Do Lower Local Benefits Incentivize Relocations? The Effect of Unemployment Insurance Generosity on Internal Migration

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Abstract

Between 1991 and 2016, the Mobilità program provided unemployment insurance benefits to Italian workers laid off due to economic reasons or sizeable restructuring of the firm. The program offered more months of eligibility to older workers and those terminated in the South, where local economies are historically weaker. Using linked employee-employer administrative data and a quasi-experimental framework, I estimate the effects on Mobilità take-up and internal migration of a reform that decreased the program's generosity and made it geographically homogeneous. I find that dropping the maximum duration of Mobilità by at least 12 months decreases its recipiency by 124 days and increases the probability of migration by 37%. My results show that, once the duration of the benefits decreases, unemployed workers are more likely to move and become re-employed in relatively stronger local labor markets. By supporting the moral hazard explanation over the liquidity constraint one, which would have implied a decrease in migration following the reform's curtail in generosity, this evidence uncovers some unexplored implications of heterogeneous unemployment insurance generosity.

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1 Introduction

Unemployment insurance provides income to workers who unwillingly become unemployed. The benefits these workers receive through unemployment insurance often depend on their seniority and earnings at their previous jobs. The primary goal of unemployment insurance systems is to provide consumption continuity to the unemployed when they experience a sudden loss in income due to termination. Hence, the intended effect is to smooth the consumption of individuals during their unemployment spells. Gruber (1997), a founding paper on the topic, showed that in the U.S. this goal was broadly achieved, and Ganong and Noel (2019) is a more recent example.

However, a wide literature agrees that unemployment insurance may lead to unwanted effects by increasing workers' dependency on social programs. Prior work provides evidence of the unintended effects of unemployment insurance programs arising from behavioral distortions and moral hazards on the part of workers and program recipients. Individuals seem to adjust their labor supply to maximize the duration and level of the benefits. For example, unemployment insurance generosity lowers job search efforts and job-finding rates, and it raises reservation wages (Meyer, 1990; Card et al., 2007; DellaVigna et al., 2017; Krueger and Mueller, 2010; Marinescu and Skandalis, 2021).

Chetty (2008) empirically disentangles the impact of unemployment insurance benefits on unemployment duration in a welfare-reducing "moral hazard" component and a welfare-enhancing "liquidity" component. In the United States, he finds that the latter determines about 60% of that relationship, implying that the unemployed, who are unable to perfectly smooth consumption, are highly sensitive to cash on hand to consume.

In this paper, I expand the existing literature on the trade-off between the intended and unintended effects of unemployment insurance generosity by focusing on internal migration. I estimate how eliminating the geographical heterogeneity in the generosity of an unemployment insurance system that historically provided higher benefits in relatively underdeveloped areas impacts the relocation of workers towards stronger local labor markets. If the moral

hazard channel dominates, then more generous unemployment insurance in underdeveloped areas dampens the long-term economic opportunities of the recipients by weakening their incentives to move to regions characterized by higher levels of economic development. If the liquidity channel dominates, then more generous unemployment insurance in underdeveloped areas enhances the long-term economic opportunities of the recipiency by providing them with the financial means to move to areas characterized by stronger local economies.

To answer this research question, I consider the Mobilità, an Italian unemployment insurance program that, since 1991, assisted workers experiencing layoffs caused by economic reasons often tied to macroeconomic trends or by deep structural transformations within firms. Due to the type of terminations the Mobilità program was associated with, most workers in the program were part of mass layoffs. The Mobilità program historically provided more generous benefits to workers considered vulnerable based on their age and geographical location. In particular, older workers and those terminated in the South had access to longer periods of benefits eligibility. Because the possible duration of unemployment insurance payments was the longest for older workers who lost their jobs in Southern firms, this design provided more protection to those who were traditionally more likely to experience weaker labor markets and remain unemployed for longer. Importantly, once on the program, the benefits were fully portable, so that moving within Italy would not alter their recipiency. The duration of Mobilità was fully determined by the age of the worker at dismissal and the location of the firm that terminated the employment, and, of course, conditional on being unemployed.

A 2012 reform,[1] with the ultimate goal of eliminating the Mobilità program and merging it with the traditional unemploying insurance system, reduced its generosity and progressively eliminated geographical differences. The reform introduced differential reductions to the maximum generosity of the program across age-geography groups of workers over two years. By 2017, Italy had a single unemployment insurance program regardless of the reasons

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[1]The legislative decree 92/2012.

behind the termination or area of termination, although some differences remained based on the age or job history of workers. This policy change provides a clear identification strategy for computing the causal effect of maximum unemployment insurance duration on the program's recipiency and internal migration.

The original design may have prompted unemployed workers to stay in, or potentially move to, underdeveloped areas so that they could be eligible for more months of unemployment insurance in case of future dismissal. Moreover, longer unemployment benefits in relatively underdeveloped areas may discourage workers from moving to stronger local labor markets for longer (i.e. as long as those benefits last). If so, then the reform, by making the benefits geographically homogeneous, might incentivize workers to move or to move faster to areas characterized by stronger labor markets, improving their economic outcomes.

Alternatively, individuals may use the additional months of unemployment insurance to subsidize their relocation to more developed areas. Moving requires financial liquidity and it involves economic risk. Unemployed workers are even more vulnerable to these costs because they have no earned income. If the liquidity mechanism dominates, then the reform decreases the ability of workers to finance their relocation and will result in lower internal migration rates among the unemployed workers who experienced the largest drops in benefits.

In this paper, I estimate the effects of decreasing unemployment insurance generosity via a reduction of the number of maximum months workers are eligible for on benefit take-up and internal migration. I rely on an administrative panel dataset from the Italian Social Security Institute that includes demographics and complete employment information on a large random sample of Italian individuals, as well as data on participation in the program.

First, I descriptively observe how Mobilità recipiency and internal migration trends across age-geography groups and over time. Second, as an effort to show the first-stage effects of the reform, I examine how it impacted the take-up (in days) of benefits recipiency using a difference-in-differences model. Third, I rely on a similar empirical model to estimate how the reform impacted the relocation incentives of workers across different local labor markets.

Descriptive evidence suggests that the geographical gap in benefits recipiency decreases with the age of the unemployed and that this gap sharply drops towards the end of the Mobilità program across all age groups. Empirical estimates from the difference-in-differences models show that the reform decreased the number of days the affected workers receive Mobilità benefits, specifically by over 10 days for each one-month-decrease in maximum duration, and increased their probability to migrate by over 35%. Most of the impact on migration was driven by workers dismissed in the South and moving to the Center-North. While the standard errors for the migration outcomes are larger in some of the alternative specifications I consider, the patterns in the outcome appear robust.

My research expands our understanding of whether and to what extent the design of unemployment insurance systems may perpetuate undesirable outcomes. To my knowledge, this is the first work empirically estimating the causal impact of unemployment insurance generosity on internal migration decisions. I found that eliminating the geographical differences in unemployment insurance generosity increased the share of workers who relocated to more advanced areas and gained employment there. My results suggest that offering more generous (portable) benefits in relatively underdeveloped areas may strengthen the attachment of workers to these regions and reinforce their dependency on public programs. Overall, the evidence in this paper implies that, in the context considered, the moral hazard mechanism appears to dominate over the liquidity constraint one.

2   Literature Review

2.1   Unemployment Insurance, Unemployment Spells, and Labor Market Outcomes

Gruber (1997) is one of the first works to estimate the benefits of unemployment insurance programs, and particularly their ability to smooth the consumption of individuals during unemployment spells. More recently, Ganong and Noel (2019) found that people's spending

dramatically drops following the decrease in income caused by the exhaustion of unemployment insurance benefits. In addition, they concluded that extending unemployment insurance benefits provides four times as much consumption smoothing than raising them.

However, other works focus on the unintended consequences of unemployment insurance arising from behavioral distortions on the part of recipients. Meyer (1990) shows that more generous unemployment insurance benefits sharply rise close to the expiration of the benefits and decrease the unemployment hazard rate, that is, the rate at which unemployed individuals exit unemployment. The paper also documents that hazard rates sharply increase just before the benefits expire and that this reference point is sticky, in that the hazard rate remains high around prior expiration periods if the benefit duration changes. Similarly, Krueger and Mueller (2010) found that job search intensity increases before the exhaustion of unemployment insurance benefits, while no such change arises among workers who are ineligible for the benefits. Using administrative data from Austria, Card et al. (2007) estimate that an extension of the potential duration of unemployment insurance benefits from 20 to 30 weeks lowers job finding rates by 5 to 9 percent in the first 20 weeks of job search. Marinescu and Skandalis (2021) use French data to show similar mechanisms: job applications increase by more than 50% in the year before benefits exhaustion. Further, reservation wages decrease by at least 2.4% during that same year and remain low. However, DellaVigna et al. (2017) show that individuals' job search effort follows patterns tied to their reference points of consumption, with individuals relaxing their job search efforts as they get used to their new consumption reference points. Not only does unemployment insurance generosity determine the behavior of the individual during unemployment, but there is evidence that the design of its eligibility requirements shapes the behavior of workers also when employed. For example, Baker and Rea (1998) found that an increase in seniority required to be eligible for unemployment insurance leads to an increase in employment hazard rates corresponding to that new temporal threshold.

Previous works also focused on how unemployment insurance generosity impacts the

quality of employment matches following the unemployment spell. Possibly, the more generous the benefits, the more time the unemployed have to find their preferred job or simply a better-paid job, hence raising their reservation wage. The evidence for this mechanism is mixed. It is not obvious that more time spent receiving the benefits enhances the future job opportunities of the individual exiting unemployment. For example, Card et al. (2007) found no evidence that increases in the duration of job search arising from extended unemployment insurance benefits result in improved job match quality. By contrast, Nekoei and Weber (2017) showed that extending the benefits by 9 weeks leads to an increase in average wages at the next job by 0.5%.

2.2 Welfare-Induced Migration and Unemployment Insurance

Because here I examine whether the maximum duration of unemployment insurance benefits impacts the internal migration choices of unemployed individuals, the literature on welfare-induced migration is relevant to this work. Welfare-induced migration is the phenomenon of migrants or potential migrants choosing where to move based on the varying levels of welfare system generosity in their original or destination areas. Fields (1979) reviews some existing literature on welfare migration from decades ago, and highlights that unemployment insurance seems the only welfare program that impacts in-migration in the expected direction, but such estimation is often statistically insignificant and characterized by large variations in magnitude. Goss and Paul (1990) uses cross-sectional PSID data and shows that, on average, receiving unemployment benefits has a statistically insignificant impact on the probability of migration, but recipients who have been *involuntarily* terminated are less likely to migrate.[2] Enchautegui (1997) finds evidence that welfare payments in the hosting location are a significant determinant of the probability for women to move interstate in the U.S., and the effects are stronger for women with a higher propensity to use welfare. Similarly, using data from the European Community Household Panel, De Giorgi and Pel-

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[2]One potential explanation the author provides is that workers who have been involuntarily terminated are more likely to wait in the same location hoping to be recalled by the former employer.

lizzari (2006) show that welfare generosity at the destination is one of the determinants of the probability of migrating.

Day and Winer (2011) reviews the empirical literature about the effect of the Canadian unemployment insurance program design, which, like the one considered here, allocated more generous benefits in relatively disadvantaged regions, on internal mobility. This literature, spanning between the 1950s and 1990s, mostly relies on explanatory regressions using cross-sectional, high-level, and survey data, or microdata for just a few years. The authors conclude that, due to a lack of quasi-experimental evidence, the studies could not disentangle the effects on migration of the regional heterogeneity in the unemployment insurance benefits from those of the local labor markets conditions and unemployment rates.

Using data from the European Community Household Panel, Tatsiramos (2009) investigates the effect of unemployment insurance benefits on the males' geographic labor mobility in 5 countries. They consider that unemployment insurance generosity could have contrasting effects on workers' mobility: it could increase reservation wages and decrease the willingness to move for a job or it could provide the liquidity to move. They ran country-level and pooled-country binary choice models to study how the probability of moving within the same country changes based on the different generosity levels across countries. They find that benefits are not associated with a statistically lower probability of moving. However, because recipients with the lowest probability to move are in the UK, which is the least generous country among those considered, and receiving benefits appears to increase mobility on average, the authors suggest that the liquidity constraints explanation may dominate.

To my knowledge, only a few papers attempted to causally estimate the effect of welfare generosity on migration. Considering the welfare generosity in the *receiving* location, McKinnish (2005) exploits differences in AFDC generosity across states and the fact that individuals closer to state borders experience lower migration costs compared to those in the interiors. She hypothesizes that counties on the borders of high-welfare states should have more welfare recipients than internal counties in that state, due to easier in-migration from

neighboring states. The estimates suggest that border counties with $100 more generous AFDC benefits compared to their neighboring counties have AFDC expenditures that are up to 7 percent higher relative to their interior counterparts. McKinnish (2007) finds some further, though statistically insignificant, evidence of welfare-induced migration.

