



# Financial frictions, the housing market, and unemployment <sup>☆</sup>

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Received 17 November 2014; final version received 12 May 2015; accepted 8 July 2015

Available online 22 July 2015

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## Abstract

We develop a two-sector search-matching model of the labor market with imperfect mobility of workers, augmented to incorporate a housing market and a frictional goods market. Homeowners use home equity as collateral to finance idiosyncratic consumption opportunities. A financial innovation that raises the acceptability of homes as collateral raises house prices and reduces unemployment. It also triggers a reallocation of workers, with the direction of the change depending on firms' market power in the goods market. A calibrated version of the model under adaptive learning can account for house prices, sectoral labor flows, and unemployment rate changes over 1996–2010.

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*JEL classification:* D82; D83; E40; E50

*Keywords:* Credit; Unemployment; Limited commitment; Liquidity

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<sup>☆</sup> This paper has benefited from useful discussions with Aleksander Berentsen, Allen Head, and Murat Tasci. We also thank for their comments three anonymous referees, an associate editor, seminar participants at the Bank of Canada, at the universities of Basel, Bern, California at Irvine, Hawaii at Manoa, Carleton the 2012 cycles, adjustment, and policy conference on credit, unemployment, supply and demand, and frictions, and the 2014 Workshop on Expectations in Dynamic Macroeconomics at the Bank of Finland. These views are those of the authors and do not necessarily reflect the views of the Federal Reserve System. This is a substantially revised version of a paper that previously circulated under the title “Unemployment, Financial Frictions and the Housing Market.”

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## 1. Introduction

The [Mortensen and Pissarides \(1994\)](#) model of equilibrium unemployment captures several frictions that plague labor markets, including imperfect competition, costly search, and matching frictions. Yet, it abstracts from financial frictions and borrowing constraints that provide powerful linkages between key markets of the macroeconomy, namely housing, goods, and labor markets. These linkages seem to have played an important role in the emergence of a housing boom/bust cycle and the Great Recession. Indeed, preceding the Great Recession, house prices doubled from 1991 to 2005, while households increased their consumption financed with home equity lines of credit by \$530 billion annually. In the meantime the demand for residential construction grew from supporting 4.2% of all U.S. employment in 1996 to 5.1% of total employment in 2005 ([Byun, 2010](#)). Following the bursting of the “housing bubble,” residential construction-related employment fell to 3.0% of total U.S. jobs, while home equity extraction plummeted. Moreover, the spending decline during the Great Recession was concentrated in counties that experienced the largest house price declines, which led to employment losses throughout the entire economy ([Mian and Sufi, 2014a](#)).

The objective of this paper is to incorporate borrowing constraints into a model with frictional labor and goods markets. We focus on financial frictions that affect households’ ability to borrow when facing unforeseen spending shocks. Specifically, we emphasize consumer loans collateralized with residential properties because housing wealth is the main source of collateral to households—it represents about one-half of total household net worth ([Iacoviello, 2011](#))—and the availability of such loans increased steadily over time during the housing boom. According to [Greenspan and Kennedy \(2007\)](#), expenditures financed with home equity extraction increased from 3.13% of disposable income in 1991 to 8.29% in 2005.<sup>1,2</sup> We will study, both analytically and quantitatively, how financial innovations and deregulation that make housing assets more liquid affect equilibrium unemployment, labor market flows and sectoral reallocations, and house prices. We then consider whether our model can account for the magnitude of the changes in unemployment and house prices during the housing boom that preceded the Great Recession and the housing market crash that followed.

Our model is a two-sector version of the [Mortensen and Pissarides \(1994\)](#) framework augmented to incorporate a housing market and a goods market with explicit financial frictions. In each period, frictional labor and goods markets open sequentially, as in [Berentsen et al. \(2011\)](#). The frictional labor market is divided into a construction sector where firms produce houses and a

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<sup>1</sup> [Dugan \(2008\)](#) explains the increase in home equity loans by the fact that underwriting standards have been relaxed to help more people to qualify for loans. [Ducca et al. \(2011\)](#) attribute the steady increase in average loan-to-value ratios in the U.S. to two financial innovations: the development of collateralized debt obligations and credit default swap protection. [Abdallah and Lastrapes \(2012\)](#) document a constitutional amendment in 1997–1998 in Texas that relaxed severe restrictions on home equity lending. Prior to 1997 lenders were prohibited from foreclosing on home mortgages except for the original purchase of the home and home improvements.

<sup>2</sup> [Mian and Sufi \(2009\)](#) estimate that the average U.S. homeowner extracted 25 to 30 cents for every dollar increase in home equity from 2002 to 2006. They argue that the extracted money was not used to pay down debt or purchase new real estate but for real outlays. Moreover, [Mian and Sufi \(2014b\)](#) find that this marginal propensity to borrow is the largest for homeowners with the lowest cash on hand. Using household level data for the U.K., [Campbell and Cocco \(2007\)](#) find that a large positive effect of house prices on consumption of old households who are homeowners—the house price elasticity of consumption can be up to 1.7—and an effect that is close to zero for the cohort of young households who are renters. Moreover, they find that consumption responds to predictable changes in house prices, which is consistent with a borrowing constraint channel.

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