Shocks, Housing Sentiments, and Real Economy

Karolis Bielskis   Povilas Lastauskas

Bank of Lithuania[1]

CEFER

Vilnius University

Euro4Europe #WorkingFromHome meeting, April 2020

Outline

Introduction

Overview of
Literature

Theoretical
Motivation

Data and
Econometric
Model

Results
Local Projections
Results for
Splitted Sample
Results for State
Dependence

Summary

Questions

References

Importance of Household Balance Sheet

▶ Financial asset prices tend to experience significant swings with the few huge drops over the last decades.

▶ House prices, not an exception, experienced substantial (over one third) declines during the Global Financial Crisis.

▶ These facts can be observed from the household balance sheet:
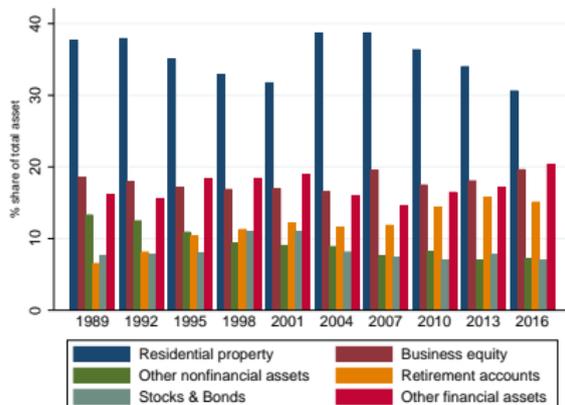
The Great Financial Crisis

▶ Channels at work during the Great Financial Crisis:
  ▶ "after a sustained boom, house prices collapsed, triggering a financial crisis and fall in household expenditures which – paired with macroeconomic frictions – led to a slump in employment." (Mian et al., 2013; Mian and Sufi, 2014a)

▶ Current literature identifies the following main driving forces for the boom and bust in house prices: credit conditions and expectations, (Kaplan et al., 2017), and household balance sheet channel and the disruption of financial intermediation (Gertler and Gilchrist, 2018).

▶ Interactions between sentiments, shocks (e.g. credit) and the real economy are way less understood, though macroeconomic (and policy) implications are absolutely crucial (especially for the times when standard tools, such as monetary policy, do not support the economy as intended).

Macro Fluctuations

▶ According to Pigou (1927), there are six different causes of business cycles: productivity shocks, monetary disturbances, sunspot shocks (shocks to business confidence), agricultural disturbances, changes in tastes and news shocks.

▶ Only quite recently the literature has "returned" to the role of expectations and learning for the cyclical macro behavior (Eusepi and Preston, 2011; Kuang and Mitra, 2016).

  ▶ Learning about the dynamics of factor prices could matter quite substantially as well as about the long-run growth rate, though not really about stationary deviations from the long-run trend.

▶ We shall consider the channels at play in turn.

Outline

Housing and Consumption

Housing and sentiments effects on consumption:

▶ Low income households in U.S. increased their spending in line with the rise in house prices between 2002 and 2006 and faced huge drop in income and consumption thereafter (Mian and Sufi, 2014a).

▶ Kaplan et al. (2017) built the model with multiple aggregate shocks to generate fluctuations in equilibrium house prices and identified beliefs as the main driver for the shift in house prices. On top, boom-bust in house prices explained half of the corresponding swings in non-durables expenditures in U.S.

▶ Recent IMF Working Paper (Caceres et al., 2019) used U.S. micro data and supported earlier driven ideas about housing as the most relevant form of equity to affect consumption dynamics.

▶ Adam et al. (2011), by introducing subjective beliefs, break (temporarily) the link between house prices and the history of fundamentals. This opens ways for interest rates to play a crucial role in fueling housing boom, which, in turn, affects the collateral constraint and leads to an increase in total borrowing, leading to a current account deficit and consumption boom.

Credit and Consumption

Credit shock effects on consumption:

▶ From an individual credit data in U.S. between 2004 - 2014 Amromin and McGranahan (2015) identified a rapid mortgage credit expansion among low-income zip codes leading up to the Great Recession. Other markets as auto lending were dominated by the real business cycle.

▶ Using behavioral theories López-Salido et al. (2017) summarized how investor sentiments in credit markets can be an important driver of future economic fluctuations.

Trade shock effects on consumption:

▶ Mian et al. (2017) conclude that a rise in the household debt to GDP ratio associates with a consumption boom followed by a reversal in the trade deficit as imports collapse and predicting lower output growth and unemployment over medium-run.

Credit spreads and cycles, and macroeconomic volatility:

▶ Bordalo et al. (2017) use diagnostic expectations to generate credit cycles with such credit spreads that are excessively volatile, over-react to news, and are subject to predictable reversals. They can generate aggregate macro variables (investment, GDP) volatility absent financial frictions.

