

# The Great Recession and Financial Shocks<sup>1</sup>

Zhen Huo

New York University

José-Víctor Ríos-Rull

University of Pennsylvania

University College London

Federal Reserve Bank of Minneapolis

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## Abstract

A case can be made for the Great Recession being the result of a large financial shock that makes household borrowing difficult. The channel involves large reductions in house prices, which trigger sharp reductions in consumption. We discuss the ingredients that a quantitative model of the economy requires to be successful in implementing such a theory. They include: wealth heterogeneity where the majority of the population needs to acquire financing to purchase houses despite the large amount of wealth in the economy; sizeable real frictions that hinder the transformation of consumption into exports and investment and that constraint the increase of the working hours of households; and, a role for expenditures in contributing to productivity.

The aftershocks of the Great Recession are only just now receding, an episode that has prompted the Federal Reserve to carry out exceptional policies for over seven year in order to alleviate its effects. The Great Recession was the most severe since the Great Depression, with GDP and consumption falling about 10% below trend and not yet fully recovering. What was its cause? For many economists and for the popular press, it is the end product of a financial shock that made access to credit more difficult, resulted in major losses in financial wealth and made it necessary for economic agents to retrench in order to repair their balance sheets. While the notion of a large financial disruption being the trigger of the crisis is very intuitive, financial shocks cannot generate such costly outcomes in standard economic models built from first principles. Macroeconomic models make simplifying assumptions so that they are tractable with modern computational techniques, but still can be and mapped to the national accounts of an actual economy and retain the elements that are essential to answering the questions at hand. In this note, we describe the main ingredients of an economic model that are required to demonstrate formally

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how a financial disruption can cause economic losses of the magnitude of the Great Recession. We also discuss how such a model could be used to answer important policy questions.

Most of the work in exploring the implications of financial disruptions has been concentrated on its effects on the production side of the economy. The argument for this approach is that firms have projects that they need to finance. In the context of the financial crisis, this work finds that financing became more difficult, preventing the implementation of many good projects. In fact, younger firms performed much worse in the Great Recession than in other recessions relative to larger and older firms that had easier access to credit. Some of the slack was taken up by low quality projects (those in the hands of firms with access to credit or to their own funds), resulting in lower new investment with worse performance than normally. There have been various excellent attempts to pursue this line of reasoning, but we do not think that it is powerful enough to generate a recession as big as the one we had for a number of reasons. First, investment is a small part of GDP. Second, many firms had large reserves of cash, so the firms that were subject to tighter lending conditions were few or relatively unimportant to overall GDP. Third, there is not a lot of evidence that cash rich firms expanded at the expense of cash stripped firms, which is an unavoidable implication of the theory. Finally, consumption contracted a lot in the Great Recession, and increased financial frictions on firms are not a big enough trigger to reduce consumption in these models. The bottom line is that the effects of financial shocks on the production side of the economy are only a minor contributor to the Great Recession.

Whatever caused the crisis, it triggered a large reduction in consumption. According to standard theory, households reduce consumption because either a change in prices induces them to do so (for instance, an increase in interest rates would induce households to postpone consumption) or because they experience a reduction in wealth that induces them to save more to rebuild their wealth. Regarding the first explanation, interest rates fell considerably during this period; hence, they cannot explain the drop in consumption. Rather, the latter explanation is a prime candidate; wealth disappeared from households' pockets, because prices of assets, mostly houses, fell dramatically during the crisis.

The question is whether a financial shock, and the ensuing difficulties to borrow, can trigger the kind of drop in house prices (and household wealth) we saw during the crisis. While household wealth in the United States immediately prior to the crisis (and currently) is close to 500 per cent of GDP, it is very concentrated. For most homeowners, the home is their primary or only source of wealth. This means that the sharp fall in this wealth, and their related capacity to borrow, hit this large segment of the U.S. population particularly hard. . Moreover, pension wealth cannot really be used as a buffer in terms of liquidity for consumption or collateral for borrowing. What we saw was consistent with these facts. The financial shock resulted in increased and widespread difficulties to get mortgages which, in turn, drastically reduced the demand for houses and ultimately resulted in plummeting housing prices (more than offsetting the effects of the credit expansion of earlier years).

