



Economic Policy Papers

EXECUTIVE SUMMARY

The vast bulk of the government financial interventions during the Great Recession was directed at helping banks weather the financial crisis. The design of these programs was heavily influenced by the view that helping banks preserve their means of providing finance to firms was the most important ingredient in ensuring a quick recovery from the crisis.

We argue that the cross-state patterns of employment, output and debt in the United States suggest that financial frictions that led to a tightening of credit to *consumers* were more important in accounting for the recession than those that led to a tightening of credit to *firms*.

Our analysis implies that policies designed to ease consumer credit conditions would have been more effective at ensuring a rapid recovery than the policies actually adopted that focused on easing firm credit conditions.

On the Importance of Easing Consumer Credit Frictions

Credit programs for consumers, rather than firms, would have led to more rapid recovery

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Introduction

There is little doubt that disruptions in the U.S. credit market played a key role in generating the deep and persistent declines in employment and economic output that were the Great Recession's unfortunate hallmarks. And in the belief that providing credit to firms would be the most effective way to boost investment, hiring and production, most U.S. government policies were designed to strengthen the ability of banks to deliver credit to *firms*. This policy paper suggests that directing credit toward *consumers* would have been more effective in ensuring a rapid recovery.

Recent research on regional patterns of the Great Recession in the United States supports and deepens the view that tight credit was a crucial factor in the downturn. Mian and Sufi (2011, 2014) show that regions of the United States with the largest declines

in household debt and housing prices also experienced the largest declines in consumption and employment, especially nontradable employment (that is, jobs in sectors whose goods and services were consumed locally).

This suggests that when housing prices declined, families spent less, in part because they were unable to borrow against home equity as they had prior to the recession. Mian and Sufi estimate that the decline in aggregate demand driven by household balance sheet declines accounted for 65 percent of job losses from 2007 to 2009. On the other hand, Giroud and Mueller (forthcoming) show that employment fell the most in firms that were facing the worst credit conditions, supporting the view that *firm*-level credit was the crucial factor.

To better understand whether credit constraints on firms or consumers were the critical factor in the downturn, we investigate the interplay between credit and labor market frictions, and how this interplay may have accounted for the Great Recession. To this purpose, we develop a job search model—that is, an economic model built to examine how firms find workers and vice versa—with borrowing constraints and human capital accumulation. The latter is a crucial feature. Our model assumes that workers acquire valuable skills on the job—human capital—and that some of those skills are useful in any future job they may take.

The importance of human capital

In our model, hiring workers is an investment activity: Costs are paid up-front while benefits accrue gradually. Thus, when credit tightens, investment falls and employment declines. Although this force is present in any dynamic model in which unemployed workers search for jobs, the employment drop caused by tighter credit is minuscule in the standard job search model, which features no human capital accumulation.

The decline in employment in such a search model is intimately connected to how much the present value of benefits from the investment in hiring workers changes as the interest rate changes. If a persistent rise in the interest rate leads that present value to fall greatly, then the stream of benefits is said to have *long duration*. Such long-duration streams have benefits that are back-loaded: A large fraction of the present value of this stream occurs far into the future.

Alternatively, if a persistent rise in the interest rate leads that present value to fall little, then the stream of benefits has *short duration*, with benefits that are front-loaded: A large fraction of the present value of the stream of benefits occurs soon after the investment is made.

Now, in a model without human capital accumulation, the flow of benefits from a match

between a firm and a worker is very short-lived, with durations of about two to three months.¹ But a model that accounts for on-the-job human capital accumulation generates a much longer benefit stream, with durations on the order of 10 years.² With human capital accumulation, a match between a firm and a worker not only produces current output but also raises a worker's human capital, with persistent effects on a worker's future output.

This long-duration flow of benefits implies that matches are highly sensitive to credit conditions, and our model confirms this intuition: The drop in employment following a tightening of credit is greatly amplified relative to that in the textbook search model, and it closely matches U.S. regional patterns during the Great Recession.

Relative importance of firms and consumer credit frictions

We use the model to examine the relative importance of consumer-side and firm-side credit frictions in accounting for employment and consumption changes after a credit tightening. In our model, a tightening of credit to households worsens the credit conditions faced by both consumers and firms. In particular, a credit tightening that reduces a household's ability to borrow raises both consumers' and firms' marginal valuation of goods. That is, tighter credit implies less consumption, so people place greater value on each extra unit of what they can consume.

