Review of Economic Dynamics 18 (2015) 77–100

Contents lists available at ScienceDirect

Review of Economic Dynamics

www.elsevier.com/locate/red

Aggregate unemployment and household unsecured debt ☆

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ARTICLE INFO

Article history:
Received 4 February 2014
Received in revised form 19 July 2014
Available online 23 August 2014

JEL classification:
D82
D83
E40
E50

Keywords:
Credit
Unemployment
Limited commitment
Liquidity

ABSTRACT

This paper studies the relationship between the availability of unsecured credit to households and unemployment. We extend the Mortensen–Pissarides model to include a goods market with search and financial frictions. Households, who have limited commitment, face endogenous borrowing constraints when financing random consumption opportunities. We show that borrowing limits depend on the sophistication of the financial system, the frequency of liquidity shocks, and the rate of return on (partially) liquid assets that households can accumulate for self insurance. Moreover, firms' expected revenue is endogenous and depends on firms' market power in the goods market and the availability of unsecured credit to consumers. As a result of the complementarity between credit and labor markets, multiple steady states might exist. Across steady states unemployment and debt limits are negatively correlated. We calibrate the model to the US labor and credit markets and illustrate the effects of an expansion in unsecured debt similar to that seen in the US from 1978 to 2008. Under the baseline calibration, the rise in unsecured credit can account for approximately seventy percent of the decline in the long-term average unemployment rate.

1. Introduction

Average household balances on unsecured loans more than tripled from 1980 to 2007, from roughly 3 to 10 percent of consumption (see Fig. 1).[1] In 2007, more than 73 percent of all U.S. households had at least one credit card and roughly 50 percent of all households carried outstanding balances on these accounts.[2] Evidence suggests that unsecured debt has become easier to obtain and limits on credit cards have become increasingly more generous. The expansion of unsecured credit over this time period coincides with a decrease in the share of liquid assets among all assets held by households and a long-term decrease in the unemployment rate.[3]

☆ We appreciate helpful comments from Steve Williamson and Mark Gertler. We also thank Vincenzo Quadrini, Richard Rogerson, Shouyong Shi, Randy Wright, Alan Head, Briana Chang, and the participants at the NBER Macro Perspectives Conference, the Money, Banking, Payments and Finance Workshop at the Federal Reserve Bank of Chicago, the Search Theory Workshop at New York University, the Conference on Money, Banking and Asset Markets at The University of Wisconsin, and the Southwest Search and Matching Workshop at UC Davis.

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[1] Unsecured debt or non-collateralized debt refers to loans that are not tied to any asset. Unsecured debt primarily consists of revolving accounts, such as credit card loans, see Sullivan (2008).

[2] Source: 2007 Survey of Consumer Finances.

[3] We define liquid assets as M2 plus treasury securities held by households as a percentage of their total assets given by the Federal Reserve Board's Z.1 Flow of Funds. The unemployment rate is the civilian unemployment rate reported by the Bureau of Labor Statistics.

http://dx.doi.org/10.1016/j.red.2014.08.002
1094-2025/

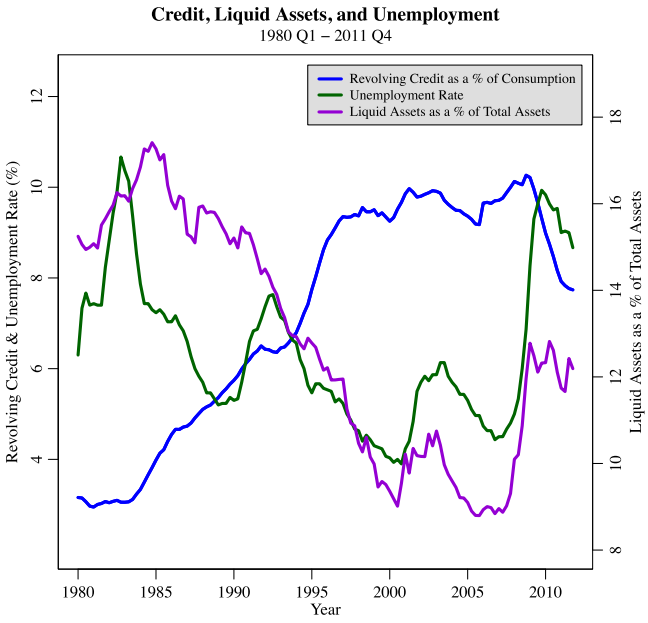

Fig. 1. Unemployment, revolving credit, and liquid assets.

These trends were abruptly reversed following the 2007–2008 financial crisis: the unemployment rate increased from about 4.5 to 10 percent while households use of unsecured credit and liquid assets returned to their 1995 level. These recent changes have led many commentators to speculate about the relationship between the recent credit crunch and the slow recovery and high levels of unemployment following the recession.[4]

The objective of this paper is to provide a tractable dynamic general equilibrium model with trading frictions in which to analyze the relationship between household unsecured debt, liquid assets, and unemployment and the joint behavior of labor and credit markets, both qualitatively and quantitatively. Our starting point is the canonical model of equilibrium unemployment by Mortensen and Pissarides (1994)—MP hereafter. While this model is explicit about the search-matching frictions that prevail in the labor market, trades in the goods market are assumed to be seamless: firms' output can be sold instantly, households have no need for borrowing (and if they do, repayment can be enforced), and there is no role for liquidity. In contrast, in this paper, we describe household unsecured credit and its relation to labor market outcomes by incorporating a retail goods market with search frictions and limited commitment—along the lines of Diamond (1987a, 1987b, 1990) and Shi (1996).

The model assumes that frictional labor and goods markets open sequentially, as in Berentsen et al. (2011). As in MP firms that enter the labor market post vacancies and unemployed workers look for jobs according to a time-consuming process. The output produced by firms can then be sold in a decentralized goods market where retailers and households are matched bilaterally, and households use liquid assets and unsecured debt to finance their purchases. The matching shocks in the decentralized goods market are analogous to liquidity shocks in banking models, except that the frequency of these shocks is endogenous in our analysis. Unsold inventories are traded in a frictionless competitive market where households have linear utility, as in the original MP model. Households value consumption in the decentralized retail market more than they value consumption in the competitive market and firms have some market power that allows them to charge a price higher than their marginal cost.

Following Kehoe and Levine (1993), and Alvarez and Jermann (2000), households in the decentralized goods market face endogenous borrowing constraints because they cannot commit to repay their debt—the repayment of the debt must be self-enforcing. In order for unsecured credit arrangements to be incentive feasible some form of punishment must take place if an agent defaults on its obligations. If agents are anonymous and their trading histories are private information, agents cannot be punished from reneging on their debt. Therefore, we will assume that an imperfect record-keeping technology is available that keeps track of defaulting individuals and that makes this information publicly available. If a household defaults, and if default is publicly recorded, then the household is excluded permanently from credit arrangements. The endogenous debt limit that results from this threat increases as households become more patient, as the frequency of trade increases, but it decreases if firms have a higher market power.

We will assume that households are heterogeneous in terms of their access to unsecured credit. Some households' histories of default can be publicly recorded, and therefore these households can be trusted to repay their debt. Other

[4] See, e.g., the article in the New-York Times of October 29, 2008, titled "As U.S. economy slows, credit card crunch begins" or the article in the Wall Street Journal of March 10, 2009, titled "Credit cards are the next credit crunch."