Finally, Nunn et al. (2018) consider the generosity of the unemployment insurance benefits across U.S. states, and, by aggregating tax data to the state-pair year level, examine whether the unemployment insurance generosity in the *origin* state affects migration. The authors estimate that a one-week increase in unemployment benefits in the origin state increases the probability of moving by 0.24 percent, highlighting the importance of the portability of such benefits. Their results signal that longer unemployment insurance allows for a more ambitious job search and better employment matches, which more likely results in across-state migration.

These prior works provide invaluable contributions to the literature on welfare-induced migration. However, due to the lack of quasi-experimental variation in employment insurance generosity within-country and over time, their estimates may be hardly interpreted as causal.

With this paper, I contribute to the literature in several ways. First, using discontinuities in unemployment insurance duration, I strengthen the evidence on how unemployment insurance generosity impacts the actual recipiency of the benefits. Moreover, I utilize the age and geographical differences in benefits eligibility, and their variation over time, to explore the impact of unemployment insurance generosity (determined by its duration) on internal migration. My main contribution is the ability to rely on an administrative longitudinal dataset and on a reform that provides a quasi-experimental setting where unemployment generosity is progressively reduced across age and geographic subgroups. To my knowledge, this is the first time such empirical framework has been used to estimate the causal impact of unemployment insurance generosity on the migration of the beneficiaries.

3 Policies

3.1 The Generosity of Unemployment Insurance Systems

The generosity of an unemployment insurance program can be determined by two features. First, the maximum number of months an unemployed worker is eligible to receive unemployment insurance payments following an involuntary layoff. Different durations in benefits impact the distress unemployed workers experience from the lack of labor income. The second measure of generosity is the unemployment insurance replacement ratio, a measure of the share of previous labor earnings that is disbursed to the dismissed workers as unemployment benefits. The higher the proportion of previous labor earnings that are replaced through the unemployment insurance system, the more generous is the system. In this work, I exploit variation in the first dimension, the maximum duration of unemployment insurance, to study the impact of unemployment insurance generosity on duration spells and migration across local labor markets.

3.2 Unemployment Insurance in Italy and the Mobilità Program

In Italy, between 1991 and 2016, two different unemployment insurance systems existed for workers depending on the type of involuntary layoff they were involved in. Workers who were part of a *mass* layoff due to deep economic reasons or wide structural transformations of a firm's activities were enrolled in the Mobilità program. The Mobilità program provided unemployed workers affected by mass layoffs or layoffs related to macroeconomic downturns with unemployment insurance, as well as some re-employment services and benefits. For example, firms hiring unemployed workers in the Mobilità program could benefit from hiring subsidies. Similarly, if the firm that initially sent workers to the Mobilità program was in the process of re-hiring, they had to consider workers in the Mobilità first. The second unemployment insurance system is the more traditional one, similar to other such systems across the world, and it applies to workers losing their jobs individually and against their

will.

To estimate the effect of unemployment insurance generosity on internal migration, I focus on the Mobilità program and the evolution of its generosity levels before (up to 2014) and after (in 2015 and 2016) the reform. Starting in 1991, the generosity of the Mobilità program was tied to geographical and demographic factors so that the more vulnerable workers, as defined by the location of their dismissal or age at dismissal, were eligible for more maximum months of payments. In particular, older workers located in the South benefited from the longest possible duration of Mobilità payments (up to 48 months).

To identify the variation in the generosity of unemployment insurance, I use an Italian reform (Law 92/2012) implemented in 2012, which aimed at eliminating the Mobilità program by 2017. In 2015, the reform initiated the progressive reduction of the maximum unemployment insurance duration across most groups of workers based on their age at dismissal and location of dismissal, and completed this transition in 2016. The variation in the decreases in generosity offers a clear identification strategy. In 2017, the Mobilità program was substituted with the traditional unemployment insurance program for all workers, regardless of the type of dismissal they experienced. While some differences in eligibility remained by the workers' age at dismissal, the geographical heterogeneity was eliminated.

In the Mobilità program, there were different generosity groups based on the age of workers at dismissal (up to 39 years old, 40-49, and 50+ years old) and the geographical location of dismissal (the Center-North and South macro-regions).[3] The initial generosity level and its progressive reduction following the reform depended on the age-geography groups. For example, while workers below 40 years old terminated in the North-Central macro-region experienced no change in maximum duration, which remained at 12 months, their counterparts in the South saw the maximum duration of benefits halve from 24 to 12 months, and match their counterparts in the Center-North starting from 2015.

The 40-49 and 50+ age groups kept experiencing a geographical difference in benefits

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[3]Out of the 20 Italian regions, 8 are in the North, 5 in the Center (hence, 13 are in the Centre-North macro-region), and 7 in the South.

until 2016, but this difference decreased in 2015 and 2016 and disappeared by 2017. Before the reform, workers aged 40 or more dismissed in the South could benefit from 12 more months of Mobilità payments compared to their Center-Northern counterparts. Between 2015 and 2016 this gap was halved and in 2017 it was eliminated.

Hence, by 2017, the reform eliminated the advantage in benefits generosity of staying in the South for all age groups by equalizing the maximum duration of the payments across the two macro-areas. Notably, no age or geographical differences in the *level* of Mobilità benefits existed or changed over time. The only variation in the program's generosity was in the duration of the benefits, and it was that variation that the reform altered.

Starting in 2017, the Mobilità program merged with the traditional unemployment insurance program and all Italian workers became part of a unique unemployment insurance program called ASPI.

Table 1 summarizes the Mobilità benefits duration by the relevant age-geography subgroups, that is, by the age at dismissal and by the macro-region where the dismissing firm is located. The table also reports the changes introduced by the reform.

Table 1: The Structure of the Program over Time: Maximum duration (months) of eligibility for the Mobilità unemployment insurance program by age and geography

		1991 to Dec 31 2014	Jan 1-Dec 31 2015	Jan 1-Dec 31 2016	From Jan 1 2017 (trad. UI)
Center-North	Up to 39 yo	12	12	12	10
	B/w 40 and 49 yo	24	18	12	10
	B/w 50 and 55 yo	36	24	18	12
	55+ yo	36	24	18	16
South	Up to 39 yo	24	12	12	10
	B/w 40 and 49 yo	36	24	18	10
	B/w 50 and 55 yo	48	36	24	12
	55+ yo	48	36	24	16

4 Data

I use an administrative dataset called LoSai (Longitudinal Sample INPS)[4] containing information on the working history of about 6.6% of the Italian population.[5] In addition to basic demographics for all individuals, the dataset contains complete longitudinal information on their employment relationships if they ever entered the formal labor force,[6] as well as the dates of any period of unemployment insurance recipiency, including the Mobilità benefits, with the corresponding dismissal date.

The data is composed of a few separate subsets. The ones I use here are 1) a dataset with information on the Mobilità spells (workers' IDs, date of dismissal, and dates of recipiency, including repetitive spells from the same dismissal)[7]; 2) a dataset with information on firms' IDs[8] and industry classification; and 3) two large datasets with the entire employment history of the workers,[9] with information on employee-employer pairs, dates of the relationships, reasons for beginning and end of contracts, earnings, and job rank.

I focus on workers between 18 and 65 years old who participated in the Mobilità between 2005 and 2016, the last year of the program. During that period, 74,434 Mobilità dismissals occurred.[10] I can match workers' demographics to the recipients of the Mobilità program for 74,095 dismissals. I use the identification numbers of workers and their dismissal date (day, month, and year) that originated the Mobilità spells to link them to the employment

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[4]In 2013, the Italian Department of Work and Social Policies started offering several sources of administrative data for research purposes. This service was suspended around the summer of 2023.

[5]In particular, the data includes information on all individuals born on the first and ninth day of any month. In 2010, there was a total of 1,072,366 employees in my sample. From official data, I found that in the same year, the total number of Italian employees was 16,833,000, and 6.6% of that amounts to 1,110,978, which is close to my sample size for that year.

[6]The information is either collected from employers by the social security office via disclosure requirements or it is generated by the social security office for social security contribution purposes.

[7]This would occur if the worker, once dismissed and in the Mobilità program, is temporarily recalled by the firm to work, and then sent back to receive the benefits, for any number of times.

[8]In revisions of this current draft, I plan to use firms' size over time to investigate the type of firms where the worker is re-employed.

[9]These arise from two separate archives but, given the scope of this paper, I treat them as similar and complements.

[10]Overall, the dataset contains 95,605 dismissals but I exclude those that originated before 2005. As a result, the pre-reform period is 10 years long.

relationships resulting in the dismissal, including the corresponding firm.[11] I can match on the exact date of dismissal (day, month, and year) for about 87% of the Mobilità spells. For the unsuccessful matches when using day, month, and year, I match by month and year of dismissal.[12] I can link employment relationship information to the data on the Mobilità participation using the month and year of dismissal for another 4.5% of the Mobilità spells. I drop the remaining unmatched spells.

After these steps, the Mobilità dataset involves 25,826 unique firms involved in 66,016 unique dismissals of 64,139 unique workers ending up receiving the Mobilità benefits.

I rely on workers' ages and regions of residence to identify the different generosity subgroups. Notably, the geographical variation in benefits depended on the location of the dismissing firm, which is absent in the data. I infer this information from the region of residence of its workers, which is a time-invariant variable referring to 2018, the last year in the data.[13] Using the employment relationships datasets, for each firm I compute the modal macro-region (South or Center-North) of residence of all its workers over all the years in the data. That is, I impute the location of the firm from the macro-region where the majority of its workers over the entire period available in the archives resided in 2018. To maximize the precision of this imputation, I drop all observations corresponding to firms employing only one worker (12.5%) in the dataset and those corresponding to firms for which there are two modes (2%). Because there are twenty regions in Italy, the fact that the Mobilità benefits vary at the level of two macro-regions relaxes the margins of error. Using granulated information to generate the location variable at a much coarser level improves the precision of the imputation.

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[11]From the employment relationship datasets, I drop the few cases of workers getting dismissed, on the same date, by two firms that are located in different macro-areas because I would not be able to identify which one started the Mobilità recipiency, and so I could not explore migration patterns. If the worker gets dismissed from two different firms in the *same* macro-region on the same day, I randomly select one employment relationship to be that resulting in the Mobilità program. However, I may improve the precision of this choice in the future by prioritizing larger firms and firms for which I observe two or more workers in the Mobilità dataset with the same dismissal date. In fact, these firms are more likely to start mass layoffs, which are those associated with the Mobilità program.

[12]Following the same procedure as for the matches on day, month, and year of dismissal.

[13]For deceased individuals, the information on the region of residence is as of their year of death.

The registry of Italian firms (ASIA) represents a useful way to check for the overall precision of the imputation. Based on this separate and reliable source, in 2011, 50% of all Italian firms were located in the North, 22% in the Center (for a total of 52% in the Center-North), and 28% in the South. In my data, using the modal region of residence of all workers that were *ever* employed at each firm, I impute that 52% of these firms are located in the North, 20% in the Center (for a total of 52% in the Center-North), and 28% in the South. First, this comparison suggests that the dataset is quite representative of the population of firms, despite arising from a random sample of workers. Second, I can conclude that the imputed variable for the location of firms is quite precise. However, I could not infer the location for about 4% of the firms that sent workers in the Mobilità program and so I could not determine the dismissal location for these cases.

Finally, I describe how I built migration, the main outcome variable. I consider workers' location to be the macro-area where their employing firm is. The location of the dismissing firm is the starting location of the workers, and that of the re-employing firm post-Mobilità is their location post-dismissal.[14]

Because the last year in the data is 2018, and the Mobilità program was reformed in 2015 and ended in 2016, to make pre- and post-reform migration rates comparable, I built the migration outcome based on the Mobilità recipients who become re-employed within two years post-dismissal. In the migration analysis, I consider all Mobilità recipients except those whose re-employment occurred more than 730 days after the dismissal. Hence, if the worker gets dismissed in day t and starts receiving the Mobilità benefits, they are included in the migration analysis as long they do not become re-employed later than $t + 730$ days after their dismissal. To identify the internal migrants, I compare their macro-region of dismissal with that of their re-employment, as long as they are at most 730 days apart. Based on the location of the firm that dismissed the worker and that of the firm re-employing the worker, I deduce whether, and where, the worker migrated (composing my outcome variable

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[14]I will also run an alternative analysis that considers the location of the dismissing firm as the starting point and the workers' region of residence in 2018 as the next location.

for migration). Workers who migrated are those who have become re-employed in a different macro-region from that of their dismissal at most 730 days after their dismissal. The non-migrants are those who have become re-employed in the same region at most 730 days after their dismissals or those who have not become re-employed at all. In the analysis, I consider migration to be any movement of unemployed workers from one macro-region to another (based on the location of their dismissing firm and that of the re-employing firm). However, I also explore alternative versions of the variable where the migration outcome only refers to the movement of workers towards the North, that is to the Center-North for those dismissed in the South, and towards the North for those dismissed in the Center.