We isolate the impact of a credit tightening that falls only on firms by assuming that a credit tightening raises firms' valuations of current goods, but not consumers' valuation, so that consumers are implicitly insulated from the credit crunch. When we do so, we find that the response of employment to tighter credit is very modest. Why? In this scenario, wages in the model fall far more than they do in the data. This drop in wages effectively protects firms from adverse credit conditions, giving them incentives to hire almost as many workers as they did before the credit tightening. This clearly doesn't describe the Great Recession job market.

In contrast, when a credit tightening falls on consumers as well as firms, wages fall only modestly, as in the data, so that a firm's incentive to hire workers is greatly reduced. In this case, our model generates just a modest fall in wages, consistent with the degree of wage flexibility estimated by Beraja, Hurst and Ospina (2016).

Regional results

To see if our model can account for the U.S. regional patterns experienced during the recession, we consider an economy composed of many states. Each state produces a nontradable good that is

consumed only in that state and a tradable good that is consumed everywhere. Each worker has one of two types of skills that are used with different intensities in the tradable and nontradable goods sectors. Workers can switch between sectors but are immobile across states, as was approximately the case in the Great Recession. This differential intensity in the use of skills across sectors generates a cost to reallocating workers between sectors.

In this model economy, a state-specific credit tightening has two effects. The first, the *investment effect*, is that the cost to a firm of finding a suitable worker by posting a job vacancy increases by more than the benefits, leading to a reduction in the number of job vacancies and, hence, to a drop in overall employment in that state.

The second, the *relative demand effect*, is due to the reduction in the demand for the nontradable goods produced in the state. This drop in the demand for nontradable goods, in turn, leads to a drop in the demand for workers by that sector, which leads those workers to reallocate to the tradable goods sector. When the cost of reallocating workers is small, a substantial reallocation occurs between sectors. As a result, the drop in nontradable employment is large, whereas the drop in tradable employment is small; tradable employment can even increase. Our model generates regional patterns for consumption and employment that are consistent with the patterns observed in the United States during the Great Recession. For example, the data show that a 10 percent fall in consumption across U.S. states between 2007 and 2009 was associated with a fall in nontradable employment of 5.5 percent and a negligible increase in tradable employment of 0.3 percent. Our model generates remarkably similar results: a 5.7 percent fall in nontradable employment and a 0.3 percent increase in tradable employment. Our model also accounts for most of the resulting change in overall employment: A 10 percent drop in consumption was associated with a 3.8 percent employment drop in the data, just slightly larger than our model's estimate of a 3.3 percent drop.

Easing consumer credit

The final step of our research evaluates the relative benefits of easing credit frictions on consumers with easing credit frictions on firms. Our model predicts that easing consumer credit in response to the credit tightening would lead to a rapid recovery of employment, whereas a policy that eases credit frictions on firms would have only a minor effect on the speed of recovery.

The key intuition is that the most important investment activity in the economy is the investment in new jobs. Such an investment is very sensitive to changes in credit conditions when the duration of benefit flows from a match between a firm and a worker is long, as is the case when workers acquire

new productive skills with employment. Easing credit frictions on consumers then leads to a virtuous cycle in which consumers demand more goods from firms, which encourages firms to hire more labor, which increases employment and output, and thus stimulates a faster economywide recovery after a credit tightening. Policies that encourage this virtuous cycle would have greatly accelerated the recovery of the U.S. economy from the Great Recession relative to the policies that were actually practiced.

Endnotes

¹ The result is similar to standard results in corporate finance that a tightening of credit has little impact on short-duration investments. See, for example, Eisfeldt and Rampini (2007) and the references therein.

² To derive these results, we quantify human capital parameters by replicating the evidence on how wages grow on the job and over the life cycle. We use two sources of data: cross-sectional data as in Elsby and Shapiro (2012) on how wages increase with experience, and longitudinal data as in Buchinsky et al. (2010) on how wages grow over an employment spell. We show that our results are robust to a range of alternative estimates of wage growth in the literature.

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