Housing and Labor Markets

Housing effects on unemployment:

▶ Gertler and Gilchrist (2018) found the importance of household balance sheet channel for variation in employment during the Great Recession.

▶ Mian and Sufi (2014b) identified housing net worth channel as the main driver in non-tradable unemployment in U.S. between 2007 and 2009.

▶ Gilchrist et al. (2018) analyze how fluctuations in the supply of mortgage credit affect commuting-zone-level economic outcomes. They find, inter alia, that the reduction in mortgage credit led to large declines in home prices, building permits, an increase in the unemployment rate, particularly at small and young firms. No real effects registered during the expansion period.

Stock market effects on unemployment:

▶ In his paper, Farmer (2010) pointed out that S&P 500 and unemployment are two non-stationary but cointegrated series. Therefore, the fall in the stock market in the autumn of 2008 interpreted as a causal explanation for the magnitude of the Great Recession.

▶ López-Salido et al. (2017) identified the stock market effect, together with the credit market sentiments, in predicting future fluctuations in output. Therefore, magnitude of the stock market was less than the credit market sentiments.

Our Contribution

▶ **The role of housing and credit spreads,** proxying for, among other
things, sentiments**, on consumption and unemployment** in **theory** and
evidence.

▶ The role of **shocks for the credit** shock, interacting with the housing
spread.

  ▶ Integrated or small open economy and separate or country-specific
  markets.

▶ **State dependence**.

▶ **Beoynd USA: panel dimension** including G7 countries (Canada, France,
Germany, Italy, Japan, United Kingdom, United States).

Outline

Introduction

Overview of Literature

Theoretical Motivation

Data and Econometric Model

Results
Local Projections
Results for Splitted Sample
Results for State Dependence

Summary

Questions

References

Outline

Introduction

Overview of
Literature

Theoretical
Motivation

Data and
Econometric
Model

Results

Local Projections
Results for
Splitted Sample
Results for State
Dependence

Summary

Questions

References

Econometric Framework

▶ Proxy for credit market sentiments by using conditional predicted change in spread (Lopez-Salido et al., 2017).

▶ We extend the approach for the housing sentiment:

$$spread_t = \triangle log(housing\ price)_t - \triangle log(rental\ price)_t,$$

$$\triangle spread_t = spread_t - spread_{t-1}.$$

▶ Unexplained difference between housing and rental prices **growth**.

1970q1 1980q1 1990q1 2000q1 2010q1 2020q1
— Housing_index   — Rental_index

1970q1 1980q1 1990q1 2000q1 2010q1 2020q1
☐ Crisis_NBER   — g_hp_rental_spread
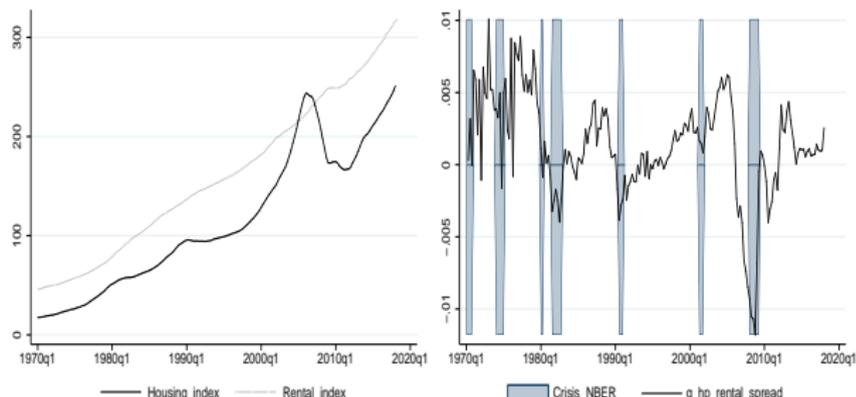
Spread and Sentiments

Introduction

Overview of
Literature

Theoretical
Motivation

Data and
Econometric
Model
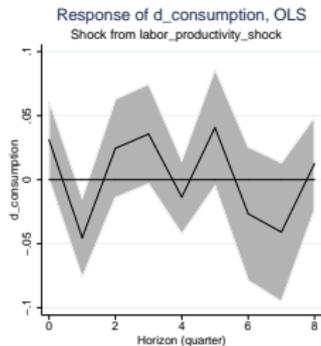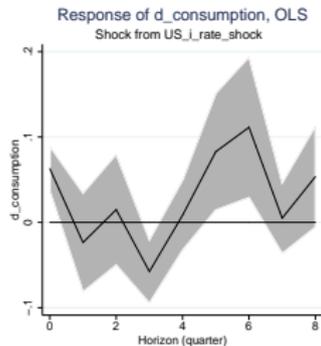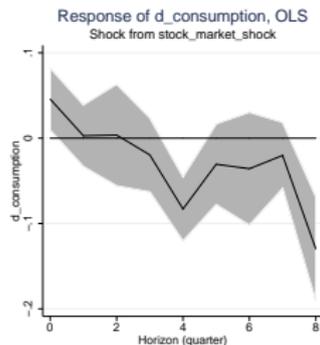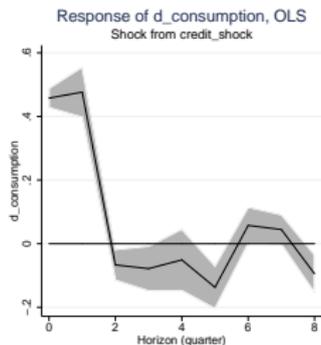
Results