5   Empirical Framework

To empirically estimate the effect that the reform has on Mobilità recipiency in number of days, I run a difference-in-differences model where the outcome is the total number of days each worker has received Mobilità benefits following a dismissal. By doing so, I estimate whether the reform, by decreasing the maximum duration of Mobilità benefits, decreased the number of days the recipients received such benefits. In some way, this is a first-stage check that, as one would expect, the *actual* average number of days of Mobilità benefits decreased as a result of the drop in the *maximum* number of days allowed. The independent variables are the interactions between the post-reform dummy, equal to 1 for the years 2015 and 2016, and the treatment group, equal to 1 for all workers aged 40 to 49 that got terminated in the Central-Northern macro-region, and so experienced a drop in maximum eligibility by 12 months (refer to Table 1). The control group is composed of all workers younger than 40 who got terminated in the Central-Northern macro-region. This age-geography group experienced no change in generosity. In addition to the main effects, I progressively added a control variable for being a female, and four sets of fixed effects: the year of dismissal, the macro-region of dismissal, the industry of the dismissing firm, and the age of the worker on

the year of dismissal.

The fully specified model estimating the effect of the reform on Mobilità benefit duration is:

$$DaysRecipiency_{itf} = \alpha_{1itf} + \alpha_2 40to49YearsOldNorth_{it} + \alpha_3 40to49YearsOldNorth_{it} \times Post_t +$$

$$\alpha_4 Female_i + Industry_f + Age_{it} + YearDismissal_t + MacroRegionDismissal_{it} + \epsilon_{itf}$$

(1)

I estimate the above model linearly, and I cluster the standard errors by the industry of the dismissing firm and the age of the worker at dismissal. The estimated coefficient α_3 is the impact of decreasing the maximum months of Mobilità recipiency by 12 on the effective number of days of recipiency for the average worker aged 40 to 49 and dismissed in the Center-North. The reference (control) group is composed of the workers younger than 40 years old dismissed in the Center-North, as for them the generosity of the program remained unchanged. Given that the reform decreases the maximum duration of recipiency, we would expect these coefficients to be negative, implying a decrease in the actual benefit recipiency.

Next, I estimate the effects of the reform on migration patterns. In building the variable for migration, I consider workers who entered the Mobilità program as a result of a dismissal that occurred between 2005 and 2016. Among these, I drop workers who become re-employed more than 730 days after their dismissal. This allows me to compare migration patterns before and after the implementation of the reform, considering that the dataset ends in 2018.

In building the numerator, I focus on workers who were participating in the Mobilità program and became re-employed at most two years after their dismissal. By exploiting the location of the firm that dismissed the worker, and that of the firm that re-employed her next, if any, I deduce the migration patterns.

The outcome variable for the first set of regressions is a dummy variable equal to 1 if the

macro-region where the firm that terminated a worker in the Mobilità program differs from that of the firm that re-employed her. This outcome variable accounts for any movements of Mobilità workers within 730 days from dismissal: away from the South towards the Center or North, away from the Center towards the South or North, and away from the North towards the South and Center. Instead, migration equals zero if, within the same time period, the worker becomes re-employed in the same macro-region where she was terminated, or if she does not become re-employed.

In the second version of the migration outcome, the dummy variable is equal to 1 if the worker was terminated in the South and then re-employed (within 730 days) either in the Center or in the North, and if she was terminated in the Center and re-gains employment in the North. This outcome equals zero if the worker becomes re-employed in the same macro-region where they were terminated, in a Southern macro-region relative to that of dismissal, or if they are still unemployed two years later. This outcome variable captures internal migration towards higher latitudes within Italy.

For this question, the treated group is composed of workers of all ages dismissed in the South, and the control group is composed of workers aged 18 to 39 who got dismissed in the Center-North. As a result of the reform, the treated group experienced a drop in maximum benefits of at least 12 months, up to 24 based on their age. The control group experienced no change in benefits.

The reason why I use a different treated group for migration than for the recipiency outcomes is that, for the recipiency outcome, workers of different age groups dismissed in the Center-North are a lot more similar and yield a convincing event study. However, when examining how the reforms changed migration patterns across areas characterized by different levels of economic development, I have to focus on workers dismissed in different macro-areas. Overall, I confirm the plausibility of the necessary assumptions also when considering this alternative treated group.

With this difference in mind, the right-hand side of the regression on migration is identical

to Model 1. In addition to a linear model for this outcome, I ran an event study using a logistic regression because the outcome variable is a dummy indicator measuring migration probabilities. Both methods yield similar results, but the logistic model sometimes generates larger standard errors.

$$Migration_{itf} = \alpha_{1itf} + \alpha_2 AllAgesSouth_{it} + \alpha_3 AllAgesSouth_{it} \times Post_t +$$
$$\alpha_4 Female_i + Industry_f + Age_{it} + YearDismissal_t + MacroRegionDismissal_{it} + \epsilon_{itf} \tag{2}$$

Again, I cluster errors by the age of the workers at dismissal and the industry of the firm that terminated them, because I assume some correlation of the observations within these subgroups.

The regression analysis relies on two key identifying assumptions. First, the difference-in-differences method assumes that workers in the control group would have followed trends in each outcome that are *parallel* to those in the treatment in the absence of the reform. In other words, there are no time-varying differences in the outcomes I consider, namely days of Mobilità recipiency and migration, across the treatment and control groups other than those originated by the reform. The assumption is that there are common trends between each of these treated groups and the control group. Second, the analysis requires a strict exogeneity assumption that unobserved factors impacting each outcome are uncorrelated with the history of workers' treatment statuses. In other words, the difference-in-differences model is identified as long as there are no anticipation effects of the reform, no differential pre-trends across treated and control workers, and no time-varying treatment effects beyond those captured by the variables in the regression.

It is common practice in this framework to fit event study regressions that help assess the plausibility of both assumptions. I describe the method and its output in Section 6.3.

6 Results

6.1 Descriptive Statistics

First, I provide descriptive evidence of the differences in the days of Mobilità benefits recipiency by workers' year of dismissal, age, and geography. The exhibits show the patterns in the take-up days of the Mobilità program by age group and location of dismissal in the period before the reforms and any potential changes resulting from the reform. Next, I turn to internal migration and report its levels and over time trends by the age of dismissed workers and the macro-region of dismissal.

In the second set of results, I turn to difference-in-differences models to empirically estimate the impact of the reform on the recipiency of the benefits and on the probability of migrating within Italy. In the model, I exploit the fact that workers aged 18 to 39 terminated in the Center-North did not experience any decrease in the Mobilità program's generosity, but those in the South did by an amount that depended on their age group. The goal is to estimate the causal effect of decreasing the maximum duration of unemployment insurance on migration towards areas that are relatively more developed and richer in job opportunities. While migrating internally does not stop the reception of the Mobilità benefits, it alters the labor market conditions, their likelihood of becoming re-employed, the quality of the new jobs, as well as their future eligibility for the program should they enter it again.

6.1.1 Days of Mobilità Benefits Recipiency

Figure 1 shows the average days of the program's recipiency by age ranges of the workers (younger than 25, 25 to 29, 30 to 34, 35 to 39, 40 to 44, 45 to 49, 50 to 54, 55 to 59, and 60 to 64) and macro-region of dismissal (South, Center, and North). The top panel shows the averages using the pre-reform data (2005 to 2014) and the bottom panel shows the averages for the post-reform period (2015 and 2016).

First, we observe that for all groups, the average number of days of Mobilità recipiency

is higher in the pre-period and sharply decreases for all workers after 2014. Second, as expected due to the generosity structure of the program, older workers, on average, receive the benefits for more days. Third, for the same reason, the recipiency of the program is very similar for workers dismissed in the Center and the North, though between these two it is marginally higher in the Center, which is relatively underdeveloped compared to the North. Fourth, unsurprisingly given the program's design, the average number of Mobilità recipiency is much greater among workers dismissed in the South.

The decrease in recipiency among workers older than 55 in the pre-reform period may be explained by older workers getting closer to retirement and exiting the program. The same dip by age is not observed in the post-period, potentially due to the increase in retirement age in these years.

Figure 2 exhibits the means of recipiency days over the years (between 2005 and 2016) for workers dismissed in the South, Center, and North separately, overall (on the top left panel) and by subsets of their age at dismissal, specifically 18 and 39 years old (top right panel), 40 to 49 years old (bottom left panel), and aged 50 or more (bottom right panel). Again, the take-up of the program is, as expected, very similar for workers dismissed in the Center and North, but larger for those in the South. Moreover, the geographical difference in recipiency gaps is largest among younger workers and smallest among older workers. Because in the pre-period the geographical difference in maximum generosity for workers of the *same* age is constant and equal to 12 months, the fact that the largest geographical gap in take-up is among younger workers cannot be explained by the program's design, but can be due to some behavioral differences by age. Figure 2 also shows that the recipiency decreases drastically towards the end of the time period, possibly due to the changes introduced by the reform.

I can draw a similar conclusion by looking at the sample means of this outcome over the years reported in Table 2, where the average number of days on the program across the whole sample over time starts at 570 in 2006, peaked at 691 in 2014, and drops to 354 in 2016, the last year dismissed workers can enter the program.

Finally, Table 3 exhibits the averages of the number of benefits recipiency days by workers'
age group on the dismissal day, their macro-region of dismissal, and by pre- and post-reform
years. This table summarizes content in Figure 2 and largely confirms all the takeaways.

Figure 1: Average Duration (Days) of Mobilità Benefit Recipiency Until 2014 (Pre-Reform)
and in 2015 and 2016 (Post-Reform) by the Age Group of Workers on the Day of Termination
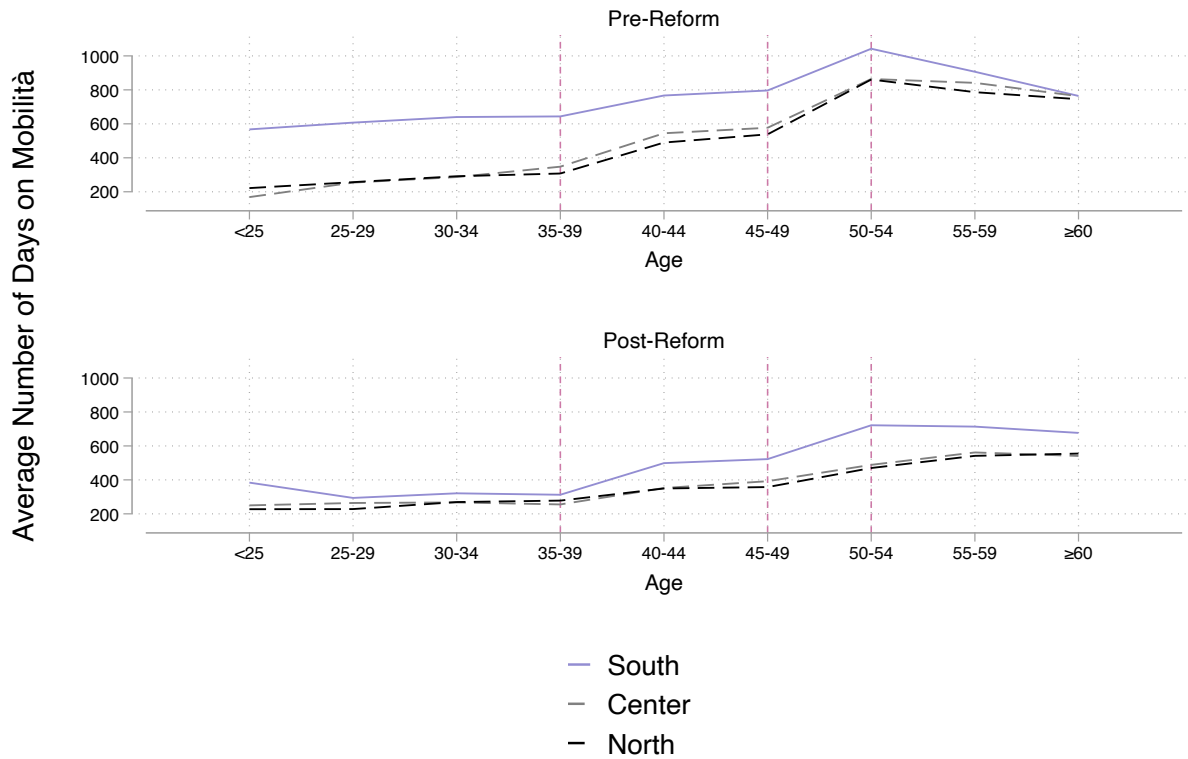and by Italian Macro-Region

