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Job protection and mortgage Conditions: Evidence from Italian administrative data

Protezione del lavoro e condizioni del mutuo: analisi empirica con dati amministrativi italiani*

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Job protection and mortgage conditions: Evidence from Italian administrative data

Protezione del lavoro e condizioni del mutuo: analisi empirica con dati amministrativi italiani *

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May 7, 2021

Abstract

In this paper we combine administrative data from the Italian national institute for social security and proprietary data from a major Italian commercial bank to analyse the impact of job protection legislation on mortgage conditions. Exogenous changes in the degree of job protection against individual dismissals of newly hired workers with open-ended contracts are identified by exploiting the 2015 Labor market reform, the so-called Jobs Act, which reduced employment protection of employees in large private firms. We find

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that the weaker job stability induced by the 2015 legislation change leads to a lower mortgage amount and a lower leveraging capacity, as measured by the loan-to-value ratio. Furthermore, the effect of job insecurity is mitigated by the presence of co-mortgagors while it is amplified for young and low-income households.

In questo lavoro gli autori costruiscono un nuovo dataset utilizzando dati INPS e dati proprietari di una grande banca commerciale italiana. Lo scopo è analizzare l'impatto della legislazione sulla tutela del lavoro sulle condizioni di accesso al mercato dei mutui. Una variazione esogena nel grado di tutela del lavoro è identificata analizzando la riforma del 2015, il soprannominato Jobs-Act, che ha previsto una riduzione della tutela del lavoro per i neo-assunti con contratto di lavoro a tempo indeterminato nelle imprese di grandi dimensioni. Gli autori trovano che una minore tutela del lavoro è associata a mutui di valore inferiore e da una ridotta capacità di indebitamento, misurata dal rapporto tra mutuo e valore dell'imnmobile. L'effetto di una maggiore insicurezza lavorativa è inferiore per i contratti di mutuo con più di un mutuatario, mentre è maggiore per mutuatari più giovani e con redditi più bassi.

Keywords: Employment protection law; job stability; mortgage market; administrative data; households' leverage.

Parole chiave: Legge sulla tutela del lavoro; stabilità lavorativa; mercato dei mutui; dati amministrativi; indebitamento delle famiglie.

JEL Classification Numbers: C21; G51; J41.

1 Introduction

In the last decades, the labor market of many European countries witnessed major institutional reforms. Common aspects of all labor reforms has been a transition towards greater flexibility of labor contracts and lower protection of insiders against individual dismissals, with the aim to increase the labor demand over the cycle and favor the employment of young outsiders. Italy is not an exception in this regard.[1] While the impact of labor reforms on aggregate unemployment and labor market outcomes has been extensively analyzed in the literature,[2] the possible effects of job flexibility on other aspects of workers' well-being remain relatively unexplored. However, these broader well-being effects of job insecurity taking place outside the labor market are of utmost importance to have a comprehensive assessment of labor market flexibility reforms.

In this paper, we focus on one specific effect of labor market reforms by exploring if and to what extent the degree of job protection against possible dismissals affects the conditions of access to the mortgage market for workers. Mortgages represent the most important households' liability in developed economies (Badev et al., 2014), and mortgage underwriting conditions have a strong impact on households' welfare and their consumption over the life cycle (see Browning and Crossley, 2001, for a review). In addition, housing prices and mortgage conditions are important determinants for the choice of young adults of leaving parental home and forming new households (Martínez-Granado and Ruiz-Castillo, 2002; Giannelli and Monfardini, 2003; Martins and Villanueva, 2006; Bayrakdar and Coulter, 2018).

The macroeconomic literature provides useful insights on the potential impact of labor income risk on the households' welfare through the decision to buy a house via mortgage market (Campbell and Cocco, 2003; Bajari et al., 2013). Consistently, the micro literature on homeownership indicates that employment and income insecurity decrease housing demand (De Salvo and Eeckhoudt, 1982; Robst et al., 1999; Diaz Serrano, 2005b,c) and the likelihood of holding a mortgage loan (Dotti Sani and Acciai, 2018). Likewise, there is clear evidence that credit constraints and strict mortgage requirements have a negative impact on homeownership of young adults (Bourassa, 1995; Haurin et al., 1997; Barakova et al.,

[1] See Schindler (2009) and Berton et al. (2012) for a review of labor market reforms occurred in the 1990s and early 2000s in a comparative perspective, and Pinelli et al. (2017) for a review of more recent events.

[2] See Boeri and Jimeno (2005) for a theoretical approach and a discussion on the empirical evidence in OECD economies.

2003; Chiuri and Jappelli, 2003; Quercia et al., 2003). However, to the best of our knowledge, the empirical literature has been silent on the effects of job protection on mortgage contract terms absent household-level administrative dataset with detailed information on the employment conditions of the mortgagors and initial conditions of their mortgage loans. This paper contributes to fill this gap by analyzing the relation between the degree of protection of the mortgagors' employment on the mortgage underwriting conditions in terms of loan-to-value ratio (LTV), mortgage amount and rate scheme. We build a granular dataset that combines proprietary data on mortgage loans from a major Italian commercial bank and administrative data on mortgagors' employment position from the Italian National Institute for Social Security (Istituto Nazionale di Previdenza Soziale, INPS). We take advantage of an exogenous change in employment protection legislation (EPL) for new employees in medium and large private enterprises introduced by the 2015 Jobs Act reform (law no. 183/2014).

Italy represents a very interesting case study for two main reasons. First, the Italian labour market has been historically characterised by high levels of EPL especially regarding firing restrictions (Sestito, 2002; Schivardi and Torrini, 2008). In this regard, we exploit the introduction of the Jobs Act reform aimed at reducing the level and uncertainty of firing costs for permanent employees newly hired after March 7, 2015 in firms with more than 15 employees. Second, financial inclusion by the Italian households is a highly debated topic, especially regarding the mortgage market. Chiuri and Jappelli (2003) show that Italian households become homeowners much later in life compared to other European households because they finance home-purchase by heavily relying on their own financial resources. In this regard, we analyze whether the degree of job protection enjoyed by the mortgagors affects the initial mortgage conditions.

Empirically, we use a diff-in-diff approach, comparing initial mortgage conditions for mortgagors that are newly hired workers against other mortgagors in the period before and after the 7th of March 2015 (diff-in-diff approach). Given that the Jobs Act only applies to workers employed in companies with more than 15 employees, we focus the analysis on this group of firms. Our primary and preferred estimation results refer to the restricted the sample of single person mortgages for which the mortgage conditions are not arbitrarily

matched with the employment position and other characteristics of the single mortgagor. We show that, conditioning on salary, age and other observable characteristics, initial mortgage conditions do not systematically differ between newly hired vs other mortgagors in the pre-period (before Jobs Act), while a difference arises for employees that are newly hired after the 7th of March 2015. Indeed, mortgage loans of mortgagors hired under weaker EPL display significantly lower amounts and LTV, while the interest rate regime is unaffected. When extending the sample to mortgages with more than one contractor, we show that the effect of job insecurity induced by the Jobs Act is mitigated by the presence of co-mortgagors. We interpret this as evidence of within-contract insurance among borrowers that limits the employment and income uncertainty effects related to lower job protection.

Finally, we exploit cross-sectional heterogeneity among mortgagors in our sample and find that the differences in initial mortgage conditions arising after the 7th of March 2015 are larger and more precisely estimated for younger and lower income employees. This is in line with the hypothesis that lower job protection affects strongly more financially-vulnerable mortgagors. No significant heterogeneous effects arise, instead, when exploiting the gender composition of the mortgagor(s) in the contract.

Taken together, our findings suggest that job insecurity affects the leveraging capacity of mortgagors. The reason is potentially twofold. On the one side, job insecurity impacts on loan demand because the mortgagor(s) anticipates the risk embedded in the commitment to long-term contracts with respect to future job conditions. On the other side, the empirical results are compatible with a selection process by the financial intermediary that, after the reform, favours the mortgage applications by newly hired workers that are endowed with larger downpayments. Unfortunately, given that we do not observe loan applications, we cannot provide a formal test to disentangle the loan demand vis-á-vis the selection process of the bank. However, from informal interviews with senior managers of the mortgage division of our data provider, we know that the formal underwriting process of the bank has not changed after the Jobs Act reform and that it does not incorporate information about the degree of job protection enjoyed by the mortgagors. For that reason, a most reasonable explanation is that the lower LTV and amounts of mortgages taken by mortgagors hired under the new Jobs Act regime is primarily driven by the effect of lower job protection on

mortgagors' demand.[3]

This paper contributes to the literature that identifies the impact of EPL on employees' non-labour-market outcomes such as workers' effort (Ichino and Riphahn, 2005; Acharya et al., 2014), fertility (Prifti and Vuri, 2013; De Paola et al., 2020), health (Benach et al., 2014; Minelli et al., 2014; Shahidi et al., 2016), job satisfaction, happiness and well-being (Bardasi and Francesconi, 2004; Origo and Pagani, 2009; Dräger, 2015; Ritzen, 2019). Our findings complement these studies by focusing on the impact of EPL on a different dimension of workers' well-being concerning on the initial mortgage conditions.

We also contribute to the empirical banking literature that analyzes the determinants of households' mortgage conditions; related papers have investigated the role of financial regulation (Campbell et al., 2015; Beltratti et al., 2017), market structure (Allen et al., 2014; Benetton, 2018) and economic incentives of the banks in their role of financial advisors (Foà et al., 2019; Gambacorta et al., 2019). Our focus is on the role of job protection legislation.

The remainder of the paper is organized as follows. Section 2 discusses the empirical question and how the institutional setting helps answering it. Section 3 describes the dataset and shows summary statistics. Section 4 discusses the empirical specification and contains the estimation results. Section 5 provides a discussion of the results, and Section 6 concludes.

2 Institutional setting and identification

The purpose of the empirical analysis is to study the differences in the initial terms and conditions of mortgages taken by mortgagors enjoying different degrees of job protection. In an ideal setting, the econometrician would like to estimate a regression model of the following type:

$$y_i = \beta_1 JobProtection_i + \beta_2 X_i + \varepsilon_i, \tag{1}$$

[3] A more formal confirmation of the prominence of demand-side response to the Jobs Acts comes from *ad hoc* estimations based on a large sample of mortgage applications drawn from a widely-used on-line platform, "mutui online", and analyzed in Michelangeli et al. (2020).The analysis shows that, controlling for mortgage characteristics and bank fixed effects, the probability of mortgage rejection did not significantly change between 2014 and 2016 (before and after the Jobs Act) neither for applicants with open-ended labour contracts nor for those with fixed-term labour contracts. The estimates have been kindly elaborated by Valentina Michelageli for her thoughtful discussion of our paper at the 2020 Bank of Italy research workshop. This evidence is in line with the opinion reported by the managers of our bank, that no significant shifts in the selection procedures of Italian banks occurred in the years around the Jobs Act, especially in relation to mortgagors' labour contract conditions.

where y_i measures one of the initial conditions of the mortgage i (in our case, for example, the LTV or the amount of the mortgage or the interest rate scheme). The variable $JobProtection_i$ measures the degree of job protection of the mortgagor(s) holding the mortgage i and is ideally unrelated to the error term component once conditioning on the observable characteristics (X_i) that affect initial mortgage conditions, such as the age, salary and number of co-mortgagors etc.

Unfortunately, we cannot rely on such an exogenous assignment of job protection intensity in the cross-section of Italian households. However, we construct an identification strategy that exploits the time and cross-sectional variation in job protection induced by the 2015 Italian Jobs Act reform.

One of the declared goals of the Jobs Act is to narrow the power of insiders in the Italian labor market and facilitate the permanent hiring of young workers by reducing the expected size of firing costs for the employers and the degree of uncertainty surrounding possible legal disputes with the dismissed workers. The reform applies to open-ended contracts signed after the 7th of March 2015 by firms with more than 15 employees. All other employees (those hired before the 7th of March 2015 by firms exceeding 15 employees, and all the permanent workers in firms with less than 15 employees) are covered by the previous law protection regime.

Before that date, whenever a worker was suing its employer by objecting to its decision of dismissal, the court had the option of declaring the dismissal to be unfair, and mandate a monetary penalty in addition to the worker's reinstatement in the job position he was holding. The employer could choose to either reinstating the worker or paying a severance payment (the amount was set according to the worker's seniority). However, for firms with more than 15 employees the reinstatement was usually mandated.

The 2015 reform has essentially reduced the degree of job protection by limiting the possibility of reinstatement to few specific cases related to discriminatory dismissals and non-existing breach of conduct, and stating unfair dismissals to be compensated by a monetary penalty which is set proportionally to the worker's tenure: 2-months' pay for every year of seniority, from a minimum of 4 to a maximum of 24 months.[4]

[4]This new job legislation has been described in details and analyzed by Sestito and Viviano (2018) and Boeri and Garibaldi (2019) to evaluate the impact of the reform on firms' hiring strategy and job mobility. The sentence of the Constitutional Court of September 25th, 2018, has increased the monetary penalty for unfair

Our empirical strategy to test the relation between job protection and mortgage conditions is to exploit variation in EPL due to the Jobs Act and compare the initial mortgage conditions of newly hired mortgagors with respect to the others. Given that differences in initial mortgage conditions between these two groups of mortgagor(s) may preexist the 2015 reform, we ultimately combine this cross-sectional difference (newly-hired vs others) with the time variation induced by the initial date of the labour contract established by The Jobs Act (i.e. if the employee has been hired before or after the 7th of March 2015).

More formally, the empirical strategy is represented by the following diff-in-diff specification:

$$y_{it} = \beta_0 + \beta_1 NewlyHired_i + \beta_2 NewlyHired_i \times JobsAct_t + \beta_3 X_i + \phi_j + \tau_t + \varepsilon_{it}, \qquad (2)$$

where the variable $NewlyHired_i$ identifies if the mortgagor is hired in the same year the mortgage contract is signed, while $JobsAct_t$ identifies whether the date of the hiring is after the 7th of March 2015. The equation (2) includes a set of X_i regressors, province fixed effects ϕ_j and year fixed effects τ_t in order to account for observable characteristics, geographical and time variation that may affect initial mortgage conditions. Note that, given the repeated cross-section structure of our sample, we cannot include individual fixed effects in the specification.We finally include sector fixed effects, defined at the 2-digit level (Ateco 2007), in all specifications.[5] The β_2 coefficient is interpreted as a diff-in-diff estimate: it indicates whether there is a significant change in the differences in initial mortgage conditions between newly hired worker(s) against the other(s), depending on if the worker(s) has been hired under the Jobs Act regime or not.

Summing up, our identification strategy focuses only on the sub-sample of mortgages where mortgagors are employed in companies above the threshold of 15 employees for which the Jobs Act applies, by comparing the before-after-Job-Acts difference in difference between the initial conditions of mortgages underwritten by newly and non-newly hired employees. Therefore, our identification strategy does not rely on the time difference be-

dismissal from a minimum of 6-months' pay to a maximum of 36-months' pay.

[5]Our baseline results are also robust to the inclusion of province-per-year fixed effects, to the inclusion of companies' total employees as additional regressor or to the inclusion of firm-size dummies defined using the quintiles of the distribution. Results, not shown for brevity, are available upon request.

tween newly-hired employees in companies above and below the 15 employees threshold, which has been typically used in the studies assessing the labour market effects of the Jobs Act (Sestito and Viviano, 2018; Boeri and Garibaldi, 2019). This is for two reasons. First, for legal reasons, the 15 employee threshold is measured with noise and can be marginally manipulated by the employers (Sestito and Viviano, 2018); hence, a regression discontinuity design is hardly implementable in this context.[6] However, moving away from the 15 threshold and analyze employees in very small firms may entail confounding factors, especially regarding the initial mortgage conditions. Indeed, employees in micro and very small enterprises are often linked directly or indirectly via family ties to the employer, and this may have effects on job stability, access to credit, house demand and mortgage conditions. As ownership and survival of micro enterprises change rapidly over time and are highly uncertain, these effects are time-varying and hard to be controlled for.

A second reason to focus on mortgages underwritten by mortgagors hired in firms above 15 employees is that starting from January 2015 the Italian government introduced a sizeable hiring subsidy for any new job opened on a permanent basis.[7] The hiring subsidy applied to all firms, irrespective of their size, and as documented by Boeri and Garibaldi (2019), smaller firms reacted more intensively by creating more new open-ended contracts. As a consequence, using newly-hired employees in companies below 15 as a control group in our diff-in-diff setting may be unwarranted, as their composition may have changed significantly in the years around 2015. By contrast, Boeri and Garibaldi (2019) show that the effects of the Jobs Act on firings costs (and, hence, on job protection, the focus of our paper) are concentrated on larger firms.

Therefore, we exclude mortgages underwritten by employees in smaller firms from our empirical strategy. However, as additional robustness test, we replicate baseline results in a sample that include mortgages where at least one co-mortgagor is employed in a company above 15 employees, while the others are possibly employed in small firms below 15 em-

[6] Indeed, related papers that study the impact of the Jobs Act typically rely on diff-in-diff strategy.

[7] It is important to note that in principle the introduction of a hiring subsidy program has major effects on the firm employment decisions. Not surprisingly, the key issue addressed by Sestito and Viviano (2018) and Boeri and Garibaldi (2019) is precisely whether and to what extent the effects on firm hiring in open-ended contracts after the Jobs Act can be ascribed to the new employment protection regime or to the concurrent policy of subsidies to hiring. In our context, the latter dimension of the policy can reasonably be expected to have second order effects on the bank and mortgagor decisions on mortgage conditions and the value of the house to buy, basically due to possible selection effects on the newly hired (for example, the subsidy might induce firms to spend less resources on the hiring process, selecting less valuable, and creditworthy, workers).

ployees. Moreover, as a placebo robustness check, we show the results for the sample where all mortgagors are employed in a company below 15 employees.

3 Data and summary statistics

Our initial database comprises 84,951 mortgages to buy or renovate a primary or secondary house supplied by a large Italian commercial bank in the period 2013-2017. For each mortgage we observe the following initial mortgage contract conditions: the amount of the loan, the amount of the mortgage loan over the value of the house (LTV) and an indicator for the fixed or variable interest rate regime initially adopted.[8] In addition, we observe the number of co-mortgagors holding the mortgage and a unique identification code of each mortgagor.[9] This sample of mortgagors is matched with the INPS archive. This archive provides information on the job conditions of the universe of Italian workers employed in private firms, and retired workers. We keep only mortgage contracts for which we obtain a match with all the co-mortgagors. This reduces the sample of mortgages to 56,694.[10]

Table 1 provides summary statistics of the variables that are used in the empirical analysis. The average amount of mortgages in our sample is 98,850 euro and about half of the mortgages have fixed interest rate. The average LTV in our sample is 68.5%. Each mortgage has, on average, 1.35 holders. The share of mortgages with a single mortgagor is 65%, while 34% of mortgages in our sample has two co-mortgagors.[11] In about 59% of mortgages in the sample there is a female single mortgagor or at least one female co-mortgagor in multiple mortgages.

Insert Table 1 here

[8] Unfortunately, mortgage interest rates and mortgage duration are not available for our sample.

[9] To guarantee the anonymity of the mortgagors, the unique identification codes have been transformed at the source by an algorithm unknown to the authors. The matching has been then performed by the INPS using the transformed identifiers. Furthermore, the numerical values of mortgage amounts and LTV have been preliminary rounded to zero decimal (the nearest integer).

[10] After merging we also drop mortgages whose holders have extreme values of the salary: top and bottom 1% of the salary distribution.

[11] In the initial sample of mortgages, before the merge with the INPS archive, the share of mortgages with a single mortgagor is 51%, while 45% of mortgages has two co-mortgagors; the rest have three or four co-mortgagors. The over-representation of mortgages with a single mortgagor in the matched sample is due to the matching strategy described above and by the limit of the INPS archive which does not contain information for public employees. As a result, some mortgagors with more than one accountholder are not matched with the INPS archive.

Turning to job-level information, the average salary per day of the mortgagors is 94 euro. In 93% of mortgages, all co-mortgagors have open-ended contract and this share rises to 98% if we consider at least one mortgagor with an open-ended job contract. In 6% of mortgages, one of the co-mortgagor has a fixed-term labour contract, and this share drops to zero when we consider single person mortgages. This evidence is consistent with the hypothesis that job security is an important determinant for the opening of a mortgage contract. On the supply side, the presence of a mortgagor with an open-ended labor contract is, *ceteris paribus*, positively evaluated by the banks because of the implied wage stability and the consequent lower delinquency probability (Diaz Serrano, 2005a). On the demand side, job security has a significant impact on the perspective of the households in making long-term investment and durable consumption choices, such as home-buying.

On average, the age of mortgagors is 38 years. Only in 1% of mortgages, one of the mortgagor is retired, receiving a pension by the INPS, and these mortgages are excluded from the empirical analysis. In 75% (61%) of mortgages, at least one mortgagor (all mortgagors) is employed in a firm with more than 15 employees. The average number of employees in firms where mortgagors work is about 2,700 with a sizeable standard deviation (about 13,000).[12]

In 13% of mortgages, at least one of the mortgagors is newly hired, that is she/he have been hired in the same year when the mortgage contract is opened. In 9% of mortgages at least one mortgagor is hired after the 7th of March 2015, and out of these, 6% refer to mortgagors that work in a company above the 15-employees threshold and are subject to the new job protection regime established in the Jobs Act.[13]

Summary statistics from our sample are in line with the results by recent contributions in the literature that analyze the Italian mortgage market by using the representative sample of Italian households (SHIW) provided by the Bank of Italy (e.g., Jappelli and Scognamiglio (2018)). Furthermore, we retrieve from the 2012-2016 waves of SHIW data regarding the initial mortgage conditions of Italian households and compare these summary statistics with our sample; to ensure comparability between the two samples, we consider households

[12]The number of employees of each Italian firm is recorded by INPS at monthly frequency. The variable "firm labor force" is a full time equivalent measure that we average at yearly level. The median number of employees in firms where mortgagors work is 278 (unreported in Table 1)

[13]The share of newly hired mortgagors is increasing in the period 2013-2017. This evidence is in line with the Italian macroeconomic trend in recruitment rates after 2015.

whose head is employed in the private sector and we select mortgages either for primary or other residences to buy or renovate a house. The selected sample from SHIW is represented by 1,115 households; for households that report more than a mortgage (about 3% in the sample), we average the variables across the various mortgages. Summary statistics in Table 2 show that the average initial mortgage amount is about 103,000 euro, the initial LTV is 70.4% and the share of mortgages with fixed rate is about 47%. The average net labour income per day of the head of the household is about 90 euros, the age of the head of the household when the mortgage begins is 38.3 and the share of mortgages where at least one family member has an open-ended contract is 95%.[14] These figures are very close to the summary statistics reported in Table 1 and reassure us about the representativeness of our sample and the external validity of our case study.

Insert Table 2 here

4 Econometric results

In this section we provide estimates of equation (2) using the sample of mortgages described above in which mortgagors are employed in firms above 15 employees. In section 4.1, we report our preferred results concerning single person mortgage contract. In section 4.2, we extend the analysis to two-person mortgages covering 99% of mortgages in our sample. In section 4.3, we consider year-by-year regressions to a check of the parallel trend assumption and the dynamic effect of the Jobs Act. Finally, in section 4.4 we test for possible differentiated effects of job protection on mortgage conditions according to mortgagors' level of salary when entering the mortgage contract, age, and gender.

4.1 Single person mortgages

Our main analysis focuses on the sample of mortgages with a single mortgagor. The reason is twofold: a) for this sample of mortgages we do not have to distinguish between different hiring dates for the co-mortgagors and, hence, the assignment of the mortgages to the Jobs Act regime is unambiguous; b) given that there is one worker per mortgage, and the unit of

[14] Unfortunately SHIW does not provide information about the number and the identity of co-mortgagors.

observation in the analysis is the mortgage contract, we do not need to average the labour contract conditions (e.g. salary) and the demographic characteristics of the mortgagors (e.g. age).

The summary statistics reported in Table 3 show that, in the period 2013-2017, mortgage-level variables are broadly similar between the group of newly hired and not newly hired mortgagors, although some differences emerge: on average, the mortgagors who are newly hired workers display lower salaries per day and are younger. The two groups are instead well balanced in terms of share of female mortgagors and the companies' size as measured by total number of employees. As mentioned in the previous section, in our sample there is no single person mortgage whose mortgagor has a fixed-term labour contract. Finally, in the group of newly hired mortgagors, 70% of them are hired after 7th March 2015, under the Jobs Act regime.

Insert Table 3 here

The purpose of the regression analysis is to investigate the differences in initial mortgage conditions between the two groups of mortgages taken by newly hired and not newly hired employees, before and after the Jobs Act. Results from estimates of equation (2) are reported in Table 4. We find that, conditioning on salary, age, gender and sector, province and time fixed effects, mortgages taken by newly hired employees do not display significant differences with respect to the others before the Jobs Act. By contrast, a significant difference emerges for mortgages taken by newly hired employees under the Jobs Act regime. Specifically, they feature significantly lower loan amount and LTV, while they do not display significant differences in the interest rate regime (fixed vs variable). In terms of magnitude, newly hired employees under the Jobs Act regime open mortgages that are, on average, about 5,000 euros lower than others, that is about 5% of average mortgage amount, and display a lower LTV by about 2.3 percentage points. These findings are consistent with the hypothesis that lower job protection is passed-through the initial mortgage conditions, which require smaller monthly payments and/or larger mortgage down-payments.

Insert Table 4 here

The coefficients attached to the job-level regressors have the expected signs. Larger labour income is significantly associated to lower LTV and larger mortgage amount. Age

is negatively associated to mortgage amount and LTV and are positively associated with the probability of fixed interest rate. This is in line with the hypothesis that younger mortgagors that possibly have more uncertain income prospects are more risk averse and display larger down-payments and opt for fixed rate mortgages. Finally, female mortgagors display significantly larger mortgage amount while we are not able to detect a statistical significant difference in terms of the LTV.

4.2 Single and multiple person mortgages

In this section, we extend the analysis by including mortgages with two co-mortgagors. The purpose is to test whether being hired under the Jobs Act regime has a differential impact on initial mortgage conditions depending on the employment condition and the EPL regime of the co-mortgagor. To this end, we distinguish three groups of mortgages: a) mortgages where a single mortgagor or both co-mortgagors are newly hired (*all newly hired*); b) mortgages where one of the co-mortgagors is newly hired and the other is not (*one newly hired*); c) mortgages where the single mortgagor or both co-mortgagors are not newly hired (*all not newly hired*). Summary statistics for the three groups are reported in Table 5. It is interesting to note that the group of mortgages with only one newly hired mortgagors display, on average, larger amounts and lower down-payments; this is consistent with the hypothesis that the presence of a co-mortgagor acts as a guarantor for the bank and allows the mortgagors to leverage more on their loans.

Insert Table 5 here

In the empirical execution, first, we compare initial conditions of *all newly hired* mortgages with respect to those of the other two groups. Results in Table 6 are in line with the findings in section 4.1: the LTV and mortgage amount are significantly lower when all co-mortgagors are newly hired under the Jobs Act regime. Notice that, in this extended analysis, we include, as additional regressors, the number of mortgagors and an indicator variable that accounts for the presence of a co-mortgagor with an open-ended contract. Having an additional mortgagor is associated with significantly larger LTV and mortgage amount and lower probability of fixed interest rate; furthermore, the presence of a co-mortgagor

with open-ended contract is associated with a significantly lower mortgage amount (about 14,000 euros smaller, on average) and a larger LTV.

Insert Table 6 here

As a second empirical exercise, we separately identify the impact of the Jobs Act on *all newly hired* and *one newly hired* mortgages. In this specification: i) the coefficient attached to the variable *At least one newly hired after March 7th 2015* indicates the difference in initial mortgage conditions between *one newly hired* and *all not newly hired* mortgages after the Jobs Act; ii) the coefficient on *All newly hired after March 7th 2015* indicates the difference between *all newly hired* and *one newly hired* mortgages; iii) the sum of the two coefficients attached to the variables *At least one newly hired after March 7th 2015* and *All newly hired after March 7th 2015* indicates the difference between *all newly hired* and *all not newly hired* mortgages. Results in Table 7, show that the initial conditions of *one newly hired* mortgages are not statistically different from those of *all not newly hired* ones. This result suggests that the presence of one co-mortgagor hired under stronger job protection law abates the negative effect of the Jobs Act on LTV and mortgage amounts. Mortgages where both mortgagors are newly hired under the Jobs Act display significantly lower LTVs compared with both *one newly hired* and *all not newly hired* mortgages. In terms of mortgage amount, the difference between *all newly hired* and *one newly hired* is negative and close to 3,500 (eur) although noisily estimated.[15]

Insert Table 7 here

Finally, as a placebo test for the identification of the impact of the Jobs Act on initial mortgage conditions, we replicate the analysis in Table 7 for the subsample of mortgages where all mortgagors are employed in a company below the 15 threshold and hence do not experience any change in job protection in 2015. Results in Table 8 show that initial mortgage conditions of newly hired employees after March 7th 2015 are not statistically different with respect to those of newly hired employees before the Jobs Act. This evidence reassures that our results are driven by the application of the new EPL regime (Jobs Act) on mortgagors that are employed in companies above the threshold of 15 employees.

[15] As third strategy, we enlarge the sample and include mortgages where one of the co-mortgagor is employed in a company below the 15 employees threshold. After this inclusion, the total number of mortgages increase by about 7,000 observations. We replicate the analysis in Table 7 using this enlarged sample and the empirical results, available upon request, are confirmed.

Insert Table 8 here

4.3 Dynamic effect of the Jobs Act

In this section, we perform year-by-year regression analysis that shows the differences in initial contractual conditions between mortgages taken by mortgagors that are newly hired versus the others. The scope of this analysis is, first, to confirm the reliability of our diff-in-diff estimates by showing that differences in initial mortgage conditions between newly and not-newly hired arise after 2015, while no differences emerge in 2013 and 2014. Second, we explore whether the differences that arise on average after 2015 are stable in each of the years covered by our sample (up to 2017).

Results are displayed graphically in Figures 1 and 2 for, respectively, the sample of single person mortgages and the extended sample including two-person mortgages. Notice that, as for Figure 2 we report coefficient estimates relative to a specification where we test for the difference between *all newly hired* vs other mortgagors. Each plot in the figures refers to the three outcome variables, LTV, Mortgage amount and Fixed rate. The bullets in each plot are the estimated coefficients of the year-by-year regressions, while red lines display the upper and lower bounds of confidence intervals at 10% level. Notice all regressions include the full set of regressors used in the baseline analysis as well as sector and province fixed effects. Both figures confirm the absence of pre-2015 differences in initial mortgage conditions between newly and not-newly hired; in details, the estimates are close-to-zero both in 2013 and 2014, and the confidence intervals of the estimates in these two years practically overlaps, confirming the absence of a pre-reform trend in the outcome variables. When analyzing the estimates using the group of newly-hired employees after 2015, which includes those hired after March 7th 2015, a significant difference in initial mortgage conditions emerges, especially regarding LTV and mortgage amount. We also observe a positive jump in the difference of the fraction of mortgages with fixed rate in 2015 and 2016, but this difference reverts in 2017, making the average estimates in the above baseline regression analyses not statistically different from zero. In line with the baseline analysis, the impact is more precisely estimated for the sub-group of single person mortgages (Figure 1)

Insert Figures 1 and 2 here

4.4 Heterogeneity analysis

So far, we have shown that the loosening of the job protection conditions caused by the Jobs Act have a significant impact on the initial conditions of mortgages taken by newly hired employees, which are on average of lower amounts and provide for larger down-payments (i.e, smaller LTV). To the extent that the economic mechanism behind these findings is linked to the transfer of risk from a lower employment protection to a lower ability of regular repayment mortgage installments, we should expect our results to be mostly driven by the subgroup of mortgagors that are more vulnerable in financial terms and more risk averse. We exploit two potential dimensions of individual financial fragility as measured by the wage income and age. Indeed, low-income and young households are expected to have a lower stock of liquid savings and are relatively more exposed to default risk when their employment is less protected by the legislation. In addition, we verify if the baseline effect of job protection is stronger for female mortgagor(s), given that the literature acknowledges that females tend to display larger risk aversion than males in financial decisions (Sunden and Surette, 1998; Croson and Gneezy, 2009).

We re-estimate specifications in Table 4, for single person mortgages, and Table 7), for the extended sample with two-person mortgages, by distinguishing the subgroups of mortgagors that have a (average) salary per day and an (average) age below their sample median values, and for (at least one) female (co-)mortgagors. Results are presented in Panels A, B and C of Tables 9 and 10. As expected, we find larger and more precisely estimated impacts on LTV and mortgage amounts for mortgagors who are newly hired under the Jobs Act and display salary per day below the median value (which is about 82.3 euros) and an age below the sample median value (which is 37). By contrast, we find mixed evidence for a differential impact of job protection on initial mortgage conditions of female (co-)mortgagors. Indeed, we find that female single mortgagors under Jobs Act regime display significantly lower mortgage amount, although no significant impact is detected on LTV (Table 9, Panel C). When extending the sample to multiple person mortgages with at least one female co-mortgagor, we find that the coefficients of interest are of lower magnitude than the baseline estimates and are also more noisily estimated (Table 10, Panel C).

Insert Tables 9 and 10 here

5 Did the Jobs Act affect the extensive margin?

As stated above, one of the objectives of the Jobs Act is to reduce the expected firing costs of permanent workers incurred by the firms. This, while increasing job insecurity, also potentially increased the use of permanent open-ended labour contracts by hiring firms. To the extent that having a permanent job position is almost a "conditio sine qua non" for taking out a mortgage, the Jobs Act may have entailed the access to the mortgage market for a larger share of private employees. Unfortunately, as previously argued, we cannot rely on a dataset that covers the universe of mortgages together with detailed information on mortgagors' labour conditions.[16] Therefore, we are not able to provide a definitive assessment of the effects that the employment stabilization, induced by the Jobs Act, has had on mortgage allocations at the aggregate level.

However we can still provide an insightful analysis of the effects of Jobs Act effect on the extensive margin, by using information on the universe of mortgages, the age of the mortgagors and their region of residence. This data is drawn from the Central Credit Register managed by the Bank of Italy.

In what follows, we reasonably assume that the cohorts of younger workers are the most affected by the job stabilization effects induced by the Jobs Act, and that these groups of workers are looking for their first mortgage. Thus, in Figure 3 we report the series of total first mortgages allocated in Italy by the universe of banks in the period 2013-2017. The upper panel displays the series of total mortgages by splitting the mortgagors according to their age-group. The graphical analysis shows that there is a significant growing trend in the number of mortgages granted in Italy in the period under scrutiny. However, no significant break occurs from 2015 across age-cohorts.[17]

The bottom-panel of Figure 3 displays the series of total first mortgages by splitting Italian regions into two groups: *High growing regions* are the ten regions with the highest growth rate of newly-hired workers with open-ended contracts between 2014 and 2015; *Low growing*

[16] To the best of our knowledge, such a dataset has never been collected in Italy, nor it is available for other countries, and actually this is the first study matching mortgage-level data with administrative data on mortgagors, even if for mortgages from a single bank.

[17] This non-significance result is confirmed by a more rigorous difference-in-differences regression analysis that formally evaluate the hypothesis of a statistical break in the series of mortgages for different cohorts. Precisely, the difference before and after 2015 in the difference between first mortgages taken out by the mortgagors aged up to 35 (the treated group) and mortgagors aged more than 36 (the control group) does not result statistically significant at any standard confidence level. The results of these tests are available upon request.

regions are the ten regions with the lowest growth rate of newly-hired workers with open-ended contracts between 2014 and 2015. This split provides a test of the effectiveness of the employment stabilization induced by the Jobs Act by exploiting geographical variation, rather than cohort-level variation. Also in this case, we do not detect significant breaks after 2014.

Finally, in upper and bottom panels of Figure 4, we reproduce the series of total first mortgages by mortgagors' age-group in the two sets of regions (*High growing regions* and *Low growing regions*). The graphical inspection reveals no evidence of a differential trend in total first mortgages between the younger vs older cohorts of employees.[18]

Summing up, this preliminary evidence based on aggregate figures suggests that the employment stabilization effect induced by the Jobs Act had no significant effect on the aggregate mortgage market. Importantly for our identification strategy, this provided evidence is in line with the hypothesis that the composition of the pool of mortgagors, and possibly of applicants to the mortgage market, did not change from 2015 in terms of both age and geographical distribution.

Insert Figures 3 and 4 here

6 Conclusions

In this paper, we built a novel dataset that combines Italian administrative sources and proprietary loan-level information, and showed that the employment insecurity associated with the degree of EPL has a significant impact on initial mortgage conditions. We exploited the variation induced by the 2015 Italian labour market reform (Jobs Act) and showed that newly hired employees under the new weaker job protection regime display significantly lower levels of LTV and mortgage amounts relative to similar newly hired employees under the previous job protection regime. We also showed that the impact of job protection is lower for multiple mortgages, stronger for low-income and younger mortgagors. A limit of our analysis is that we cannot identify whether the effect is driven by more conservative demand of mortgages by borrowers or by a restriction in mortgage supply conditions. This

[18] Also in this case, difference-in-differences estimations confirm the non-significance result.

issue, which cannot be addressed with the our dataset, given the unavailability of mortgage application data, is left to future research.

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A Tables

Table 1: Summary statistics (2013-2017)

	Mean	Standard Deviation	Max	Min
Mortgage-level data				
Mortgage amount (eur thousands)	98.85	44.00	400.00	5.00
Mortgage LTV	68.51	23.67	100.00	9.00
Fixed interest rate	0.48	0.50	1.00	0.00
N. Accountholders	1.35	0.49	4.00	1.00
Single mortgagor	0.65	0.48	1.00	0.00
Female co-mortgagor	0.59	0.49	1.00	0.00
Job-level data				
Average salary per day (eur)	94.08	45.91	335.31	20.11
All mortgagors with open-ended contract	0.93	0.25	1.00	0.00
At least one mortgagor with open-ended contract	0.98	0.15	1.00	0.00
At least one mortgagor with fixed-term contract	0.06	0.21	1.00	0.00
At least one mortgagor retired	0.01	0.09	1.00	0.00
Average age of co-mortgagors	38.19	8.44	70.50	18.00
Min age of co-mortgagors	37.40	8.63	69.00	18.00
Max age of co-mortgagors	38.99	8.73	75.00	18.00
Average N. employees in co-mortgagors' firm	2676.61	12914.72	139175.33	0.00
All mortgagors work in a company above 15 employees	0.61	0.49	1.00	0.00
At least one mortgagor work in a company above 15 employees	0.75	0.44	1.00	0.00
All mortgagors employed in the year of the mortgage (newly hired)	0.06	0.24	1.00	0.00
At least one mortgagor employed in the year of the mortgage (newly hired)	0.13	0.33	1.00	0.00
All mortgagors newly hired after March 7th 2015	0.04	0.20	1.00	0.00
At least one mortgagor newly hired after March 7th 2015	0.09	0.29	1.00	0.00
All mortgagors newly hired after March 7th 2015 in a company above 15	0.02	0.15	1.00	0.00
At least one newly hired after March 7th 2015 in a company above 15	0.06	0.23	1.00	0.00

Table 2: Summary statistics - SHIW (2012-2016)

	Mean	Standard Deviation	Max	Min
Initial mortgage amount (eur thousands)	103.67	57.54	550.00	3.00
Initial mortgage LTV	70.37	25.61	100.00	4.00
Fixed interest rate	0.47	0.50	1.00	0.00
Average net labor income per day (head of household - eur)	90.82	51.61	833.33	12.50
Age (head of household) when mortgage contract starts	38.30	8.20	61.00	18.00
At least one family member with open-ended contract	0.95	0.22	1.00	0.00

Average net labor income is calculated as the net annual labor income divided first divided by the months of activity (as reported in SHIW) and then divided by 20 (approximate average number of working days per month). LTV is available for only about 50% of the households in SHIW.

Table 3: Summary statistics (2013-2017) - Single person mortgages

	Newly hired		Not newly hired	
	Mean	Standard Deviation	Mean	Standard Deviation
Mortgage-level data				
Mortgage amount (eur thousands)	88.25	43.12	91.02	40.93
Mortgage LTV	66.30	23.11	65.24	23.97
Fixed interest rate	0.52	0.50	0.50	0.50
Female mortgagor	0.37	0.48	0.36	0.48
Job-level data				
Salary per day (eur)	99.60	53.89	110.03	52.65
Age	36.39	8.83	39.33	8.40
N. employees in mortgagors' firm	3424.05	9269.75	4021.92	17247.70
Mortgagor with fixed-term contract	0	(.)	0	(.)
Newly hired after March 7th 2015	0.70	0.46	0.00	0.00

Table 4: Jobs Act and initial mortgage conditions: Single person mortgages

	(1)	(2)	(3)
	LTV	Mortgage amount	Fixed rate
Newly hired after March 7 2015	-2.258**	-4.982**	-0.008
	(1.125)	(2.124)	(0.021)
Newly hired	0.072	2.766	0.026
	(0.909)	(1.787)	(0.016)
Log(Salary per day)	-8.005***	25.475***	0.005
	(0.394)	(0.794)	(0.007)
Age	-0.441***	-0.650***	0.002***
	(0.017)	(0.029)	(0.000)
Female co-mortgagor	-0.410	5.365***	-0.006
	(0.322)	(0.564)	(0.006)
Observations	24739	25509	25509
Adjusted R^2	0.177	0.120	0.305

All specifications include sector, province and year fixed effects.
Standard errors, clustered at mortgage level, are displayed in parenthesis.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Summary statistics (2013-2017) - Single and multiple person mortgages

	All newly hired		One newly hired		All not newly hired	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Mortgage-level data						
Mortgage amount (eur thousands)	89.64	43.56	109.28	44.74	98.15	44.38
Mortgage LTV	67.10	23.17	75.36	23.36	66.79	24.02
Fixed interest rate	0.52	0.50	0.48	0.50	0.50	0.50
N. Accountholders	1.07	0.25	2	(.)	1.23	0.42
Single mortgagor	0.93	0.25	0	(.)	0.77	0.42
Female co-mortgagor	0.41	0.49	0.95	0.25	0.51	0.50
Job-level data						
Average salary per day (eur)	98.29	52.97	82.94	45.21	105.93	49.76
Average age of co-mortgagors	36.35	8.76	36.49	8.14	39.12	8.19
Min age of co-mortgagors	36.19	8.78	34.41	8.26	38.64	8.30
Max age of co-mortgagors	36.50	8.83	38.61	8.62	39.61	8.33
Average N. employees in mortgagors' firm	3508.99	9265.40	3954.41	9067.60	4016.05	16576.06
At least one mortgagor with open-ended contract	0.78	0.42	0.97	0.33	0.99	0.10
At least one mortgagor with fixed-term contract	0.02	0.14	0.41	0.41	0.01	0.12
At least one newly hired after March 7th 2015	0.70	0.46	0.76	0.45	0.00	0.00

Table 6: Jobs Act and initial mortgage conditions: Single and multiple person mortgages

	(1)	(2)	(3)
	LTV	Mortgage amount	Fixed rate
All newly hired after March 7 2015	-1.947*	-4.721**	-0.004
	(1.072)	(2.051)	(0.020)
All newly hired	-0.349	1.662	0.024
	(0.867)	(1.719)	(0.016)
Log(Average salary per day)	-8.725***	25.383***	0.015**
	(0.347)	(0.719)	(0.006)
Average age of co-mortgagors	-0.507***	-0.779***	0.002***
	(0.015)	(0.026)	(0.000)
N. Accountholders	3.991***	33.024***	-0.034***
	(0.285)	(0.580)	(0.006)
At least one mortgagor with fixed-term contract	1.586***	-13.223***	-0.009
	(0.614)	(1.223)	(0.014)
Female co-mortgagor	-0.541**	3.492***	-0.000
	(0.265)	(0.493)	(0.005)
Observations	33594	34496	34496
Adjusted R^2	0.204	0.189	0.296

All regressions include sector, province and year fixed effects.
Standard errors, clustered at mortgage level, are displayed in parenthesis.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Jobs Act and initial mortgage conditions II: Single and multiple person mortgages

	(1) LTV	(2) Mortgage amount	(3) Fixed rate
All newly hired after March 7 2015	-2.969**	-3.440	0.001
	(1.454)	(3.063)	(0.028)
At least one newly hired after March 7 2015	1.080	-1.367	-0.006
	(1.050)	(2.377)	(0.021)
All newly hired	0.020	3.764	0.012
	(1.230)	(2.717)	(0.023)
At least one newly hired	-0.403	-2.131	0.012
	(0.928)	(2.187)	(0.018)
Log(Average salary per day)	-8.721***	25.345***	0.015**
	(0.347)	(0.719)	(0.006)
Average age of co-mortgagors	-0.507***	-0.781***	0.002***
	(0.015)	(0.026)	(0.000)
N. Accountholders	3.947***	33.368***	-0.035***
	(0.293)	(0.599)	(0.006)
At least one mortgagor with fixed-term contract	1.385**	-11.756***	-0.012
	(0.684)	(1.356)	(0.015)
Female co-mortgagor	-0.539**	3.477***	-0.000
	(0.265)	(0.493)	(0.005)
Observations	33594	34496	34496
Adjusted R^2	0.204	0.189	0.296

All specifications include sector, province and year fixed effects.
Standard errors, clustered at mortgage level, are displayed in parenthesis.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Jobs Act and initial mortgage conditions: Single and multiple person mortgages (in companies below 15 employees)

	(1) LTV	(2) Mortgage amount	(3) Fixed rate
All newly hired after March 7 2015	-2.548	3.088	-0.059
	(2.038)	(4.174)	(0.041)
At least one newly hired after March 7 2015	-0.995	-1.280	0.012
	(1.639)	(3.505)	(0.033)
All newly hired	1.230	5.875	0.046
	(1.718)	(3.686)	(0.032)
At least one newly hired	0.452	-4.612	-0.015
	(1.402)	(3.153)	(0.027)
Log(Average salary per day)	-1.862***	20.448***	-0.002
	(0.537)	(1.073)	(0.010)
Average age of co-mortgagors	-0.567***	-0.479***	0.003***
	(0.022)	(0.040)	(0.000)
N. Accountholders	6.408***	29.393***	-0.049***
	(0.466)	(0.932)	(0.010)
At least one mortgagor with fixed-term contract	1.377	-10.692***	0.023
	(1.287)	(2.295)	(0.028)
Female co-mortgagor	-0.135	4.479***	-0.012
	(0.413)	(0.764)	(0.008)
Observations	13573	14222	14222
Adjusted R^2	0.187	0.158	0.284

All specifications include sector, province and year fixed effects.
Standard errors, clustered at mortgage level, are displayed in parenthesis.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Jobs Act and initial mortgage conditions: Single person mortgages - Heterogeneity analysis

	(1) LTV	(2) Mortgage amount	(3) Fixed rate
	Panel A: below median salary		
Newly hired after March 7 2015	-3.432***	-6.627***	0.011
	(1.307)	(2.337)	(0.026)
Newly hired	-0.216	3.316	0.024
	(1.064)	(2.018)	(0.020)
Observations	15361	15833	15833
Adjusted R^2	0.135	0.074	0.294
Other control variables	Y	Y	Y
	Panel B: below median age		
Newly hired after March 7 2015	-2.542**	-8.137***	0.004
	(1.254)	(2.405)	(0.024)
Newly hired	-0.103	4.978**	0.027
	(1.002)	(2.051)	(0.019)
Observations	17189	17770	17770
Adjusted R^2	0.163	0.119	0.303
Other control variables	Y	Y	Y
	Panel C: Female mortgagors		
Newly hired after March 7 2015	-1.078	-6.663*	0.042
	(1.840)	(3.778)	(0.035)
Newly hired	-2.480*	2.552	0.024
	(1.488)	(3.296)	(0.028)
Observations	8892	9173	9173
Adjusted R^2	0.169	0.124	0.317
Other control variables	Y	Y	Y

All specifications include sector, province and year fixed effects.
Standard errors, clustered at mortgage level, are displayed in parenthesis.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

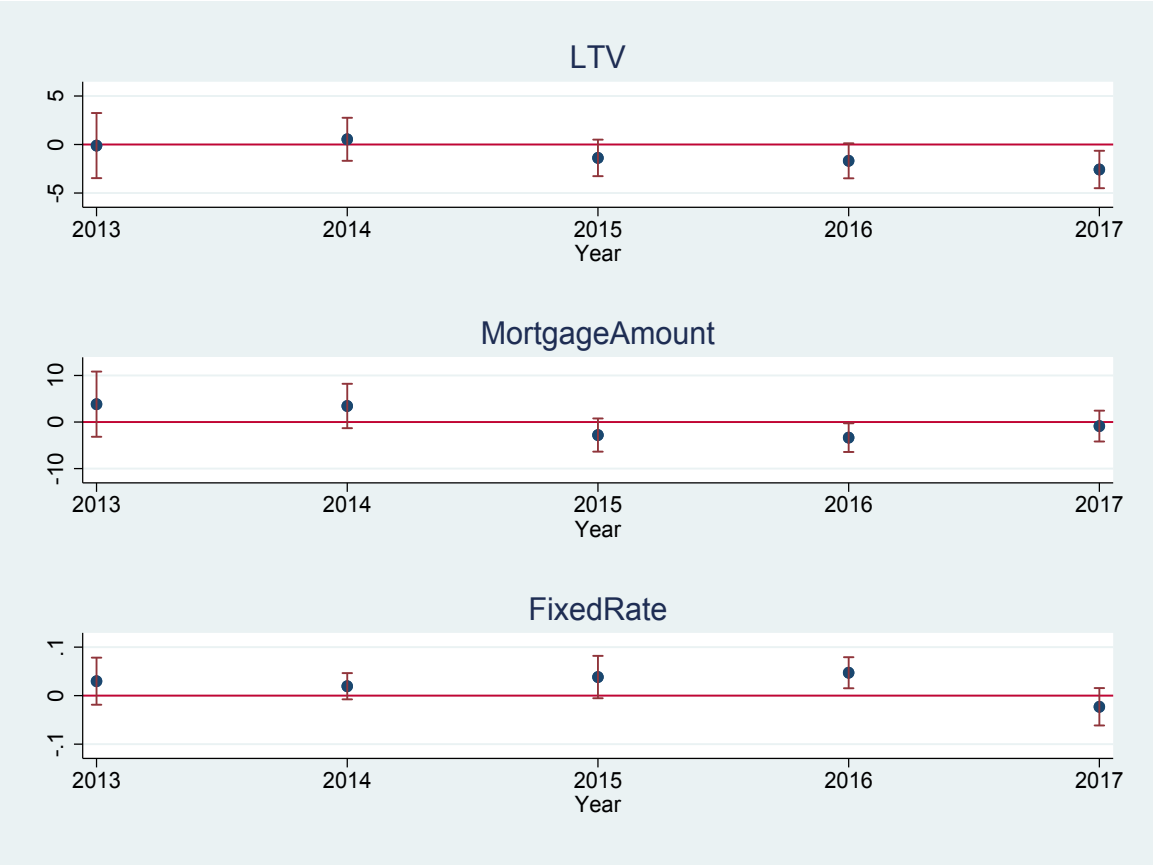
Table 10: Jobs Act and initial mortgage conditions: Single and multiple person mortgages - Heterogeneity analysis

	(1) LTV	(2) Mortgage amount	(3) Fixed rate	
	Panel A: below median salary			
All newly hired after March 7 2015	-4.003**	-4.391	0.021	
	(1.616)	(3.237)	(0.032)	
At least one newly hired after March 7th 2015	1.150	-1.744	-0.007	
	(1.122)	(2.462)	(0.023)	
All newly hired	-0.686	3.213	0.004	
	(1.366)	(2.877)	(0.027)	
At least one newly hired	-0.050	-1.335	0.017	
	(0.996)	(2.261)	(0.020)	
Observations	22352	22923	22923	
Adjusted R^2	0.160	0.204	0.283	
Other control variables	Y	Y	Y	
	Panel B: below median age			
All newly hired after March 7 2015	-3.096*	-6.504*	0.020	
	(1.582)	(3.347)	(0.032)	
At least one newly hired after March 7 2015	0.751	-1.492	-0.014	
	(1.123)	(2.574)	(0.023)	
All newly hired	-0.178	7.224**	-0.004	
	(1.340)	(2.985)	(0.026)	
At least one newly hired	-0.217	-3.297	0.028	
	(1.002)	(2.377)	(0.019)	
Observations	24062	24748	24748	
Adjusted R^2	0.193	0.202	0.290	
Other control variables	Y	Y	Y	Y
	Panel C: Female (co-)mortgagors			
All newly hired after March 7 2015	-1.571	-6.514	0.048	
	(2.247)	(4.650)	(0.044)	
At least one newly hired after March 7 2015	0.964	0.555	-0.007	
	(1.558)	(3.375)	(0.032)	
All newly hired	-2.853	3.216	-0.002	
	(1.877)	(4.106)	(0.036)	
At least one newly hired	0.227	-2.232	0.023	
	(1.350)	(3.032)	(0.026)	
Observations	13094	13447	13447	
Adjusted R^2	0.202	0.191	0.301	
Other control variables	Y	Y	Y	

All specifications include sector, province and year fixed effects.
Standard errors, clustered at mortgage level, are displayed in parenthesis.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