Local Projections

Results for
Splitted Sample

Results for State
Dependence

Summary

Questions

References
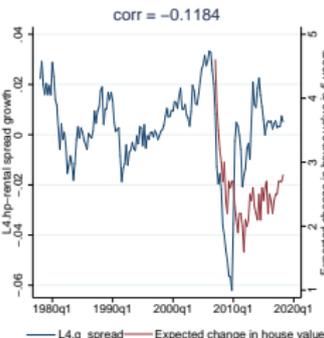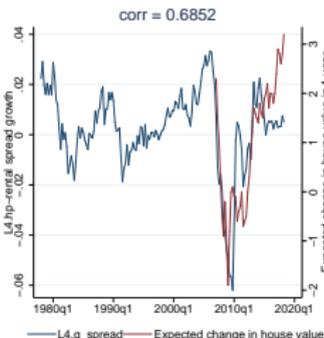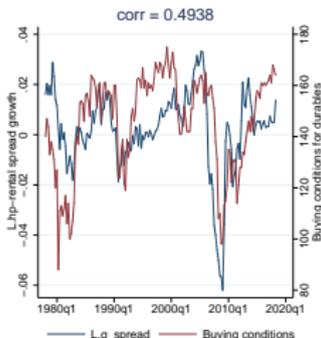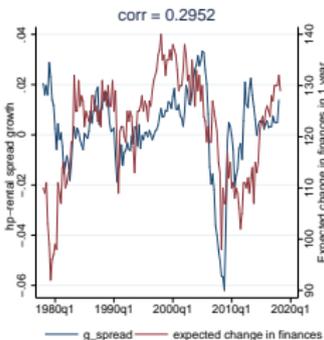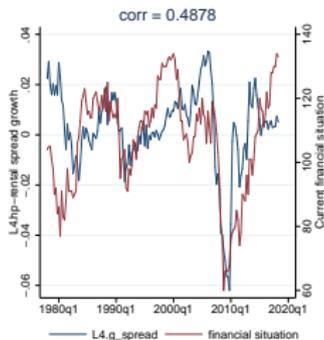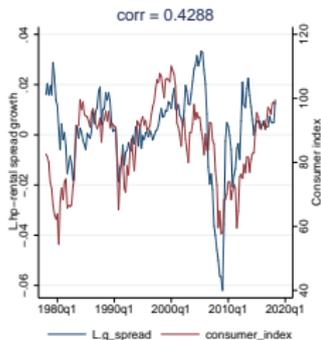
Questioners vs. Real Behavior

▶ Results from Michigan Survey are based on respondent (household)
  answers:
  ▶ It shows the buyers' "pulse";
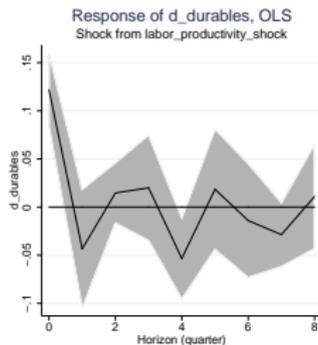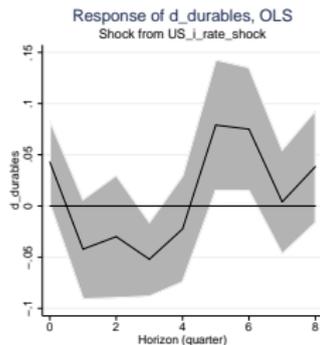 ▶ It reflects what they think about current economic situation;
  ▶ But it does not necessarily lead to actual behaviors in buying.

▶ Our idea of the "spread" measure is to capture real behavior of
  households:
  ▶ It reflects realized decisions that households already made in
    buying, selling and renting.

Econometric Framework

▶ Country-by-country ARDL regression is used to identify "shocks" to housing sentiments, credit, stock market, U.S. interest rate, and labor (factor) productivity.

▶ It is based on identification idea used by Gertler and Gilchrist (2018) to capture "shocks" to house prices and indicators of aggregate financial conditions.

▶ In this framework, "shocks" should be interpreted as surprise movements or "innovations" in analysed variables that are orthogonal to fluctuations in unemployment, consumption, etc. and to each other.

Shocks Identification

$\Delta Y_{i,t} = \sum_{i=1}^{4} \rho_i^{sp} \Delta logSp_{t-i} + \sum_{i=1}^{4} \gamma_i^{sp} \Delta logCr_{t-i} + \sum_{i=1}^{4} \omega_i^{sp} \Delta logSt_{t-i} + \sum_{i=1}^{4} \psi_i^{sp} \Delta logIrate_{t-i} + \sum_{i=1}^{4} \zeta_i^{sp} \Delta logLP_{t-i} + \sum_{i=1}^{4} \eta_i^{sp} \Delta logX_{t-i} + \mu_{i,t}$

▶ Y_i– spread, credit, stock, exchange rate, labor (factor) productivity.

▶ Sp_t, Cr_t, St_t, Ex_t, and Lp_t stands for *housing spread, credit, stock, exchange rate*, and *labor productivity*, respectively.

▶ X_i contains information about *total consumption, durables consumption* or *unemployment*.

▶ Y_i specific residuals μ_i are taken as "shocks".

Data

▶ We analyze G7 economies: Canada, Germany, France, Italy, Japan, United Kingdom, and the United States.

▶ We consider housing and rental indexes, household credit, country specific stock values, U.S. interest rate, labor productivity, unemployment rate, and final household consumption.

▶ We extract recent data from FRED, OECD, Bloomberg, and BIS databases.

   ▶ At quarterly frequency ranging from Q4 1951 to Q2 2018.

▶ Jordà (2005) method of local projections is used to get impulse responses (using the time horizon of 8 quarters).

Outline

Introduction

Overview of Literature
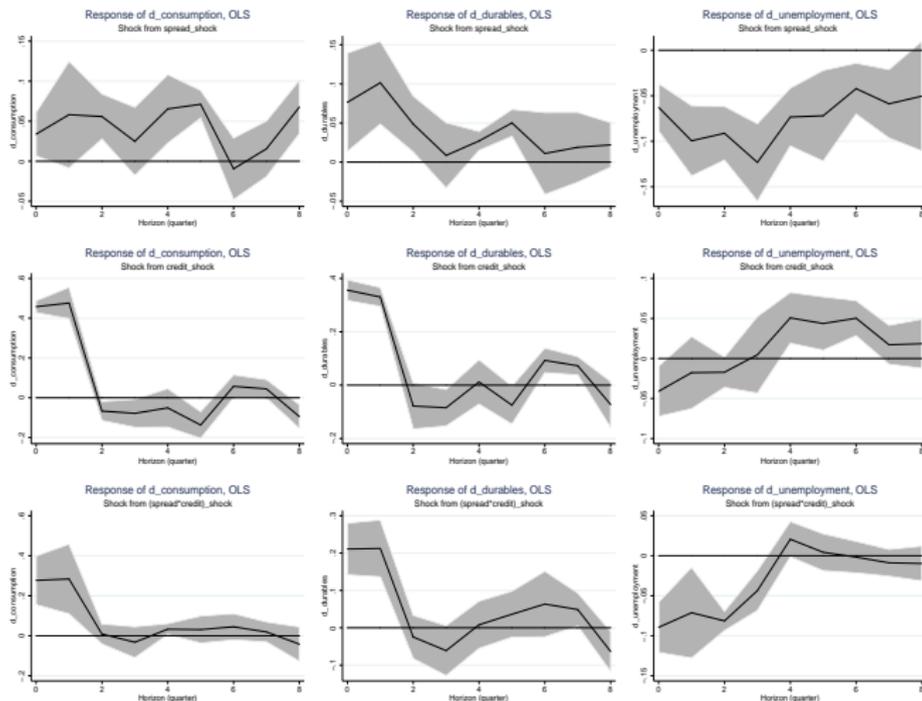
Theoretical Motivation

Data and Econometric Model

Results

Local Projections
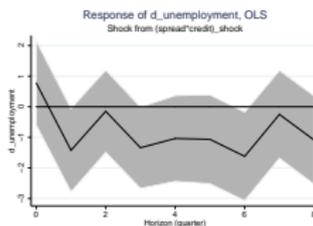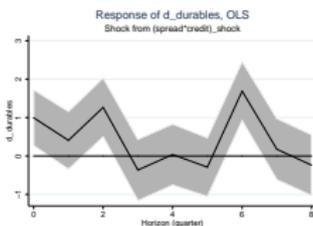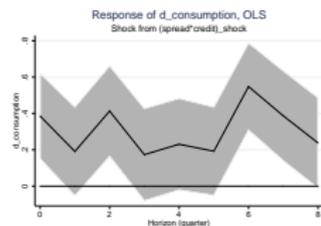Results for Splitted Sample
Results for State Dependence

Summary

Questions

References

Baseline Impulse Responses (total consumption)

Baseline Impulse Responses (durables consumption)

Baseline Impulse Responses (unemployment)
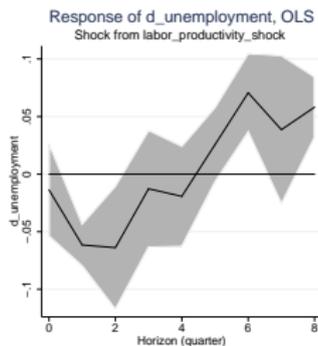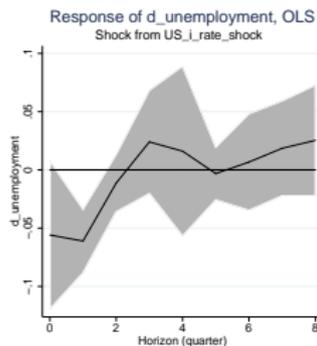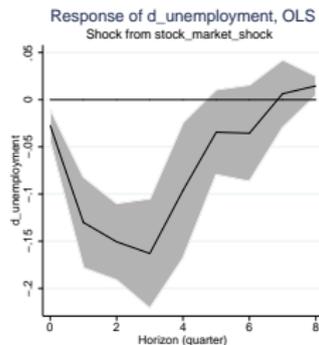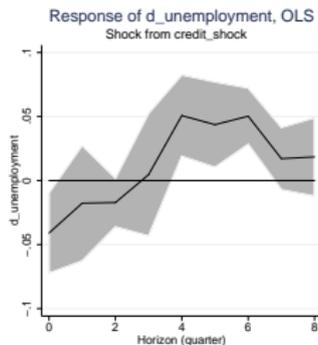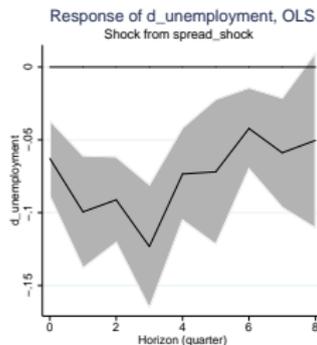
Spread Results Over Splitted Sample
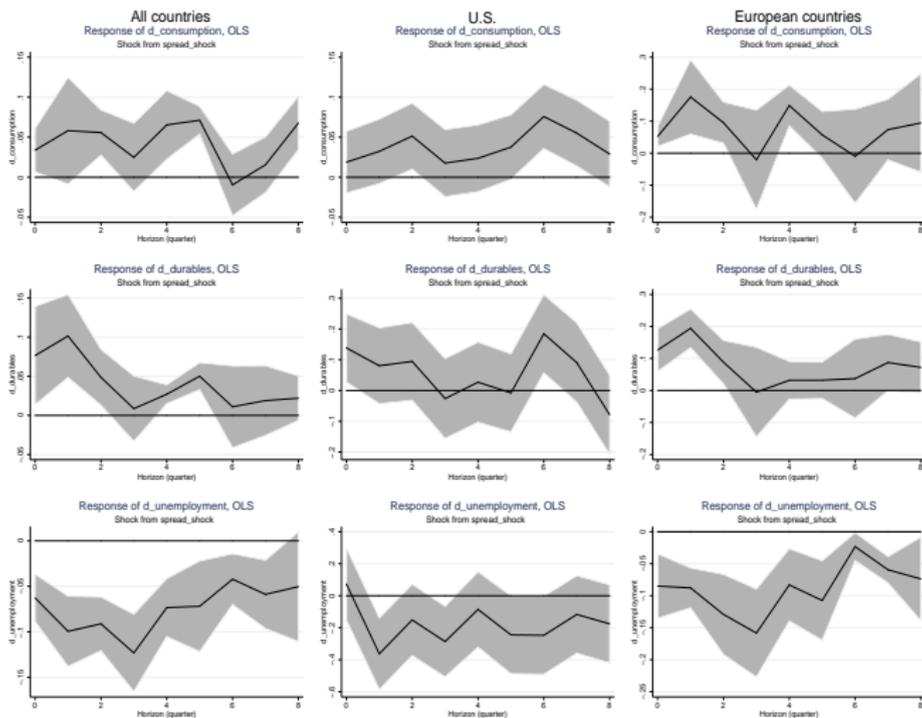
Spread*Credit Interaction for All Countries' Sample
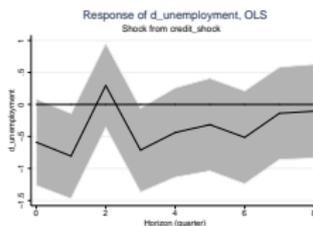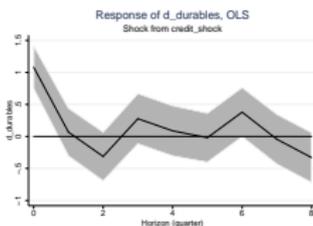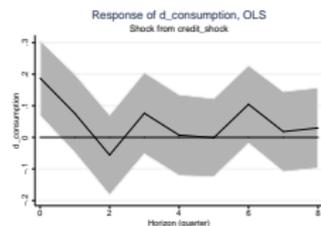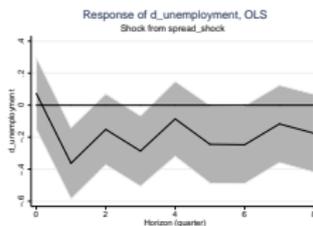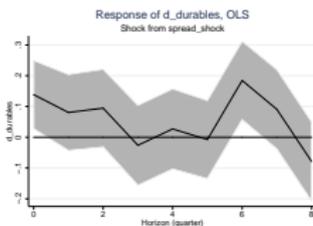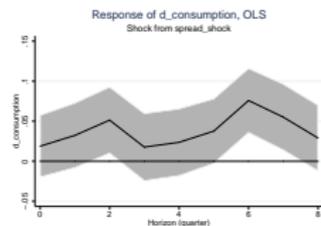
Spread*Credit Interaction for U.S.

Spread*Credit Interaction for European Countries
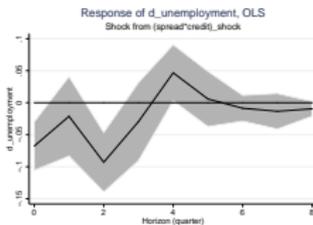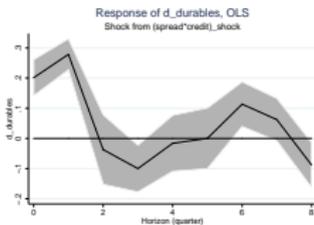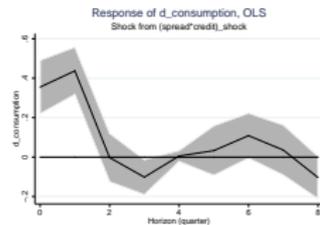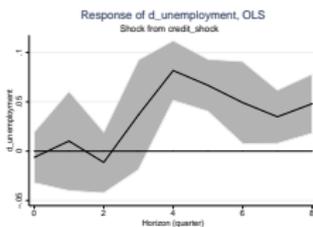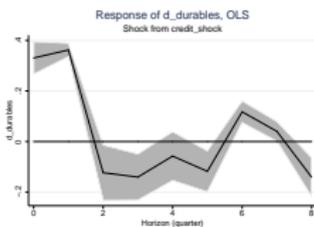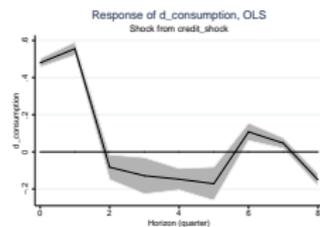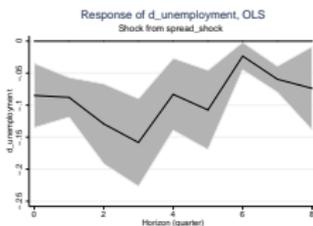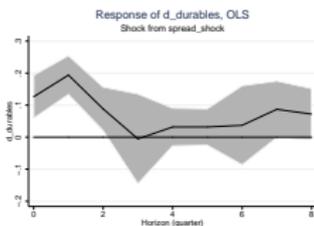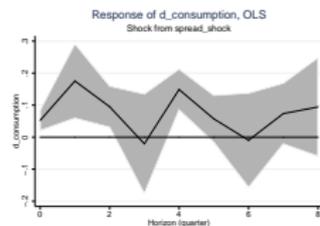
State Dependence (for Total Consumption)
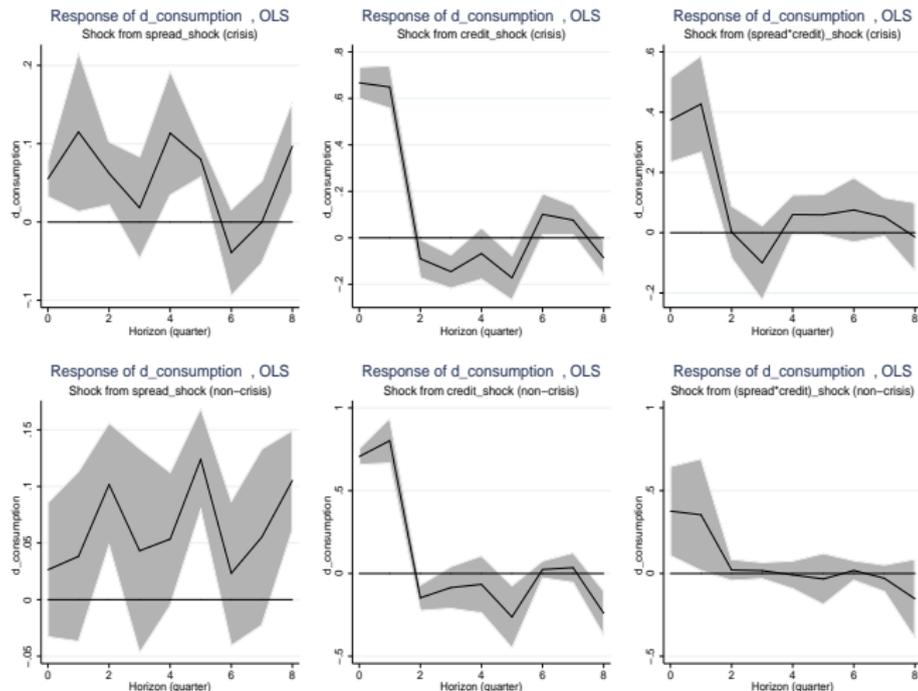
* State dependence is based on Auerbach & Gorodnichenko (2012) approach
of smooth transition between states.