Figure 2: Average Duration (Days) of Mobilità Benefit Recipiency over Time by the Age of Workers on the Day of Termination and by Italian Macro-Region
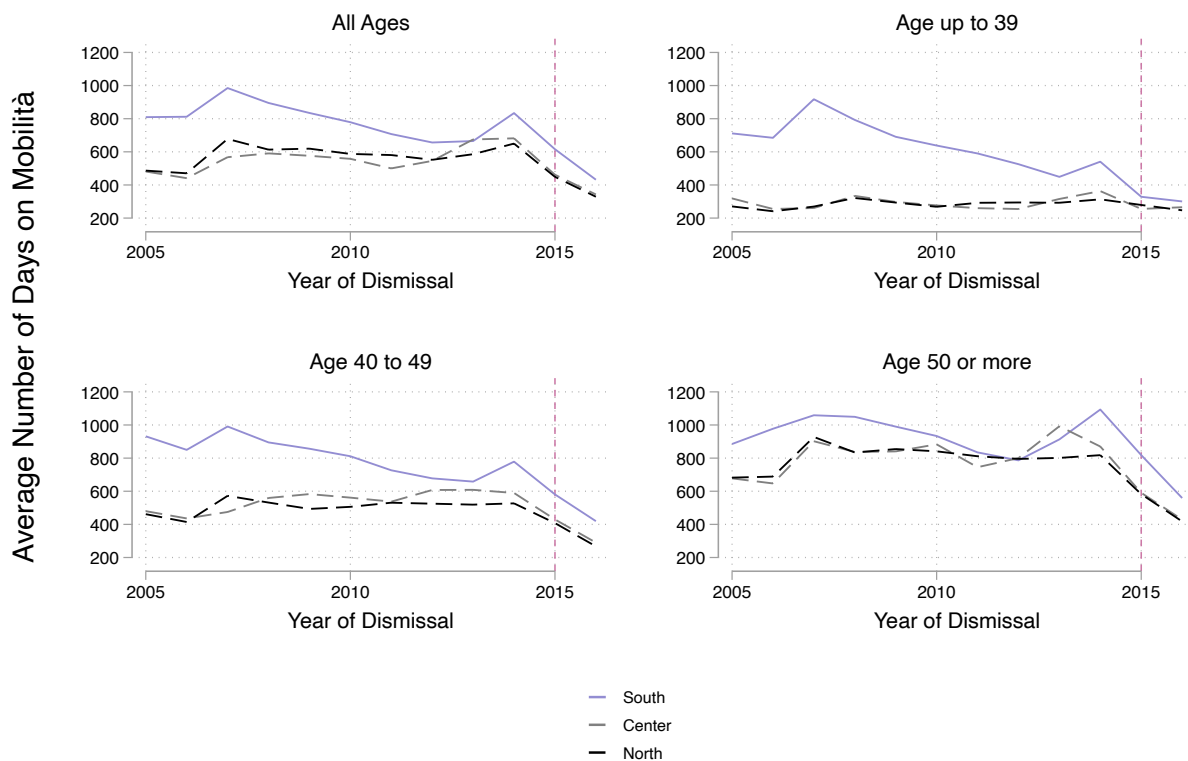

Table 2: Average Number of Days of Mobilità Benefit Recipiency by Year

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Mean	570	548	732	680	651	610	588	553	606	691	481	354
N	4,228	3,869	3,972	3,761	5,587	6,425	7,026	7,755	7,655	9,504	3,660	2,510

Table 3: Average Number of Days of the Mobilità Benefit Recipiency by Macro Region, Age Group, and Before and After the Reform

	Pre-2015			2015 to 2018		
	South	Center	North	South	Center	North
39 Years old or Less	631	292	286	314	260	268
40 to 49 Years Old	781	560	513	510	373	353
50 Years Old or More	946	841	814	709	528	516

6.1.2 Internal Migration

Figure 3 reproduces Figure 1 for the migration outcome. In this case, migration is equal to 1 for workers who were dismissed in one macro-region, entered the Mobilità program, and became re-employed at most 2 years later in a macro-region different from that of dismissal. First, we observe that the highest migration rates are among younger workers, and these rates decrease with age. Second, the highest migration rates are among workers dismissed in the Center, followed by those dismissed in the South. Workers dismissed in the North have the lowest out-migration rate. Third, in the post-reform period internal migration rates appear to bump up for most ages and all macro-regions, but especially for workers dismissed in the South, whose migration rates get closer to those of workers leaving the Center.

Figure 4 replicates Figure 2 for the migration outcome. Again, for the majority of the time period, the greatest out-migration rate (likely to the North) occurs from the Center, followed by the South. Consistently, workers dismissed in the North are the least likely to migrate within Italy. Moreover, migration rates are largest among younger workers, and those aged 40 to 49 have migration rates that are similar but marginally lower. Unsurprisingly, workers aged 50 or more have the lowest migration rates, and for this age group, geographical differences are much slimmer. The time trend suggests an increase in this outcome towards the end of the time series for all age groups. Similar evidence emerges from Table 4, where I report the averages for internal migration by age groups, macro-region of dismissal, and pre- and post-reform years.

In Figure 5 I report the means for the migration outcome by the direction of the move, within two years of termination. In particular, I summarize migration when considering: any move away from the macro-region of dismissal (including from North to Center or to South) in Columns (1), moving from Center to North and from South to Center-North in Columns (2), and then separately from the South to the Center-North in Columns (3), and from the Center to the North in Columns (4). For each age group, Columns (3) and (4) should sum up to Columns (2), and the difference between Columns (1) and (2) corresponds

to the average migration from the North to the Center or the South. Two main insights emerge from this table. First, the most substantial movement of workers is from the Center to the North, followed by the one from the South to the Center-North. Internal migration from the North to the Center or South is only about 20% of the total internal migration in Italy. Second, migration rates increase for all age groups in the years following the reform, with the largest increase regarding migration from the South to the Center-North.

In the regression analysis which I turn to next, I explore the variations in these outcomes using a causal inference technique.

Figure 3: Average Migration Rate Until 2014 (Pre-Reform) and in 2015 and 2016 (Post-Reform) by the Age of Workers on the Day of Termination and by Italian Macro-Region
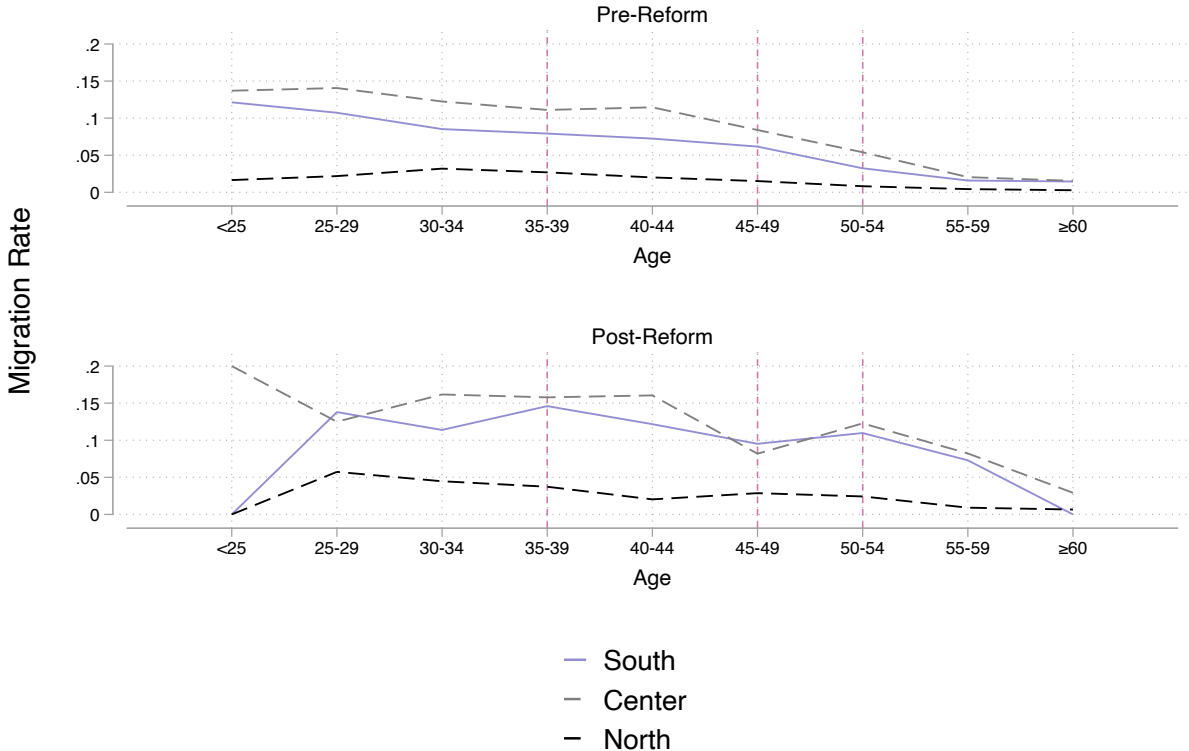
Figure 4: Average Migration Rate over Time by the Age Range of Workers on the Day of Termination and by Italian Macro-Region
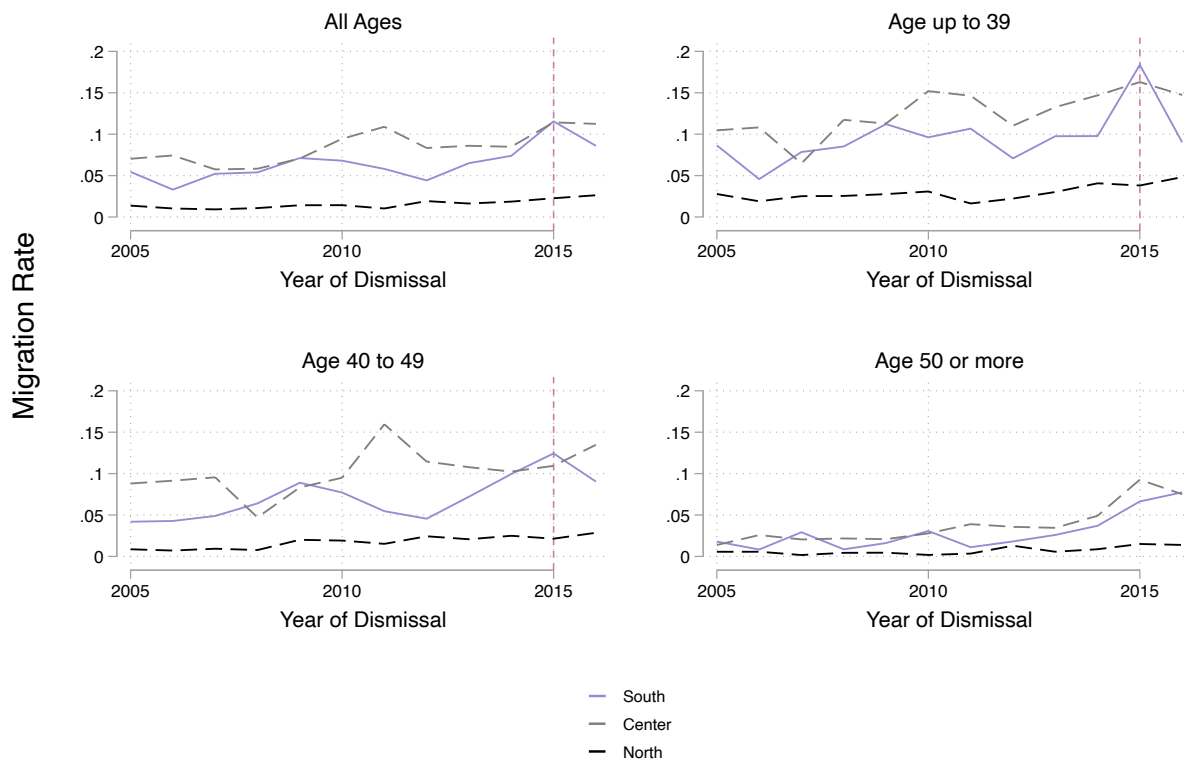
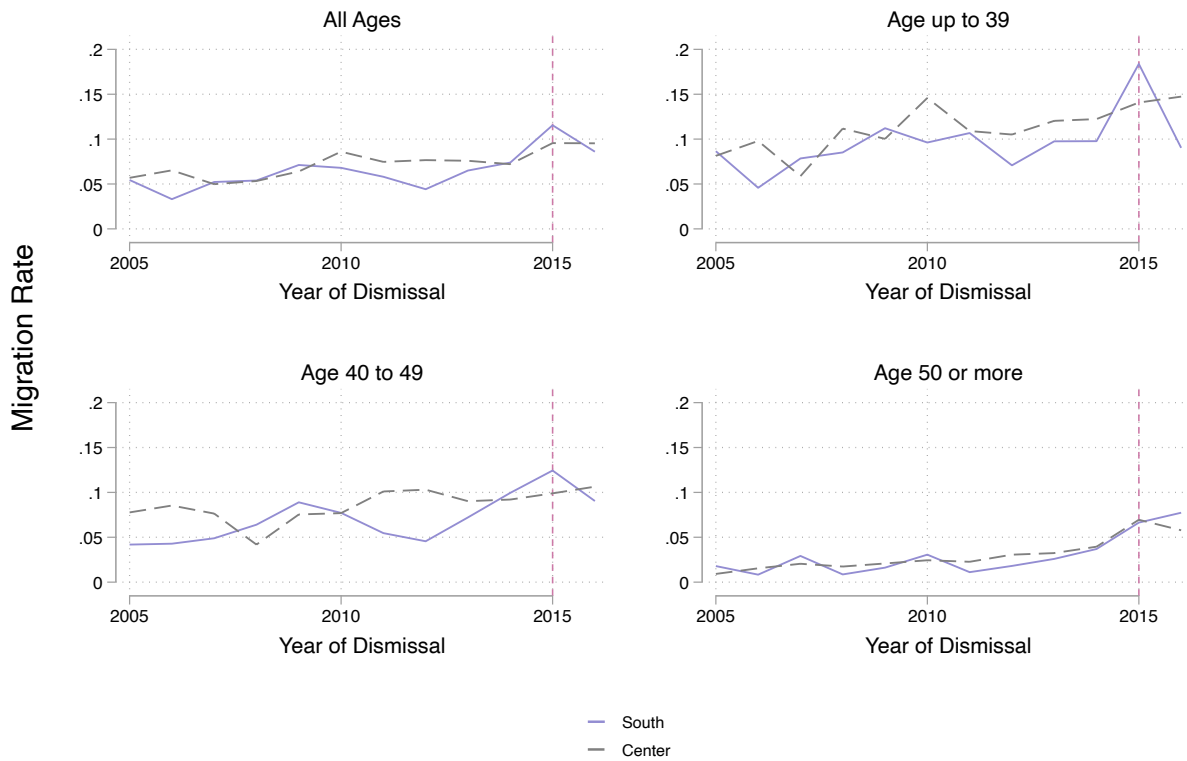Figure 5: Average Migration Rate from the South to the Center-North and from the Center to the North

