



Looking behind mortgage delinquencies

Sauro Mocetti*, Eliana Viviano¹

DG for Economics, Statistics and Research, address: Via Nazionale 91, 00184, Rome



ARTICLE INFO

Article history:

Received 14 January 2016

Accepted 2 November 2016

Available online 10 November 2016

JEL classification:

D12

E51

G01

G21

Keywords:

Mortgage delinquency

Income

Selection

Lending policies

ABSTRACT

Delinquency rates for mortgages originated before and after the financial crisis are examined using a novel and large panel obtained by merging data from tax records and credit registers. First, we estimate the selection into the mortgage market using an exogenous index of local credit supply as exclusion restriction. Second, controlling for selection we estimate the impact of income shocks on the delinquency rate. We find that since 2008 the selection process has led to the halving of the delinquency rate. Conditional on the creation of a new mortgage, job losses nearly double the delinquency risk; estimates uncorrected for selection are severely downward biased.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

As the U.S. subprime crisis has showed, even a small number of indebted households can produce a considerable turmoil if the sustainability of their debt is in question (Mayer et al., 2009). Thus, understanding and quantifying the determinants of financial difficulties is crucial not only at the microeconomic level, but also for the stability of the financial system.²

In spite of the relevance of the issue, the empirical evidence on the determinants of debt delinquencies is not as wide and it is disproportionately focused on the housing equity (i.e. the difference between the market value of the house and the outstanding

mortgage debt). The relevance of the housing equity channel, however, is lower in those countries (other than the US), where the institutional setting is less favorable to the strategic behavior of borrowers.³ This is a general feature of many European countries where debt-repayment history heavily affects access to credit in the future and the penalty for defaulting are higher. Duygan-Bump and Grant (2009) shows the effects of judicial and financial institutions on households' default behavior. Indeed, many commentators put emphasis on the deterioration of the quality of the pool of the borrowers as one of the main drivers of the increase in the delinquency rate in the 2000s. Moreover, large and widespread income fluctuations as the ones recorded after the Global Financial Crisis of 2008 are plausibly another important driver of financial difficulties of households.

In this regard we address the two following questions: how much do lending policies affect the household delinquency rate? And how much, given banks' selection, do labor shocks impact on the individual financial health? To the best of our knowledge, this is the first paper that tries to address the roles of both selection into indebtedness and income shocks in a unified framework and quantifies the impact of selection and of income shocks (corrected for selection) on the delinquency rate. Our analysis relies on a novel and large dataset obtained by merging data from

* Corresponding author.

E-mail address: sauro.mocetti@bancaditalia.it (S. Mocetti).

¹ We thank David Card, Francesco Manaresi, Paolo Sestito, seminar participants at the University of California, Berkeley and at the Bank of Italy, the participants at the Rimini Conference on Economics and Finance and the AIEL conference and two anonymous referees for very useful suggestions. Paolo Acciari and Elisabetta Manzoli provided excellent help in the construction of the dataset, making this research project possible. Sauro Mocetti is grateful to UC Berkeley's Center for Labor Economics for their generous hospitality during the research on this project. The views expressed in this paper are those of the authors alone and do not necessarily reflect those of the Bank of Italy.

² The microeconomic consequences include credit costs (since delinquent households will suffer worsened credit ratings and larger credit constraints in the future) and non-monetary costs associated with the stigma of default. From a macroeconomic point of view, troubles in the mortgage portfolio of a large bank may lead to a reduction in the domestic credit supply and propagate internationally through the funding markets (Aiyar, 2012).

³ Strategic behavior is commonly referred to the households' propensity to default on mortgages – even if they can afford to pay them – when the value of the mortgage exceeds the value of the house.

the Italian tax records (TR) with information on individual financial situation drawn from the credit register managed by the Bank of Italy (CR). The final merged dataset contains roughly 1 million individuals representing a random sample of the population born between 1950 and 1986 (around 1/30 of the Italian population in the same cohort). These individuals are followed yearly from 2005 to 2011. Thus, we are able to map out – from TR – the evolution of the individual economic conditions and to observe – from CR – those who originated a mortgage and their subsequent repayment behavior (the possible anomalies being past due, substandard loans and bad loans, which are interpretable in terms of increasing degrees of financial bad health).

From the empirical point of view we analyze, for different cohorts of mortgages, the determinants of household delinquencies after two years from the creation of the mortgage using a Heckman probit approach. This estimation strategy has two advantages. First, it allows us to examine the relationship between income changes and debt delinquencies while controlling for unobserved variables that are systematically related to the likelihood of originating a loan and to the subsequent repayment behavior. Second, the replication of the analysis for different cohorts of mortgages allows us directly assessing whether and to what extent selection matters and, more importantly, whether its role has changed across the years here considered which cover the period before and after the Global financial crisis.

To model selection we first derive a quantitative measure of the credit supply at the local level, following an approach which is in spirit very similar to the one proposed by Greenstone et al., (2015). Specifically, we estimate a bank-year fixed effect – interpreted as an indicator of the bank's lending policy in a given year – in a regression where overall household debt at the province-bank-year level is the dependent variable and province-year fixed effects are among the controls. The bank-year indicator of the credit supply is, by construction, nationwide and unrelated to local economic conditions. This indicator has been translated at the local level using the number of branches of each bank in each local credit market as weights. In the selection-corrected main equation we estimate the probability that a borrower faces a deterioration of her/his financial health as a function of the changes in labor income after the creation of the new mortgage.