State Dependence (for Durables Consumption)
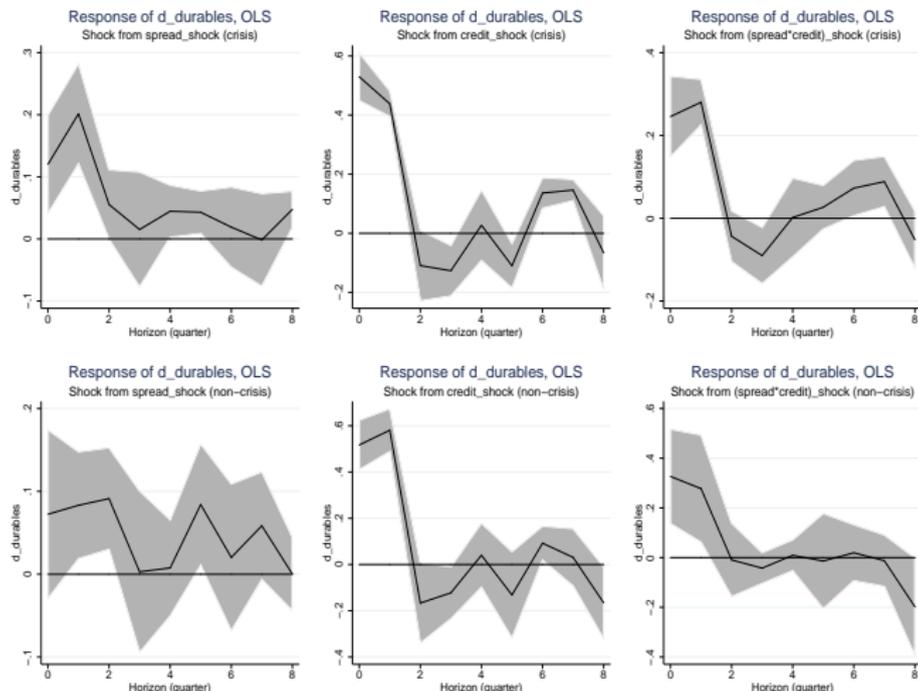
* State dependence is based on Auerbach & Gorodnichenko (2012) approach
of smooth transition between states.

State Dependence (for Unemployment)
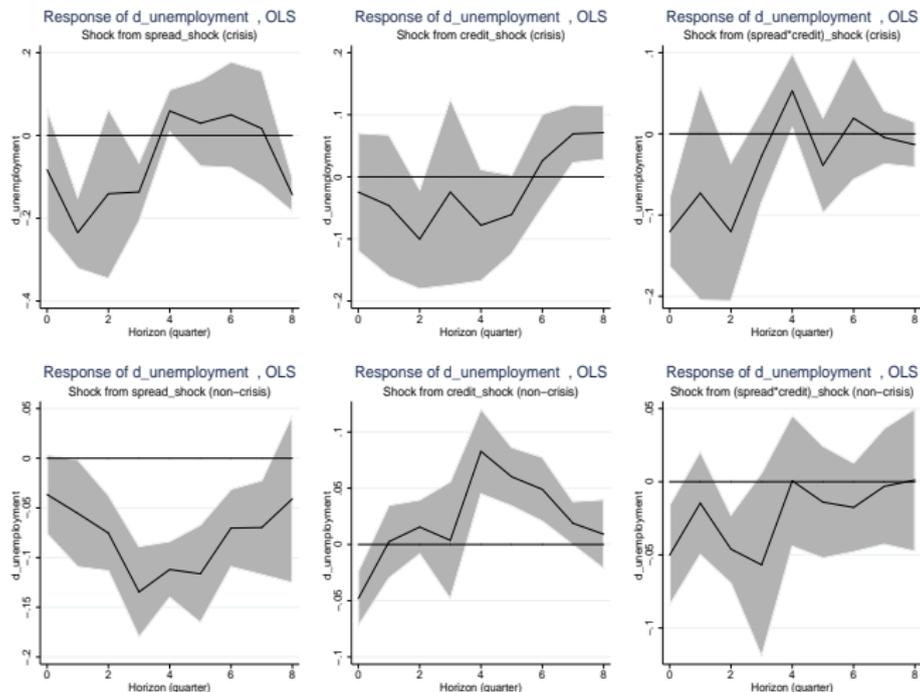
* State dependence is based on Auerbach & Gorodnichenko (2012) approach
of smooth transition between states.