For a model to successfully deliver this type of explanation for the Great Depression, it has to include several ingredients. First, it must incorporate substantial wealth inequality and place many households in a position where a loss of housing wealth directly reduces their desired consumption. The model has to have many households buying houses on credit and the price of houses has to be dependent on credit availability. Recent work by [Huo and Ríos-Rull \(2014a\)](#) and [Kaplan, Mitman, and Violante \(2015\)](#) have large drops in housing prices as a result of financial shocks.

Second, when households suffer a drastic reduction of wealth, they typically have incentives to save more and work harder to re-build their lost wealth. In the standard model, a reduction of wealth happens because of capital destruction, which increases the rate of return, and the response is to work harder and to save and invest more. The economy shifts quickly from production for consumption (e.g., espresso bars, hair salons) to production for saving into the future (e.g., net exports) To explain the facts, the model needs to incorporate frictions such that households cannot get all the work they desire. Turning the economy on a dime from being a consumption-oriented economy to a savings-oriented economy has to be difficult due to high costs of reallocation of resources. This dynamic is reinforced in a model that incorporates a global recession, as countries find it more difficult to increase exports.

Third, the model needs to use a production technology where lower demand translates into lower productivity, because of idle capacity, and profits. Service industries with fewer customers will look like they have lower productivity, and unsold consumer goods will show up as low-value inventory goods and perhaps be sold only at low prices. This is in contrast to the standard macroeconomic model in which lower demand and the accompanying reduction in employment results in an increase in productivity. Recent developments that use search theory in goods markets ([Bai, Ríos-Rull, and Storesletten \(2011\)](#)), [Dyrda and Rios-Rull \(2012\)](#), [Huo and Ríos-Rull \(2014b\)](#), [Huo and Ríos-Rull \(2014a\)](#) and [Petrosky-Nadeau and Wasmer \(2015\)](#) allow for a different outcome whereby decreases in spending result in lower productivity.

Fourth, a successful model must incorporate market imperfections. In standard macroeconomic models, when households do the best they can, how much they work and how much they consume is governed by a simple equation linking their real wages to their desire to substitute consumption and leisure. However, this relation has been shown empirically to not work very well. Fortunately, in the last few years the standard framework has been supplanted by the approach of Nobel laureates Dale Mortensen and Christopher Pissarides. According to the Mortensen and Pissarides approach, unemployed workers are not always able to find jobs even though they are looking. With the aid of search theory, there is discipline in how this is done and high unemployment can exist when firms post few vacancies.<sup>2</sup>

Finally, the model should also incorporate a degree of unresponsiveness of interest rates to movements in consumption. When all is said and done, in standard models, much of the macroeconomic adjustment – investment and consumption, in particular - occurs via interest rate movements. Reductions in consumption coming from a negative wealth effect push down interest rates, thus reducing the strength of the fall in consumption. However, interest rates all over the world have come down for reasons that are

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<sup>2</sup>A trickier issue is the behavior of wages. Most traditional models imply large wage reductions as the economy's response to unemployment, again a feature that is not present in the data. While many models pose arbitrary rigidities in the wage adjustment process, recent work by [Christiano, Eichenbaum, and Trabandt \(2013\)](#) shows how wage inertia can arise endogenously.

not internal to the U.S. Moreover, the expansionary monetary policy has nominal interest rates close to the zero bound, leaving limited room for further interest rate reductions.

To summarize, the most important implication of these ingredients for explaining the Great Recession is that assets prices adjust in response to financial frictions, which requires that large numbers of agents trade the assets (mostly houses) actively and are vulnerable to abrupt changes in financing terms. Because modern economies have a lot of wealth, a delicate balance must be achieved between the total amount of wealth and the existence of vulnerable people in the fringes. Also required is the existence of real rigidities that hinder the transformation of an economy mostly engaged in producing to consume into one capable of producing for the future, as well as frictions in goods and in labor markets that reduce labor productivity during the recession and slow down the adjustment of wages and of workers so unemployment can linger for a long time.

While there is still much room for improvement, economic models that have these ingredients are a step up from standard models for answering important policy questions. This is because they feature the main channels of transmission of financial shocks, which we have learned only recently are so important. We look forward to seeing reliable answers to questions related to the effectiveness of anti-crisis fiscal and monetary policies and what types of households are more likely to increase consumption in response to income stimulus, among others.

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