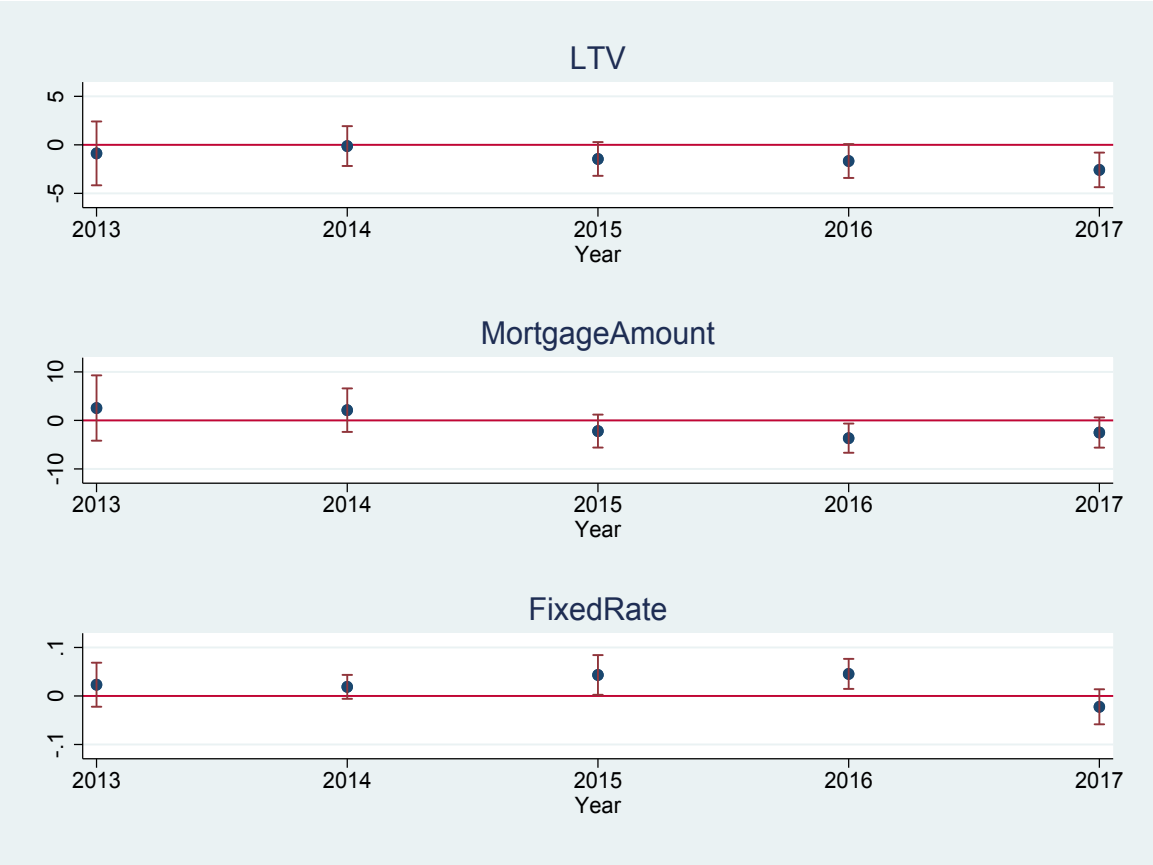
B Figures

Figure 1: Yearly regressions: Single person mortgages



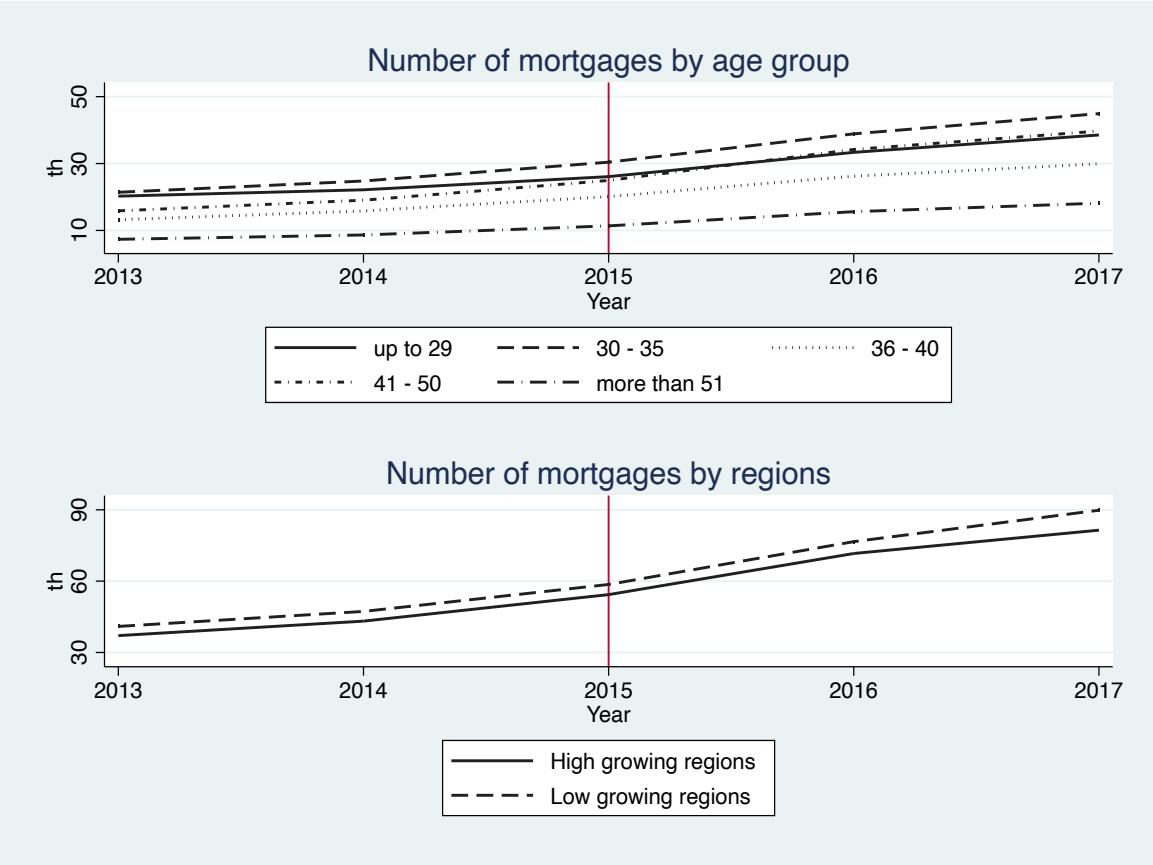
Note. This figure plots coefficient estimates from year-by-year regressions and their relative upper and lower bounds of confidence intervals at 10% level. All regressions include the set of regressors as in the baseline specifications and sector and province fixed effects.

Figure 2: Yearly regressions: Single and multiple person mortgages



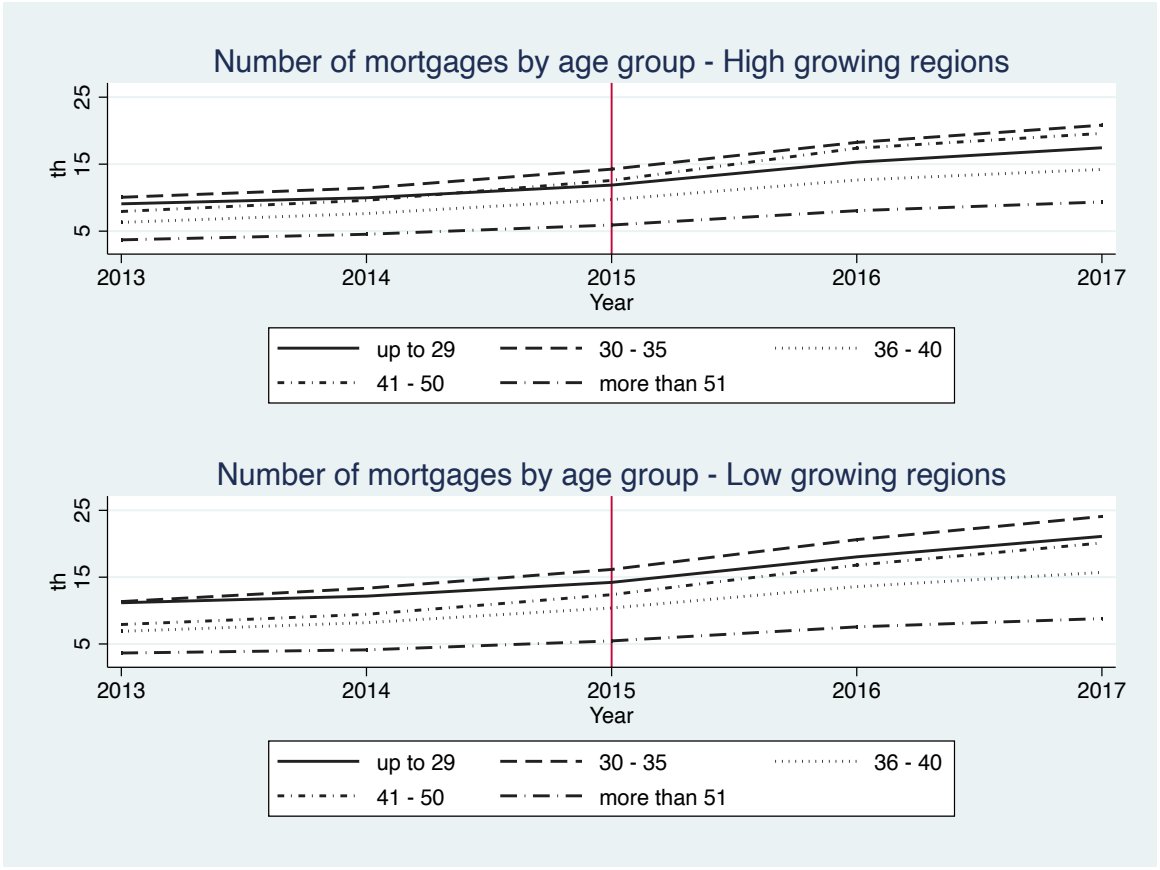
Note. This figure plots coefficient estimates from year-by-year regressions and their relative upper and lower bounds of confidence intervals at 10% level. All regressions include the set of regressors as in the baseline specifications and sector and province fixed effects.

Figure 3: Number of first mortgages by the universe of Italian banks (2013-2017)



Note. This figure plots the series of total mortgages allocated in Italy by the universe of banks in the period 2013-2017 (source: Bank of Italy, Credit Registry). Upper-panel displays the series by splitting the group of mortgagors according to their age. Bottom-panel displays the series by splitting the Italian regions into two groups: *High growing regions* are the Italian regions with the highest growth rate of newly-hired workers with open ended contracts in the years 2014-2015; *Low growing regions* are the Italian regions with the lowest growth rate of newly-hired workers with open ended contracts in the years 2014-2015.

Figure 4: Number of fist mortgages by the universe of Italian banks (2013-2017) - split by age-group and regions



Note. This figure plots the series of total mortgages allocated in Italy by the universe of banks in the period 2013-2017 (source: Bank of Italy, Credit Registry). Upper-panel displays the series by splitting the group of mortgagors according to their age-group and if they belong to the group of regions defined above as *High growing*. Bottom-panel displays the series by splitting the group of mortgagors according to their age-group and if they belong to the group of regions defined above as *Low growing*.