Table 4: Average Migration Rates by Macro Region, Age Group, and Before and After the Reform

	Pre-2015			2015 to 2018		
	South	Center	North	South	Center	North
39 Years old or Less	0.089	0.123	0.027	0.134	0.157	0.042
40 to 49 Years Old	0.067	0.100	0.018	0.108	0.120	0.024
50 Years Old or More	0.022	0.033	0.006	0.071	0.086	0.016

Table 5: Averages for Alternative Migration Patterns, by Age Group and Before and After the Reform

	Pre-2015				2015 to 2018			
	(1) Overall (incl. N to C or S)	(2) C to N and S to C-N	(3) S to C-N	(4) C to N	(1) Overall (incl. N to C or S)	(2) C to N and S to C-N	(3) S to C-N	(4) C to N
39 Years Old or Less	0.065	0.052	0.021	0.031	0.106	0.088	0.042	0.046
40 to 49 Years Old	0.049	0.04	0.016	0.024	0.079	0.065	0.032	0.033
50 Years Old or More	0.017	0.013	0.006	0.007	0.053	0.042	0.021	0.02

6.2 Results from the Regression Analysis

6.2.1 Recipiency of Mobilità Benefits

Table 6 reports the results from the regression analysis on benefits recipiency. As expected, I estimate that decreasing the maximum Mobilità benefits by 12 months decreases the actual take-up of the program (measured as days of benefits recipiency). In Column 1, there are no control variables or fixed effects. In Column 2 I include the fixed effects for the year and macro-region of termination and a control variable for female workers, and in Column 3 I further add the fixed effects for the industry of the firm that terminated and the age of the worker. While progressively adding the fixed effects decreases the magnitude of the coefficients, the estimate remains negative and statistically significant.

From the most specified model, I estimate that the number of days on the Mobilità program for workers aged 40 to 49 terminated in the Center-North decreases by about 125 days more than for those younger than 40 terminated in the same region. Because the treated group (aged 40 to 49) experienced a drop in maximum program duration by 12 months, while the control group experienced no change in generosity, this implies that for each one-month decrease in maximum benefits, the actual take-up of the program decreases by a bit over 10 days, which is a third of the decrease in maximum eligibility). Moreover, I find that, on average, female workers receive about 53 more days of benefits relative to males. From the most specified model, I estimate that the number of days on the Mobilità program for workers aged 40 to 49 terminated in the Center-North by about 125 days more than for those younger than 40 terminated in the same region. Because the treated group (aged 40 to 49) experienced a drop in maximum program duration by 12 months, while the control group experienced no change in generosity, this implies that for each one-month decrease in maximum benefits, the actual take-up of the program decreases by a bit over 10 days, which corresponds to about a third of the decrease in maximum eligibility. Moreover, I find that, on average, female workers receive about 53 more days of benefits relative to males.

These results confirm that the reform, by decreasing the maximum number of days on the Mobilità program, decreased the actual days of the program's recipiency.

Table 6: Effects of a 12-Month Decrease in Maximum Unemployment Insurance Duration on the Effective Days of Benefits Recipiency

	(1) Days of Recipiency	(2) Days of Recipiency	(3) Days of Recipiency
ge 40-49 × Post	-146.827***	-138.867***	-125.066***
	(7.805)	(7.725)	(10.512)
Post	-19.209		
	(13.999)		
Age 40-49	236.874***	234.762***	
	(8.921)	(8.886)	
Female		53.680***	52.566***
		(12.952)	(11.924)
Constant	286.517***	263.844***	384.394***
	(7.601)	(10.704)	(5.257)
Observations	25730	25730	25729

Outcome Variable: Number of days of Mobilità recipiency originating from a termination.
Col 1: No FE, Col 2: control variable for female workers, and fixed effects for year and macro-region of termination, Col 3: control variable for female workers, fixed effects for year and macro-region of termination, the industry of the firm that terminated, and the age of worker on the year of termination.
Standard errors clustered by the age of workers at termination and the industry of the firm.
The treated group is composed of all workers aged 40 to 49 terminated in the Center-North (these workers experienced a drop of 12 months fin the maximum duration of unemployment insurance benefits). The control group is composed of all workers aged 18 to 39 dismissed in the Center-North (these workers experienced no change in the generosity of the program).

6.2.2 Migration

To explore how the reform changed the migration patterns, I consider a few variations of this outcome. Table 7 reports the results from the difference-in-differences model on overall migration and in Table 8 I consider migration from the South to the Center-North or from the Center to the North. I report estimates from linear probability models in the main regressions, but I also show the event studies estimation from logistic models in Section 6.3.

Table 7 reports the regression results for the linear model on overall migration. This outcome is a dummy variable equal to one if a worker, once being terminated and going into

the Mobilità program, regains employment in any macro-region other than that of dismissal at most 730 days after the dismissal. The outcome is zero if they do not become re-employed within two years from their dismissal or if they do in the same macro-region of dismissal. In all the models exploring migration, the treated group is composed of workers aged 18 to 64 terminated in the South. They experienced a decrease in the maximum benefits by at least 12 months. Control workers are those between 18 to 39 years old terminated in the Center-North because this subgroup experienced no change in benefits generosity.

Column (1) reports estimates when no fixed effects are included, in Column (2) I include a control variable for female workers, and fixed effects for the year and macro-region of termination, and in Column (3) I further add fixed effects for the age of the worker at dismissal and the sector of the firm that terminated. In all specifications, the coefficient on the interaction term $South \times Post$, which is the estimated causal effect of the reform on overall migration, ranges around 0.02. In the most specified model, this coefficient is statistically significant at the 90 percent level. Because the average migration outcome for the treated group in the pre-period was 0.059, the estimated coefficient from Column 3 implies that the reform decreasing the generosity of the unemployment insurance program by at least 12 months increased the migration of workers by about 36%.

To isolate the type of migration that the reform triggered, I consider changes in the movements of workers toward the North. In Table 8, I estimate the impact of the reform on migration toward northern regions. For workers dismissed in the South, this means becoming re-employed in the Center-North at most 730 days after dismissal. For workers dismissed in the Center, this means becoming re-employed in the North at most 730 days after dismissal. For workers dismissed in the North, the outcome variable is always zero. The treated group is again composed of workers aged 18 to 64 who were dismissed in the South. I progressively include a control variable for female workers and fixed effects as I did in Table 7. The estimated coefficients on $South \times Post$ represent the causal effect of the reform on the migration of workers dismissed in the South and moving to the Center-North compared to

the workers dismissed in the Center and moving to the North. The estimates across the three columns are positive, larger in magnitude, and statistically significant at the 95% level. In the most specified model, I estimate that the reform increases the probability of morning toward the North by 3.2 percentage points. Because the average northern migration outcome in the pre-reform period for the treated group is 0.059,[15], the fully specified model suggests that decreasing the maximum unemployment insurance benefits by at least 12 months increases migration towards northern areas by about 54%.

These results suggest that the reform increases the probability of workers migrating for a job. Because the magnitude of the coefficients increases when I focus on migration toward northern areas, the reform particularly increases the movements of workers and their re-employment in regions that are characterized by relatively more developed local economies.

The estimates imply that decreasing the maximum duration of unemployment insurance benefits increases the migration and re-employment, within two years from dismissal, of workers in economically more advanced areas. Likely, this is due to workers more intensively looking for a job earlier in the recipiency period after the reform, and being more willing to recolate to exit unemployment. These results support that the moral hazard mechanism behind unemployment insurance generosity dominates over the liquidity-constraint explanation.

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[15]For workers dismissed in the South (treated) the direction of migration can only be towards the Center-North, so there is no difference in the mean of overall migration and migration towards the North for this subgroup.

Table 7: Effects of a 12-Month *Minimum* Decrease in Maximum Unemployment Insurance Duration on Migration Rate: Linear Model

	(1)	(2)	(3)
	Migration	Migration	Migration
South × Post	0.023*	0.019	0.021*
	(0.012)	(0.012)	(0.012)
Post	0.018**		
	(0.006)		
South	0.007		
	(0.007)		
Female		-0.015	-0.020
		(0.012)	(0.012)
Constant	0.050***	0.061***	0.062***
	(0.005)	(0.003)	(0.004)
Fixed Effects	No	Year and	Year, Macro-Region,
		Macro-Region	Age, and Sector
Observations	22553	22553	22553

Outcome Variable: the probability for workers in the Mobilità program of becoming re-employed in a macro-region that is different from the one of dismissal within two years (i.e. 730 days) from the dismissal. For workers who were terminated in the South, this is the probability of becoming re-employed in the Center-North. For workers who were terminated in the Center, this is the probability of becoming re-employed in the North or South. For workers who were terminated in the North, this is the probability of becoming re-employed in the Center or South.

Col 1: No FE, Col 2: control for female workers and fixed effects for year and macro-region of termination, Col 3: control for female workers and fixed effects for year and macro-region of termination, the industry of the firm that terminated, and the age of the worker on the year of termination. Standard errors clustered by the age of workers at termination and the industry of the firm.

The treated group is composed of all workers dismissed in the South. These workers experienced a drop in the maximum duration of unemployment insurance benefits, by 12 months if younger than 40, by 18 months if between 40 and 49 years old, and by 24 months if older than 49 years old. The control group is composed of all workers aged 18 to 39 dismissed in the Center-North (these workers experienced no change in the generosity of the program.) The coefficients are estimated using a linear probability model.

Table 8: Effects of a 12-Month *Minimum* Decrease in Maximum Unemployment Insurance Duration on Migrating towards the North: Linear Model

	(1) Migration to North	(2) Migration to North	(3) Migration to North
South × Post	0.035**	0.031**	0.032**
	(0.014)	(0.013)	(0.013)
Post	0.005***		
	(0.002)		
South	0.031***		
	(0.004)		
Female		-0.010	-0.014
		(0.009)	(0.009)
Constant	0.026***	0.046***	0.047***
	(0.001)	(0.004)	(0.003)
Fixed Effects	No	Year and Macro-Region	Year, Macro-Region, Age, and Sector
Observations	22553	22553	22553

Outcome Variable: the probability for workers in the Mobilità program of becoming re-employed in a macro-region that is more northern than the one of dismissal within two years (i.e. 730 days) from the dismissal. For workers who were terminated in the South, this is the probability of becoming re-employed in the Center or in the North. For workers who were terminated in the Center, this is the probability of becoming re-employed in the North.

Col 1: No FE, Col 2: control for female workers and fixed effects for year and macro-region of termination, Col 3: control for female workers and fixed effects for year and macro-region of termination, the industry of the firm that terminated, and the age of the worker on the year of termination. Standard errors clustered by the age of workers at termination and the industry of the firm.

The treated group is composed of all workers dismissed in the South. These workers experienced a drop in the maximum duration of unemployment insurance benefits, by 12 months if younger than 40, by 18 months if between 40 and 49 years old, and by 24 months if older than 49 years old. The control group is composed of all workers aged 18 to 39 dismissed in the Center-North (these workers experienced no change in the generosity of the program.) The coefficients are estimated using a linear probability model.

6.3 Event Studies: Method and Results

Event studies help assess the plausibility of the assumptions required for the causal interpretation of the estimates from the difference-in-differences models. The event study regressions include indicator functions that trace out changes in the outcome variables in the years leading to and following the implementation of the reform. The regressions estimate the presence of differential effects between the treated group, which experiences at least 12 months of change in maximum recipiency (i.e. 12, 18, or 24 months), and the control group, which experiences no change in maximum recipiency, before the 2015 reform and after. The presence of differential effects before the reform would caution against the causal interpretation of the estimates, and the effects post-reform measure the impact of the policy change and its variation over time.

From the most specified model, I estimate that the number of days on the Mobilità program for workers aged 40 to 49 terminated in the Center-North by about 125 days more than for those younger than 40 terminated in the same region. Because the treated group (aged 40 to 49) experienced a drop in maximum program duration by 12 months, while the control group experienced no change in generosity, this implies that for each one-month decrease in maximum benefits, the actual take-up of the program decreases by a bit over 10 days, which is a third of the decrease in maximum eligibility). Moreover, I find that, on average, female workers receive about 53 more days of benefits relative to males. In my data, I consider 2005 to be the earliest year. From 2005 to 2014 we expect no differential or anticipation effects between the two treatment groups. The adoption year is 2015 and 2014 is the reference year, which I omit from the regression so that all other coefficients should be interpreted with respect to that baseline. I generate a variable, $YSA_t = t - 2014$, which measures the number of years between year t and 2014, the reform's implementation year.[16] Treated workers are those in the Mobilità program who got dismissed in the South. All these

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[16]For example $YSA_t = 1$ is year $t = 2015$ and $YSA_t = -2$ is year $t = 2012$. $P(k)_t$ is an indicator variable equal to 1 when $YSA_t = k$, that is $P(k)_t = 1(YSA_t = k)$.

workers have experienced at least a 12-month decrease in the maximum number of Mobilità months as a result of the reform.

The event study model regresses the outcomes, Mobilità recipiency and migration, on dummy variables for each level of $P(k)_t$ interacted with $treated_{g,2014}$, and includes a control for female workers, the fixed effects for year and macro-region of dismissal (South, Center, and North), age at dismissal, and the industry of the firm that dismissed them:

$$Outcome_{ift} = \beta + \sum_{k=-9}^{-1}[\alpha_k P(k)_t treat_{it}] + \sum_{k=1}^{2}[\alpha_k P(k)_t treat_{it}]$$
$$+Female_i + Age_{it} + Year_t + Industry_f + MacroRegionDismissal_{it} + \epsilon_{ift}$$

(3)

Because 2014 is the reference year ($k = 0$), I omit its interaction with $treated_{it}$ (i.e. $P(0)_t Treat_{it}$) from the model. This implies that all the α coefficients in front of the interaction terms should be interpreted as the differential effects of the policy in year k relative to 2014. In the model, $k = 1$ refers to 2015 and $k = 2$ refers to 2016, the last year of the Mobilità program. In 2017 and 2018, the recipiency of the benefits was still active for terminations that occurred until 2016, the last year of the program. In the event studies, changes in the outcomes during these last two years refer to dismissal that occurred before the end of 2016.

I clustered standard errors at the age and industry level.

In the model, α_k, with $-9 < k < -1$, estimate the response of the outcome variables to the future implementation of the reform. They suggest whether there are anticipation effects of the upcoming reform that vary across treated and control workers. I expect all these coefficients to not be statistically different from zero because, under the strict exogeneity assumption, future events should not impact present outcomes.

In contrast, α_1 and α_2 are the post-reform coefficients. In particular, α_1 measures the effect of changes one year post-reform, and α_2 estimates the effect of the reform two years

from its implementation, relative to 2014. The variation between these two coefficients provides information on the potential time-varying effects of the reform. If the impact of the reform is drastic and temporary, then α_1 is positive and statistically significant, but α_2 goes back to zero. If the effects arise progressively and increasingly over time, then α_2 may have a larger magnitude than α_1.

In the graphs below, I plot the estimates of the event studies obtained by running Equation 3 for the two outcomes: days of Mobilità recipiency and migration. When estimating the leads and lags for both outcomes I run a linear regression, but for migration I also use a logit model as an alternative specification. Overall, no pre-trends during the pre-reform period emerge from any of the graphs below, alleviating concerns about anticipation effects.

The event study for the days of Mobilità recipiency is in Figure 6, where I compare the take-up of the program, measured by the number of days, for workers younger than 40 dismissed in the Center-North (these experienced no change in generosity after the reform) with those aged 40 to 49 dismissed in the Center-North (whose maximum benefits decreased by 12 months).[17]

Despite a few years when the confidence intervals do not overlap with zero, the event study for Mobilità recipiency displays a large, sharp, and statistically significant drop in recipiency days post-reform. This provides convincing evidence that the reform, by decreasing the number of maximum months workers are allowed to be on the program, actually decreased its take-up.

Figures 7 and 8 present the event study graph for the main outcome of interest in this paper, migration, using a linear and a logit model, respectively. In these graphs, the outcome variable is equal to 1 for workers who lost their jobs in a macro-region and became re-employed at most 730 days later in a different macro-region.[18] The treated group is composed

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[17]For this outcome, I consider a different treated group than for migration because when using Southern workers as treated the event study for recipiency exhibits strong pre-trends (with large negative coefficients in the post-period). Notably, comparing different age groups from the Center-North does not allow me to explore the migration question.

[18]The outcome is zero if the worker does not regain employment at most 730 days later or they do in the same macro-region of termination.

of workers of all ages who were dismissed in the South because they experienced a drop in generosity. The control group is composed of workers younger than 40 and terminated in the Center-North because this age-geography group experienced no change in maximum benefits.

Figures 7 and 8 show the absence of concerning differential pre-trend and anticipation effects between the treated and control groups in the period preceding the reform. Moreover, they exhibit a positive effect of the reform on migration in 2015, which became null in 2016, suggesting a short-lived impact of policy change. Because all the coefficients estimated for the years preceding the reforms revolve around zero, and because their confidence intervals overlap zero, I can conclude that the 2015 increase in migration rate among the treated group represents the causal effect of the reform. Moreover, the event studies estimated using a linear regression (Figure 7) and a logit regression (Figure 8) yield very similar patterns, further strengthening the above conclusions and reassuring on the validity of the linear probability model in this context.

6.3.1   Event Studies for Robustness and Placebo Checks

Figure 9 replicates the results on migration considering the alternative definition I used in Table 8. Isolating movements of workers from the South to the Center-North and from the Center to the North. In this alternative definition, I code movements of workers from the North towards the Center or South and those from the Center towards the South as zero.[19] The estimates from the linear model are on the left panel, and those from the logit model are on the right panel.

Comparing movements towards northern regions of workers dismissed in the South with those dismissed in the Center, the conclusions are largely similar to those from Figures 7 and 8. The lack of differential pre-trends confirms the plausibility of causal identification, the increase in migration in 2015 suggests a positive effect on migration, which then returns to zero in the following year. However, the confidence intervals from the logit model are larger,

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[19]As a consequence, workers who were dismissed in the North are always coded as non-migrants.

and the positive estimate for 2015 is statistically insignificant.

Figures 10 and 11 show the event studies (estimated using a linear model on the left, and a logit model on the right) of two placebo checks for two slightly different definitions of migration. I estimate the over-time differences in migration patterns between two groups that did *not* experience any change in unemployment insurance generosity: workers aged 18 to 39 terminated in the Center and those in the North. Because these workers keep being able to receive at most 12 months of Mobilità benefits throughout the study period, including the post-reform years, any differential change in migration trends between these two groups cannot be explained by changes in generosity and would cast doubts on the causal nature of my main estimates.

In Figure 10, I compare changes over time in the relocation of workers from the Center to the North. Since, as expected, Figure 10 displays no jump in migration rates from the Center to the North in 2015, this placebo test is reassuring for the causal interpretation of the estimated effects on migration. In Figure 11, I consider a different definition of migration. I compare changes in overall migration between workers in the Center and the North, that is, movements from the Center to the South or North and from the North to the Center or South. Because, as expected, there was no differential change post-reform between the relocation of workers out of the South and that of workers out of the North, also this check reassures the reliability of the main results.
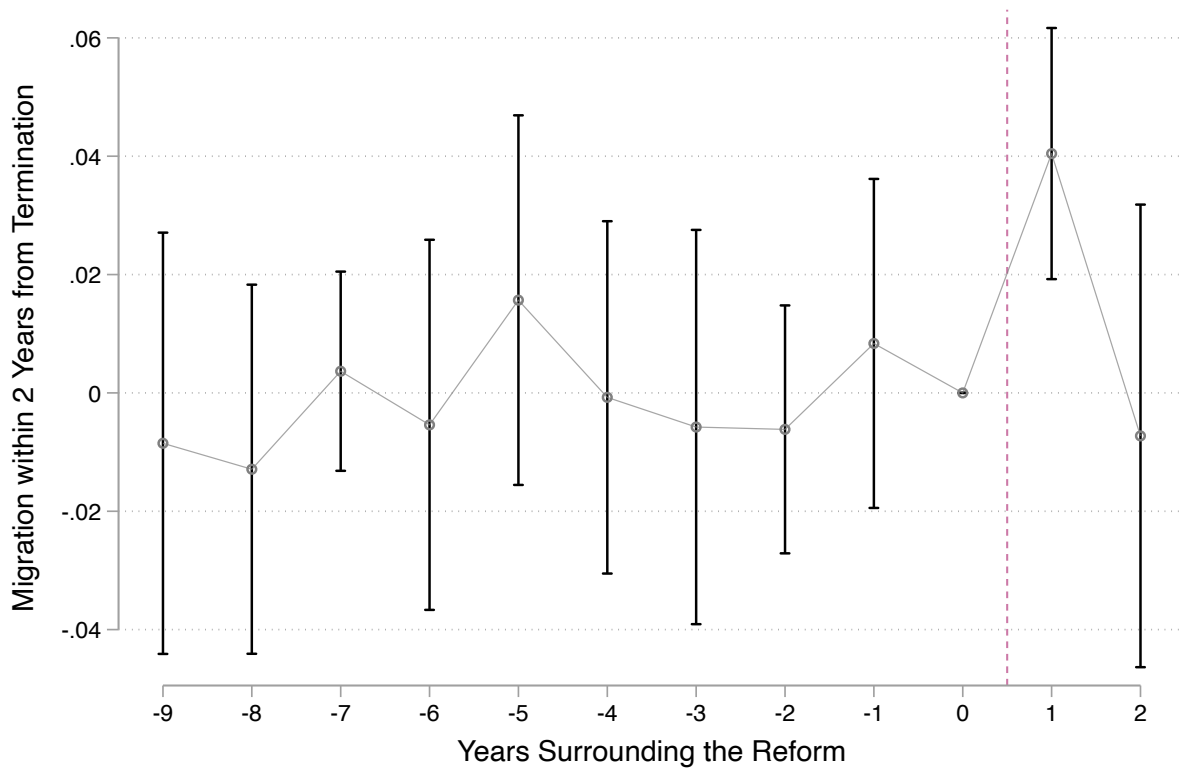
Figure 6: Event Study for the Effects of a 12-Month Decrease in Maximum Unemployment Insurance Duration on the Number of Days Spent Receiving the Mobilità benefits
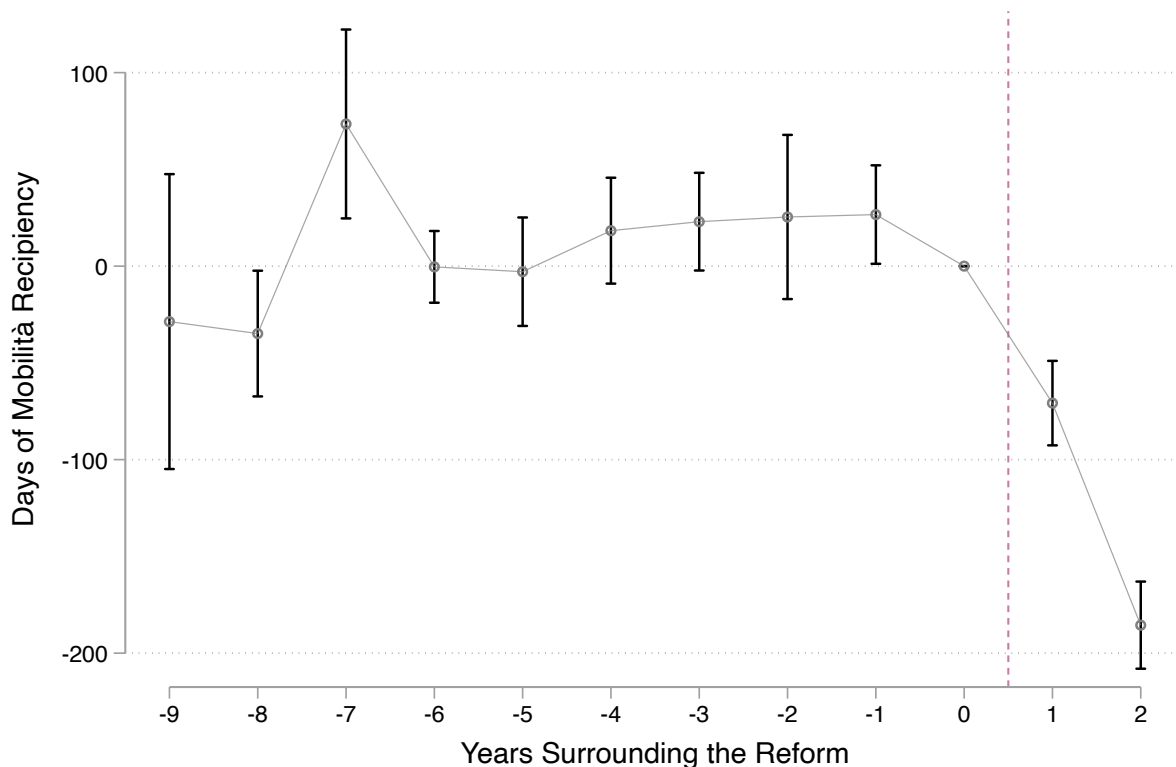
Outcome Variable: Number of days of Mobilità recipiency originating from a termination. I control for whether the worker is female, and I add fixed effects for year and macro region of termination, the industry of the firm that terminated, and the age of the worker on the year of termination. Standard errors clustered by the age of workers at termination and the industry of the firm. Confidence intervals are at the 95 percent confidence level. The reference year is 2014.

The treated group is composed of workers aged 40 to 49 years old dismissed in the Center-North. These workers experienced a drop in the maximum duration of unemployment insurance benefits by 12 months. The control group comprises all workers aged 18 to 39 dismissed in the Center-North who experienced no change in the program's generosity. The coefficients are estimated using a linear model.

Figure 7: Event Study for the Effects of a 12-Month *Minimum* Decrease in Maximum Unemployment Insurance Duration on Migration Rate - Linear Model
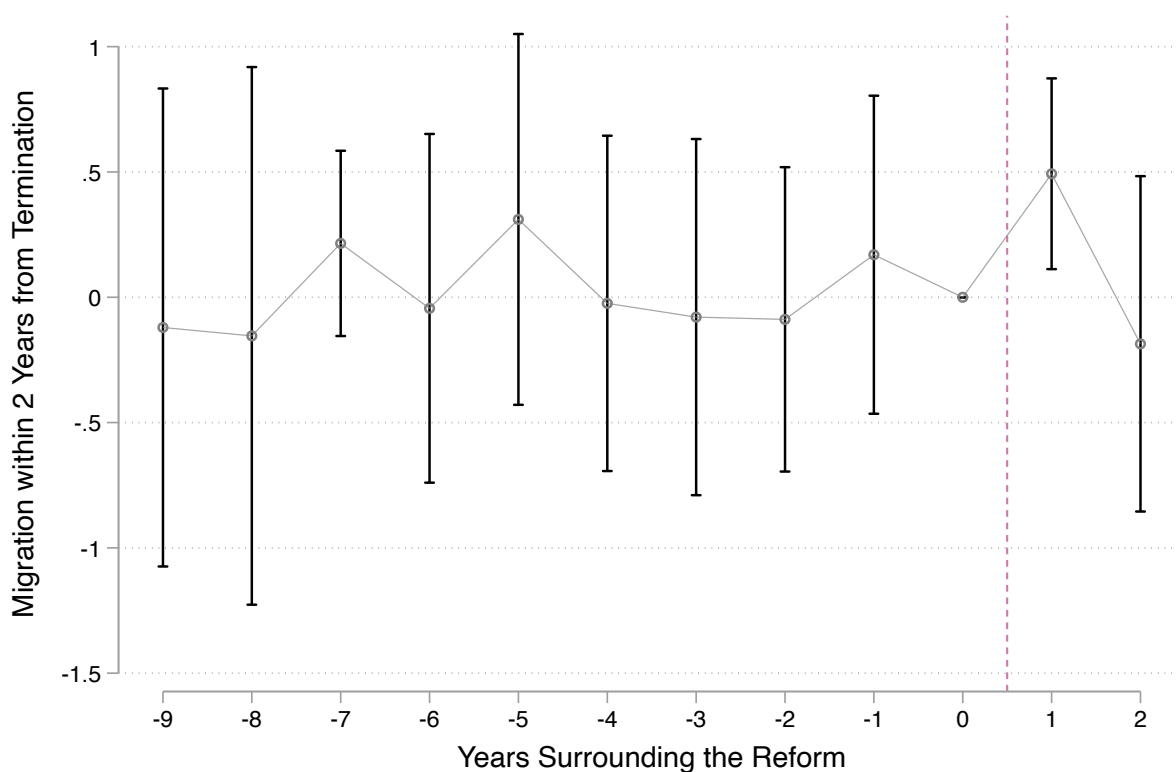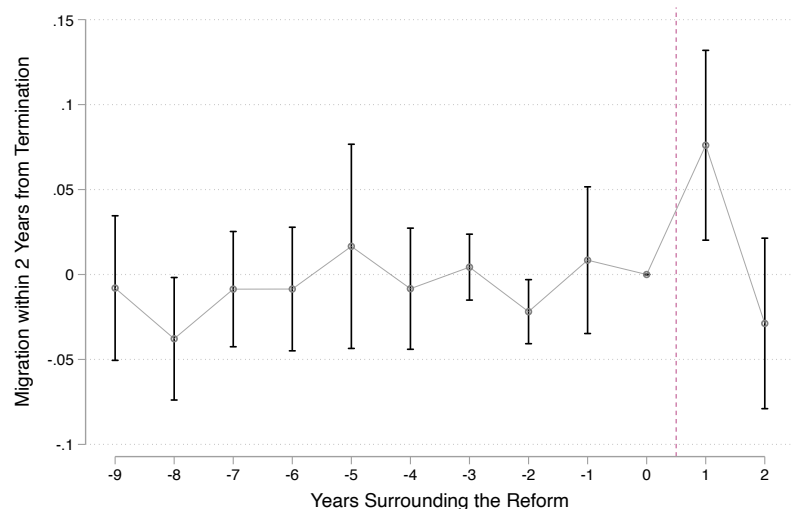

Outcome Variable: probability of workers terminated in one macro-region to become re-employed in a *different* macro-region within two years from termination.

I control for whether the worker is female, and I add fixed effects for year and macro region of termination, the industry of the firm that terminated, and the age of the worker on the year of termination. Standard errors clustered by the age of workers at termination and the industry of the firm. Confidence intervals are at the 95 percent confidence level. The reference year is 2014.

The treated group is composed of all workers dismissed in the South. These workers experienced a drop in the maximum duration of unemployment insurance benefits, by 12 months if younger than 40, by 18 months if between 40 and 49 years old, and by 24 months if older than 49 years old. The control group includes all workers aged 18 to 39 dismissed in the Center-North (these workers experienced no change in the program's generosity.) The coefficients are estimated using a linear model.

Figure 8: Event Study for the Effects of a 12-Month *Minimum* Decrease in Maximum Unemployment Insurance Duration on Migration Rate - Logit Model

Outcome Variable: probability of workers terminated in one macro-region to become re-employed in a $different$ macro-region within two years from termination.

I control for whether the worker is female, and I add fixed effects for year and macro region of termination, the industry of the firm that terminated, and the age of the worker on the year of termination. Standard errors clustered by the age of workers at termination and the industry of the firm. Confidence intervals are at the 95 percent confidence level. The reference year is 2014.

The treated group is composed of all workers dismissed in the South. These workers experienced a drop in the maximum duration of unemployment insurance benefits, by 12 months if younger than 40, by 18 months if between 40 and 49 years old, and by 24 months if older than 49 years old. The control group includes all workers aged 18 to 39 dismissed in the Center-North (these workers experienced no change in the program's generosity.) The coefficients are estimated using a logit model.

Figure 9: Robustness Check - Event Study for an Alternative Definition of Migration: Moving North

Linear Model

Logit Model
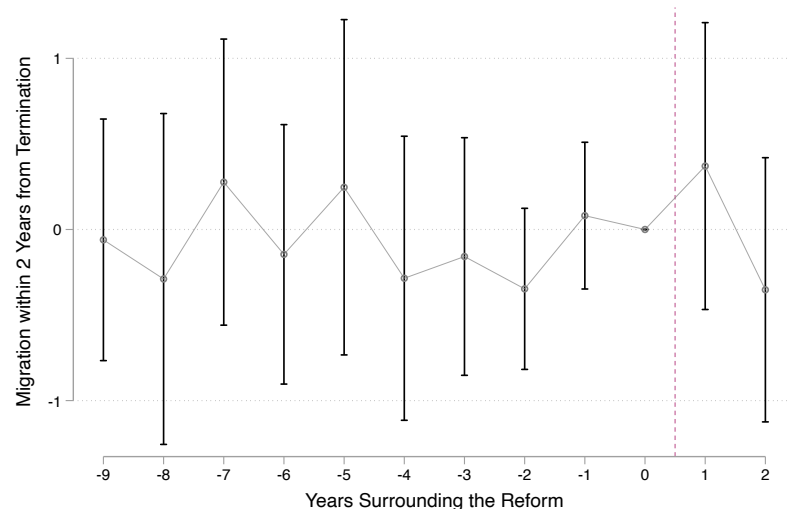
Outcome Variable: probability of becoming re-employed in a macro-region that is more northern than the one of termination within two years from termination. For workers who were terminated in the South, this is the probability of becoming re-employed in the Center or in the North. For workers who were terminated in the Center, this is the probability of becoming re-employed in the North.
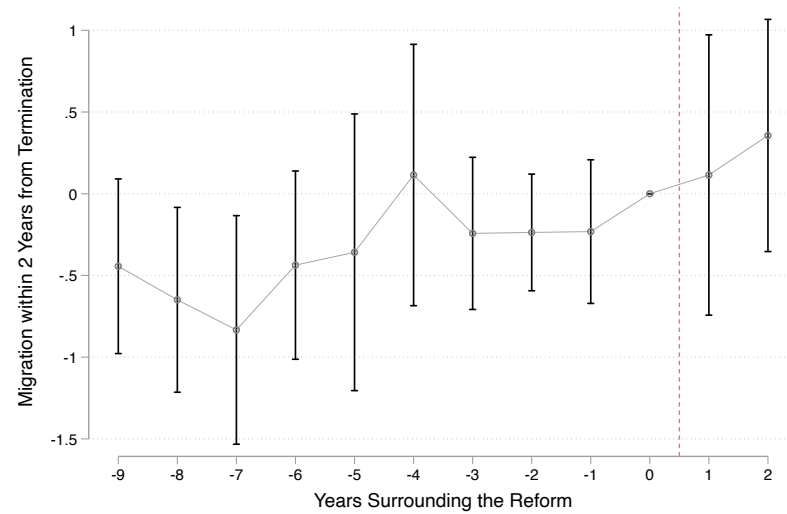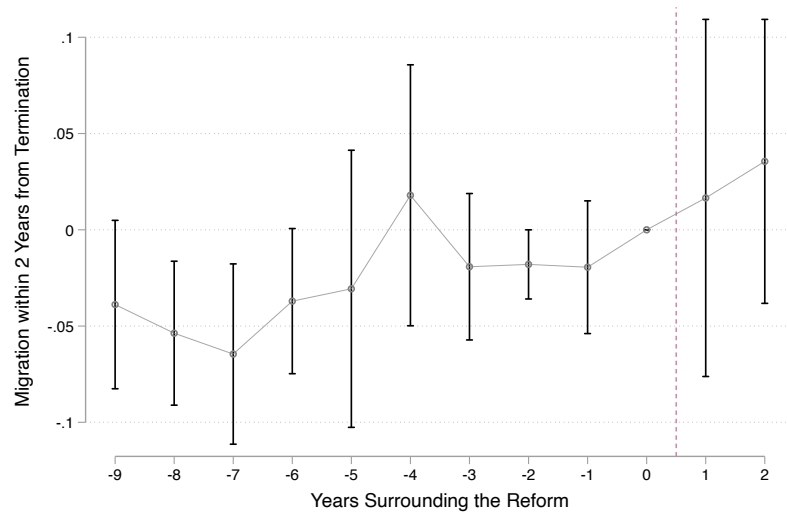
I control for whether the worker is female, and I add fixed effects for year and macro region of termination, the industry of the firm that terminated, and the age of the worker on the year of termination. Standard errors clustered by the age of workers at termination and the industry of the firm. Confidence intervals are at the 95 percent confidence level. The reference year is 2014.

