

# The Great Recession and Financial Shocks\*

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October 2015

## 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

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\*Thanks to the National Science Foundation for Grant SES-1156228, to the comments of Kei-Mu Yi, and to the detailed input of Carolyn Wilkins. The views expressed herein are those of the author and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

describe the main ingredients of an economic model that are required to demonstrate formally a 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 were swimming in cash, so the firms that were at the mercy of skittish lenders 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 has to have 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 delay gratification) or because they experience a reduction in wealth that induces them to save more to rebuild their wealth. Since interest rate increases over the period in question cannot explain the drop in consumption, 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 there is a lot wealth in the U.S., at around 500 per cent of GDP, it is very concentrated. This means that the destruction of wealth, and related capacity to borrow, hit the majority of homeowners (who have a mortgage) 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 reverting 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 wealth 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 must have the incentive to save more and work harder to accumulate the lost wealth. The model needs to incorporate frictions such that households cannot get all the work they desire to offset their financial difficulties. 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. For this not to happen, a model has to be explicit about the difference between production for consumption (espresso bars, hair salons) and for saving into the future (which is net exports given the poor opportunities to invest at home). 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 grow exports.

Third, the model needs to use a production technology where lower demand translates into lower productivity, because of idle capacity, and profits. 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 \(2011\)](#), [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 macroeconomics there is a static equation that determines simultaneously how much to work and how much to consume from the point of view of consumers, but it has been shown to not work very well. Fortunately, in the last few years this equation has been all but thrown away from macroeconomics. In its place, following the work of Nobel laureates Mortensen and Pissarides, 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 unemployment can exist even in large amounts, when firms post few vacancies. 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.

Finally, the model should also incorporate a degree of unresponsiveness of interest rates to movements in consumption. When all is said and done, standard models adjust via interest rate movements. Reductions

in consumption coming from a negative wealth effect push down interest rates reducing the strength of the fall in consumption. However, interest rates all over the world have come down for reasons that are 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.

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 learned the hard way 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 type of household is more likely to increase consumption in response to income stimulus, among others.

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