We find that the probability of originating a mortgage is significantly correlated with the bank lending policies that were characterized, from 2008 onwards, by a remarkable tightening of the standards applied to the approval decision. This led to a weakening of the supply-driven effect in mortgage origination and a strengthening of the (positive) selection of borrowers, thus reducing the probability of delinquencies for more recent cohorts of mortgages. According to our estimates, because of the positive selection, the delinquency rate of the new borrowers has been roughly 50 per cent lower with respect to the rest of the population (i.e. 3.5 points lower with respect to a predicted probability slightly above 6 per cent). Before the crisis, on the contrary, the selection effect was not statistically significant from zero and negligible from an economic point of view. Conditional on selection, the exposure of individual financial health to the labor market shocks is sizeable: a 10 percent drop in earnings is associated to about 5 percent increase in the delinquency rate; in case of job loss the delinquency rate nearly doubles. The correction for sample selection leads to larger negative effects, suggesting that the selection-uncorrected estimates suffer from a severe attenuation bias (roughly one third of the true parameter).

All in all, our findings highlight the importance of a labor market perspective in examining mortgage origination and debt repayment behavior. Moreover, they provide some insights about the role of institutions and policy design. First, the selection mechanism underlying the creation of a new mortgage strongly affects

the quality of the pool of borrowers. Thus the regulatory framework may play a key role in avoiding an improper attenuation of the banks' screening policies.

Second, household financial difficulties are significantly and strongly related to adverse shocks in the labor market. On this respect, institutions – from unemployment insurance to credit market legislation – might mitigate the negative consequences of these shocks and have much wider effects (e.g. financial stability) than those traditionally thought.

Most of the existing empirical evidence – based on loans data – refers to the US mortgage market (e.g. Deng et al., 2000; Foote et al., 2008; Haughwout et al., 2008; Demyanyk and Van Hemert, 2011; Bajari et al., 2013) and focuses on the evolution of the housing equity. A general finding is that housing equity explains a large part of default behavior of households and that the sharp reversal in house price dynamics observed in the second half of the 2000s was a critical factor in the recent increase of default rates. The drawbacks of these studies are that they refer to a selected sample of the population (those who have a loan) and they have almost no information on the borrower (i.e. if any, they are collected only at the time of the creation of the new mortgage).⁴

A second group of studies – based on surveys – includes Boheim and Taylor (2000), Fay et al. (2002), Diaz-Serrano (2005), Duygan-Bump and Grant (2009), Guiso et al. (2013) and Gerardi et al. (2015). These studies exploit the availability of a richer set of information compared to loan data and (in some cases) explore also the consequences of “trigger events” inside households (such as episodes of unemployment or long-term sickness).⁵ These studies also document that proxies of employment status at the aggregate level (e.g. state or MSA) can lead to a severe attenuation bias that substantially understates the role of unemployment (Gerardi et al., 2015). However, surveys suffer for some limitations. First, the estimation of low-probability events (like household delinquency) requires sufficiently large sample that indeed are not available.⁶ Second, surveys do not collect data on repayment difficulties or mortgage arrears on a regular basis. Third, like any survey, the willingness of household to participate and/or to accurately answer to the questions may vary significantly with income and the financial situation itself, thus inducing potential severe biases in the estimates.⁷ Finally, the panel dimension of the survey is typically small, thus exacerbating some of the limitations discussed above. Beyond these drawbacks, none of the existing studies have

⁴ Some other papers address the repayment behavior for other types of loans like personal loans and credit cards (Domowitz and Sartain, 1999; Gross and Souleles, 2002; Adams et al., 2009), focusing on the role of borrowers' financial conditions, adverse selection and default costs.

⁵ Fay et al. (2002) use the Panel Study of Income Dynamics (PSID) and find evidence of the strategic behavior of the households (i.e. households are more likely to file for bankruptcy when their financial benefit is higher). Guiso et al. (2013) find that the strategic behavior is affected also by the social stigma associated with the default. Diaz-Serrano (2005), using the European Household Community Panel (ECHP), finds that income volatility is associated to a higher mortgage delinquency risk. Duygan-Bump and Grant (2009) present a descriptive analysis based again on the ECHP and find that household repayment behavior differs across European countries and that this is related to differences in institutions. Gerardi et al. (2015) use the PSID and find that individual unemployment is a strong predictor of default.

⁶ As Fay et al. (2002) and Duygan-Bump and Grant (2009) acknowledge, an important limitation of their studies is that they are based on a small number of bankruptcy filings and arrears, respectively.

⁷ One reason is that households tend to guard their financial privacy jealously. In Fay et al. (2002) the fraction of households that filed for bankruptcy in the PSID is less than half the national rate. Duygan-Bump and Grant (2009) recognize that in the ECHP arrears are self-reported and, likely, under-reported; the definition of arrears itself is vague, including a wide range of borrowers' behaviors, from bankruptcy to being only a few weeks behind on their payments. Acciari et al. (2014) find evidence of under-reporting in the delinquency rate in the Survey of Household Income and Wealth (SHIW) in Italy.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات