Discussion

Comment on: "Welfare implications of the transition to high household debt" by Campbell and Hercowitz

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1. Introduction

The purpose of Campbell and Hercowitz (2009) is to evaluate quantitatively the macroeconomic effects of deregulation of the mortgage market in the early 1980s. This deregulation made it easier for consumers to use houses as collateral for loans. The paper focusses on two questions. First, can this deregulation help to explain the increase in real interest rates in the early 1980s? Second, and more importantly, what effect did this deregulation have on household welfare?

Campbell and Hercowitz do a good job of motivating their quantitative analysis, citing facts about changes in household debt and mortgage refinancing in the U.S. during the past quarter-century. The percentage of mortgagees who had ever refinanced their homes, for example, increased from 10% in 1983 to 44% in 2001, and housing equity as a fraction of house value (for newly purchased homes with a loan-to-value ratio of at least 50%) decreased from 23% of 1983 to 16% in 2001. Moreover, household debt increased from 43% of U.S. GDP in 1982 to 62% in 2000. Finally, throughout this period, homes and cars collateralized roughly 90% of household debt. These are big numbers that underscore the need for a coherent quantitative analysis of the macroeconomic effects of deregulation in the mortgage market. Campbell and Hercowitz do an excellent job of providing precisely such an analysis.

The main findings of the paper are twofold. First, the sudden loosening of collateral (or, more generally, borrowing) constraints increases interest rates and lowers wages during the transition to a new steady state. Second, in a reasonably calibrated quantitative model, deregulation hurts borrowers: although they benefit directly from looser borrowing constraints, the indirect (general equilibrium) effect of deregulation on prices more than offsets these benefits, leading to a net welfare loss. Lenders, on the other hand, gain.

I will use the bulk of the rest of my discussion to illustrate these effects in a drastically simplified version of Campbell and Hercowitz's model. By stripping away extraneous details, this simplified version of their model suggests that the forces at work in Campbell and Hercowitz's model are robust to changes in the exact details of how housing, housing debt, and mortgage financing are modelled. Moreover, even in this simple model there are opposing effects on household welfare, emphasizing again the need for a quantitative analysis such as Campbell and Hercowitz's in order to measure their net effect.

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2. A simple model

This section presents and analyzes a simple, stripped-down model that captures many of the essential elements of Campbell and Hercowitz's more elaborate model. Consider first an exchange economy with a single consumption good in each time period; time is discrete and lasts forever. There are two (types of) consumers with time-separable utility over consumption streams: consumers of type S (for "saver") have a discount factor β_S and consumers of type B (for "borrower") have a discount factor $\beta_B < \beta_S$. Both consumers have identical isoelastic felicity functions with elasticity of intertemporal substitution equal to σ^{-1}. There is no uncertainty: each consumer receives an endowment y of the consumption good in each period. In each period, consumers trade, in a perfectly competitive market, a risk-free bond with price q_t in period t (expressed in terms of the current consumption good); each consumer begins with zero assets. The price q_t adjusts to clear the bond market: in equilibrium, aggregate bondholdings sum to zero in each period.

As in Campbell and Hercowitz's model, the differing patience of the two consumers provides a motive for trade. In the absence of a binding borrowing constraint, the two consumer's Euler equations hold with equality at all points in time:

$$q_t = \beta_S (c_{t+1}^S / c_t^S)^{-\sigma} = \beta_B (c_{t+1}^B / c_t^B)^{-\sigma},$$

where c_t^i is the consumption of a consumer of type-i in period t. These Euler equations imply that $c_{t+1}^S / c_t^S > c_{t+1}^B / c_t^B$ for all t: there is no steady state, as shown by Becker (1980). Furthermore, market-clearing implies that $c_{t+1}^S / c_t^S > 1 > c_{t+1}^B / c_t^B$ for all t. Since c_t^S is bounded above by $2y$, it follows that, in equilibrium, c_t^S converges to $2y$ and c_t^B converges to 0 as time passes. The impatient consumer's bondholdings approach $y/(q-1) < 0$: in the limit, the impatient consumer disappears from the economy, simply rolling over his debt and consuming nothing. Finally, the equilibrium bond price q_t approaches β_S as time passes, but $q_t < \beta_S$ for all t. In other words, the equilibrium interest rate (the inverse of q_t) is bounded below by the inverse of the discount factor of the patient consumer.

Now impose a borrowing constraint: the bondholdings of either type of consumer can be no smaller than $\underline{b} > y/(q-1)$. In this case, there does exist a steady state. The borrower (i.e., the impatient consumer) hits the borrowing constraint in finite time: he borrows as much as possible, and has positive consumption equal to $y + (1 - q)\underline{b}$. The saver's discount factor pins down the equilibrium bond price in the steady state: $q = \beta_S$.

From this steady state, imagine that the borrowing constraint, $\underline{b}$, is suddenly and unexpectedly loosened (but remains larger than $y/(q-1)$, which is the loosest possible constraint consistent with repayment of debts). Along the transition to the new steady state, the economy behaves like the economy without borrowing constraints. There is a sudden drop in the bond price (or, conversely, a sudden increase in the interest rate), after which the bond price returns (in finite time) to its initial steady-state value. Borrowers, who are relatively impatient, benefit from the decrease in $\underline{b}$: they would like to borrow as much as possible against their future endowment stream in order to consume more now. But, at the same time, they are hurt by the increase in the interest rate, which redistributes wealth from borrowers to savers. The net effect on the welfare of borrowers is unclear theoretically, but can be measured in a quantitative model.

