to the relatively low levels of agricultural productivity in poor countries as a major source of income differences. Essentially, Restuccia argues that cross-country differences in aggregate productivity and per capita income can be attributed to differences in sectoral productivities resulting in differences in resource allocation. Restuccia then surveys theories that attribute differences in sectoral productivity to distortions that lead to the inefficient allocation of resources across production establishments. Restuccia’s survey reflects how the baseline neoclassical model of production can be modified to account for heterogeneity in production, first at the industry level, then at the establishment level. These modifications are matched to observations, and we can see how much they contribute to differences in aggregate output.

The four articles in this issue represent part of a research program in macroeconomics that takes the basic stochastic growth model with complete markets as its point of departure. Work in this research program then adds various sources of frictions and heterogeneity on the consumption and production side, including restrictions on the set of available markets, and the ability of market participants to pledge to repay debts. This procedure allows macroeconomists to evaluate the contributions of the various features that allow model economies to capture more dimensions of available empirical evidence relative to a common benchmark model. Another line of research that is part of this program, but is not addressed by these articles, departs from the baseline growth model by introducing nominal price rigidities in order to address monetary non-neutrality.<sup>1</sup> In fact, until the Great Recession, research on the role of nominal price rigidities and monetary policy institutions in particular, received more attention in macroeconomics in general than did research on financial market frictions. This ranking of different lines of research simply reflected the historical experience with the U.S. economy and other advanced economies: Apparent inflation-output tradeoffs were considered to be much more important than financial-market instability. For example, in the U.S. economy the stock market crash of 1987 had no appreciable impact on the aggregate economy, and the boom in equity prices in the 1990s, with a subsequent crash in 2001, was followed by one of the shallowest recessions in post-WWII history. For many macroeconomists, the Great Recession changed the perception on how important financial markets might be for the economy. Consequently, attention among economists has shifted more toward the lines of research that emphasize financial market frictions and that are described in this special issue. The fact that economists continue to discuss the causes and consequences of the Great Depression should, however, give one pause to expect any time soon a coherent and generally accepted narrative of the Great Recession and how it relates to the preceding collapse of the housing bubble and the ensuing financial crisis.<sup>2</sup>

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<sup>1</sup> For an introduction, see Galí (2008).

<sup>2</sup> Lo (forthcoming), in a very instructive survey of the literature on the financial crisis, both by academics and journalists, observes that no single narrative has yet emerged from that literature, and that, even for a number of commonly accepted “stylized facts” of the financial crisis, there is no clear cut empirical evidence.

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## REFERENCES

- Galí, Jordi. 2008. *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework*. Princeton, N.J.: Princeton University Press.
- Lo, Andrew W. Forthcoming. "Reading About the Financial Crisis: A 21-Book Review." *Journal of Economic Literature*.