Possible Robustness Checks

▶ We are working on the following robustness checks:

  ▶ assymetries in "spread" effects;
  ▶ possible explanation for differences in magnitudes of effects
    between countries (homeownership rates, specific institutional
    setups, specific housing market rules...);
  ▶ repeated exercise for different dataset (for example,
    macroeconomic history data (yearly frequency));
  ▶ looking for special cases/periods (e.g. 4 or 8 quarters before the
    crisis), to capture "build-up" ("Minsky") moments in asset prices.

Summary of Key Results

▶ Housing sentiments, as the gap between housing and rental prices (fundamentals) growth, and stock market shocks affect the real economy.

    ▶ Unemployment reacts more strongly to housing sentiments whereas consumption to the credit shocks.

▶ Durables are affected more by housing sentiments, in comparison to the total consumption.

▶ Interaction between credit shock and housing sentiments vital, one of the mechanisms to produce boom-bust effects.

▶ Positive housing sentiments and credit may help during the crisis but also act as a build-up for crisis during "good times": a clear tradeoff.

▶ Stock market affects firms's, less so households', decisions and impacts unemployment (in line with Farmer).

Outline

Introduction

Overview of
Literature

Theoretical
Motivation

Data and
Econometric
Model

Results

Local Projections
Results for
Splitted Sample
Results for State
Dependence

Summary

Questions

References

Summary and Future Research Directions

▶ Household wealth, expressed by housing and stock value, is an important channel to explain fluctuations in the real economy.

▶ Credit driven boom-bust episode confirmed, in line with literature:
  ▶ More nuanced interaction between credit and sentiments during crisis and non-crisis periods.
  ▶ Channels, the role of international and local capital markets.

▶ Micro-data (e.g. HFCS) could enrich the analysis with more detailed episodes in shocks and their effects on the real economy.

▶ The role of policy intervention, sentiment generation, larger country coverage, ...

Outline

Introduction

Overview of Literature

Theoretical Motivation

Data and Econometric Model

Results

Local Projections

Results for Splitted Sample

Results for State Dependence

Summary

Questions

References

Q&A

Bibliography

Introduction

Overview of Literature

Theoretical Motivation

Data and Econometric Model

Results
Local Projections
Results for Splitted Sample
Results for State Dependence

Summary

Questions

References

AMROMIN, G. AND L. MCGRANAHAN (2015): "The Great Recession and Credit Trends Across Income Groups," *American Economic Review*, 105(5), 147–53.

CACERES, C. ET AL. (2019): "Analyzing the Effects of Financial and Housing Wealth on Consumption using Micro Data," Tech. rep., International Monetary Fund.

FARMER, R. E. (2010): "Animal Spirits, Persistent Unemployment and the Belief Function," Tech. rep., National Bureau of Economic Research.

GERTLER, M. AND S. GILCHRIST (2018): "What Happened: Financial Factors in the Great Recession," *Journal of Economic Perspectives*, 32(3), 3–30.

JORDÀ, Ò. (2005): "Estimation and inference of impulse responses by local projections," *American economic review*, 95, 161–182.

KAPLAN, G., K. MITMAN, AND G. L. VIOLANTE (2017): "The Housing Boom and Bust: Model Meets Evidence," Tech. rep., National Bureau of Economic Research.

LÓPEZ-SALIDO, D., J. C. STEIN, AND E. ZAKRAJŠEK (2017): "Credit-market sentiment and the business cycle," *The Quarterly Journal of Economics*, 132, 1373–1426.

MIAN, A., K. RAO, AND A. SUFI (2013): "Household Balance Sheets, Consumption, and the Economic Slump," *The Quarterly Journal of Economics*, 128(4), 1687–1726.

MIAN, A. AND A. SUFI (2014a): "House Price Gains and US Household Spending from 2002 to 2006," Tech. rep., National Bureau of Economic Research.

——— (2014b): "What explains the 2007–2009 drop in employment?" *Econometrica*, 82, 2197–2223.

MIAN, A., A. SUFI, AND E. VERNER (2017): "Household Debt and Business Cycles Worldwide," *The Quarterly Journal of Economics*, 132(4), 1755–1817.

PIGOU, A. (1927): *Industrial Fluctuations*, Reprints of economic classics, A. M. Kelley.