This simple model captures, in my view, the essential logic of Campbell and Hercowitz's more elaborate model. Because they want to study deregulation in the mortgage market, Campbell and Hercowitz introduce durable goods (such as housing), collateral constraints (borrowing must be secured by durable goods), and equity requirements (consumers cannot borrow against the full value of their durable goods). This additional realism is critical for a proper quantitative evaluation of the effect of relaxing constraints on borrowing: the simple model developed above really is too stark for that purpose. But the simple model shows that Campbell and Hercowitz's key qualitative results about how looser constraints affects interest rates and household welfare do not depend on the specific details of how debt is modelled.

Campbell and Hercowitz discover another channel through which a relaxation of borrowing constraints can influence welfare: in a world with production, an increase in the interest rate must be accompanied by a decrease in the capital stock, leading in turn to a decrease in the wage. These effects too can be illustrated in the simple model described above. Introduce into the simple model a perfectly competitive firm operating a constant-returns-to-scale technology. Imagine that the saver (the "capitalist") owns the economy's productive capital but does not work, whereas the borrower (the "worker") holds no capital but supplies labor inelastically to the firm. (That the worker does not hold capital is not a restriction in the sense that the worker, being impatient, will hold no capital in a steady state, assuming that short sales of capital are not permitted. That the capitalist does not work is more restrictive, but Campbell and Hercowitz find in their calibrated model that a wealth effect leads the capitalist not to work when there is an endogenous labor-leisure decision.) In addition, the capitalist and the worker trade a risk-free bond in a competitive market. Because there is no risk, the capitalist's first-order conditions for his portfolio allocation problem imply that the rate of the return on the bond must be equal to the rate of return on capital at all points in time. Starting from an initial steady state in which the worker is constrained, a relaxation of the borrowing constraint leads (as in the exchange economy) to a sudden increase in the interest rate, which then eventually returns to its initial value as the economy transits to a new steady state in which borrowers hold a larger amount of debt. Because the return on capital is determined by the (decreasing) marginal product of capital, along the transition path the level of capital must fall before returning to its initial steady-state value. Consequently, the wage (as determined by the marginal product of labor) also falls during the transition following the relaxation of the borrowing constraint. Production, therefore, provides another mechanism through which the welfare of borrowers/workers is hurt by the relaxation of borrowing constraints. This mechanism operates in a qualitatively similar in Campbell and Hercowitz's more elaborate model.

3. Concluding remarks

Campbell and Hercowitz find that in their model a relaxation of collateral constraints in the early 1980s causes a quantitatively large increase in the interest rate, driven by increases in the demand for debt by constrained households. This effect of looser collateral constraints provides a complement, and possibly an alternative, to the conventional story that high real interest rates in the early 1980s were caused primarily by increases in government borrowing during this period.

Although Campbell and Hercowitz's story is a compelling one, it relies heavily on a particular mechanism for generating an active loan market in equilibrium, namely, differences in patience across households. Households that borrow to finance purchases of durables/housing do so (in equilibrium) simply because they are relatively impatient. But it is easy to imagine other environments without heterogeneity in impatience in which households must borrow to purchase durables and in which borrowing constraints play an active role in determining both interest rates and wages. Consider, for example, the life-cycle model of Huggett (1997) in which consumers with identical preferences are born with little to no assets, face idiosyncratic (uninsurable) shocks to labor income, and accumulate assets when young in order to finance retirement when old. A relaxation of the borrowing constraint in this model has the same qualitative effects as in Campbell and Hercowitz's model, but the underlying mechanism is different: in Huggett's model, looser borrowing constraints reduce the precautionary motive for saving, leading in turn to an increase in the interest rate (to offset the reduced precautionary motive), a decrease in the capital stock, and a decrease in the wage. It would be relatively straightforward to introduce durable goods and/or housing into this environment: young consumers, who have few assets, must borrow in order to purchase houses from old consumers who are retiring. It seems plausible to speculate too that looser borrowing constraints in this environment would lead at least some households to accumulate more debt. The important question then is whether this alternative environment delivers quantitatively different answers to the question of how mortgage deregulation affects interest rates and consumer welfare. In short, are the quantitative effects that Campbell and Hercowitz obtain robust to alternative ways of modelling borrowers and lenders? This question is left to future investigators.

In closing, let me add that Campbell and Hercowitz's paper is an excellent case study for how to conduct a quantitative investigation in macroeconomics. First, it asks a well-defined and interesting question—how did mortgage deregulation affect welfare—and answers it using a carefully constructed, quantitative model. Second, it emphasizes the distributional effects of macroeconomic policy. Third, it uses a proper transitional analysis to study these distributional effects. Fourth and finally, it shows (by example) that to answer quantitative questions about how changes in policy affect welfare it is important to account for how these changes move equilibrium prices.

References

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