The treated group is composed of all workers dismissed in the South. These workers experienced a drop in the maximum duration of unemployment insurance benefits, by 12 months if younger than 40, by 18 months if between 40 and 49 years old, and by 24 months if older than 49 years old. The control group includes workers aged 18 to 39 dismissed in the North, who did not experience any change in the program's generosity. The left panel reports the event study coefficients estimated using a linear model, the right panel reports the same coefficients estimated using a logit model.

Figure 10: Placebo Check - Event Study for the Changes in Migration Patterns from the Center to the North

Linear Model

Logit Model

Outcome Variable: probability of workers terminated in the Center to become re-employed in the North within two years from termination.
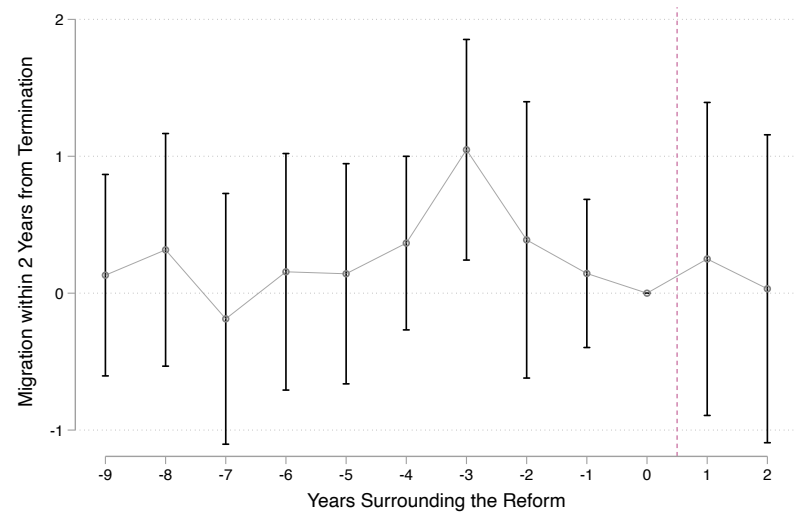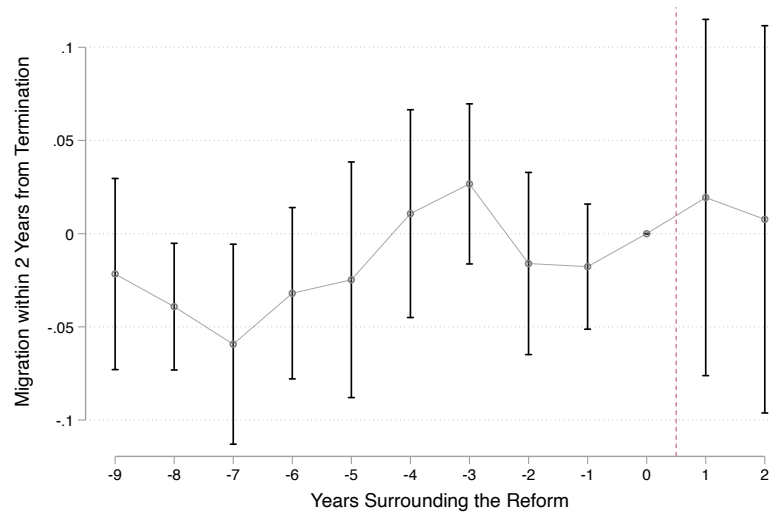
I control for whether the worker is female, and I add fixed effects for year and macro region of termination, the industry of the firm that terminated, and the age of the worker on the year of termination. Standard errors clustered by the age of workers at termination and the industry of the firm. Confidence intervals are at the 95 percent confidence level. The reference year is 2014.

The treated group is composed of workers aged 18 to 39 years old dismissed in the Center. These workers experienced no drop in the program's generosity. The control group includes workers aged 18 to 39 dismissed in the North, who also did not experience any change in the program's generosity. The left panel reports the event study coefficients estimated using a linear model, the right panel reports the same coefficients estimated using a logit model.

Figure 11: Placebo Check - Event Study for the Changes in Overall Migration Patterns Comparing the Center to the North

Linear Model

Logit Model

Outcome Variable: probability of workers terminated in the Center to become re-employed in the North or in the South, or of those terminated in the North to become re-employed in the Center or South within two years from termination.

I control for whether the worker is female, and I add fixed effects for year and macro region of termination, the industry of the firm that terminated, and the age of the worker on the year of termination. Standard errors clustered by the age of workers at termination and the industry of the firm. Confidence intervals are at the 95 percent confidence level. The reference year is 2014.

The treated group is composed of workers aged 18 to 39 years old dismissed in the Center. These workers experienced no drop in the program's generosity. The control group includes workers aged 18 to 39 dismissed in the North, who also did not experience any change in the program's generosity. The left panel reports the event study coefficients estimated using a linear model, the right panel reports the same coefficients estimated using a logit model.

7 Discussion and Conclusion

One common goal of public programs is to help individuals establish stable employment trajectories and sustained income flows. In this paper, I consider the role that unemployment insurance systems with heterogeneous levels of generosity based on economic differences in local labor markets play in reaching this goal.

In Italy, the Mobilità program was a special type of unemployment insurance dedicated to workers who were part of mass layoffs. These layoffs often arose from macroeconomic reasons or large restructuring of the firm. The program was implemented in 1991, and a 2012 reform aimed at phasing it out by 2017 and merging it with the traditional unemployment insurance system that was simultaneously in place. The Mobilità program was peculiar in its design because it allowed for different maximum recipiency periods depending on the age and the macro-region of dismissal of the worker. These different generosity groups were defined based on their level of vulnerability in the labor market, with more eligibility months being assigned to age and geography groups that traditionally struggled more to become re-employed. As a consequence, the Mobilità program was more generous for dismissals occurring in the South and involving older workers.

As part of the Mobilità's phase-out, the reform differentially decreased the total number of maximum months of Mobilità benefits for all age-geography groups but one, workers younger than 40 and dismissed in the Center-North. Moreover, the reform eliminated all geographic differences in generosity and lowered the variability by age.

I use this quasi-experimental policy variation to study the causal effects of reducing the maximum generosity of unemployment insurance on migration across local areas characterized by different levels of economic development. First, I establish that the reform, by decreasing the maximum duration of benefits eligibility, shortened the actual take-up among the affected subgroups. Once I establish the existence of this first-stage effect, I explore the causal impact of the reform on the internal migration of workers. Because the time-varying location of individuals is otherwise absent in the data, I infer it from the modal region of

47

residence of the workers employed at a firm. As a consequence, I can only study migration patterns for workers who become re-employed. Given that the data ends in 2018, I focus on re-employment at most 730 days after dismissal to make post-reform migration trends comparable to pre-migration trends. In other words, I explore the effect of the reforms on the workers' probability of becoming re-employed in a different macro-region from that of their dismissal.

There are two potential contrasting mechanisms in place behind how unemployment insurance generosity can affect the migration incentives of unemployed workers who consider moving to local areas characterized by varying probabilities of re-employment. On the one hand, a moral hazard behavior may dominate, where a higher maximum duration of unemployment insurance benefits for some age-geography subgroups incentivizes them to stay longer in underdeveloped areas where local labor markets are weaker. This may occur if they delay looking for a job, which they are more likely to find if they relocate to stronger local labor markets, for as long as the benefits last. Alternatively, they may want to remain in the underdeveloped areas if they hope to take advantage of the more generous benefits should they be dismissed again in the future. If so, the historical heterogeneous generosity of the Mobilità program perpetuated the negative labor market outcomes of these workers, who did not promptly relocate to local areas characterized by more and better quality jobs. In this scenario, the reform would increase the migration of workers from relatively weaker labor markets to stronger ones. In the Italian setting, this means a movement of workers from Southern regions towards Central and Northern regions.

By contrast, more generous benefits may help alleviate the liquidity constraints unemployed workers experience when they are considering a potential relocation to stronger local labor markets. Moving is costly, and unemployed individuals who are more likely to struggle financially may rely on the longer period of unemployment insurance payments to face the economic risk of moving. According to the liquidity-constrained channel, the reform decreases individuals' ability to relocate, lowering their migration rates towards more advan-

taged areas. As a result, we would observe a decrease in migration toward the Center-North following the curtailing of unemployment insurance duration.

I use an administrative panel dataset on a large random sample of workers containing information on their employment histories, specifically on their employers, employment relationships, and participation in the Mobilità program. I use difference-in-differences analysis where the treated group is composed of workers terminated in the South because these groups experienced a drop of at least 12 months of maximum benefits, and at most 24 months, depending on their age. The control group is composed of workers up to 39 years old dismissed in the Center-North because they experienced no change in maximum benefits.

I find that the reform, as expected, decreases the number of days the treatment group receives the Mobilità benefits. On average, the most specified model implies that decreasing the maximum duration of benefits by 12 months lowers the number of recipiency days by 125. These estimates imply that lowering the maximum duration of Mobilità by one month decreases the number of days on Mobilità by over 10 days on average.

The main result of this paper, however, is that decreasing the maximum unemployment insurance benefits increases migration rates. Because I show that the estimates are stronger in magnitude and more statistically significant when I only consider movements toward northern latitude regions, I conclude that the results are driven by workers dismissed in the South and increasingly moving towards the Center-North. The estimates from the most specified linear probability model suggest that decreasing the maximum number of Mobilità months by at least 12 months increases the probability of migrating and becoming re-employed in a different macro-region by about 36%. The estimates jump to increases by over 50% when I compare the migration rates of workers dismissed in the South moving to the Center-North to those dismissed in the Center moving to the North (and those staying in the North). Notably, these estimates only refer to workers in the Mobilità program, as that is the sample I use. The logit estimation yields similar conclusions, though at times it produces wider confidence intervals.

My evidence suggests that reducing the maximum duration of unemployment benefits leads to lower days of recipiency and increases workers' probability of migrating and becoming re-employed in local economies that are more developed relative to those where they were dismissed.

The estimates indicate that cutting the duration of the unemployment insurance benefits leads to greater migration probabilities, suggesting that the moral hazard explanation may dominate over the liquidity constraint one. It is plausible that, under more maximum months of benefits, workers were staying longer in underdeveloped areas because they were delaying looking more intensively for a job, which they were likely to find in stronger local labor markets. It is also possible that they were staying where the generosity of the benefits was higher so that they could benefit from it in case they got dismissed again in the future. Regardless, it does not appear that unemployed workers were using those resources to relocate to stronger local economies and have better chances in the labor market.

While unemployment insurance programs have the potential to financially support unemployed individuals, designing unemployment insurance generosity so that they are more generous in weaker local labor markets seems to favor the moral hazard component of these programs. Geographically homogeneous benefits are likely to facilitate the reallocation of the labor force across regions in a way that is efficient and puts them in better positions to achieve long-term economic stability.

References

Baker, M. and Rea, S. A. (1998). Employment Spells and Unemployment Insurance Eligibility Requirements. *Review of Economics and Statistics*, 80(1):80–94.

Card, D., Chetty, R., and Weber, A. (2007). Cash-on-Hand and Competing Models of Intertemporal Behavior: New Evidence From the Labor Market. *Quarterly Journal of Economics*, 122(4):1511–1560.

Chetty, R. (2008). Moral Hazard versus Liquidity and Optimal Unemployment Insurance. *Journal of Political Economy*, 116(2):173–234.

Day, K. M. and Winer, S. L. (2011). What Do We Know About the Relationship Between Regionalized Aspects of the Unemployment Insurance System and Internal Migration in Canada? *SSRN Electronic Journal*.

De Giorgi, G. and Pellizzari, M. (2006). Welfare Migration in Europe and the Cost of a Harmonised Social Assistance. *SSRN Electronic Journal*.

DellaVigna, S., Lindner, A., Reizer, B., and Schmieder, J. F. (2017). Reference-Dependent Job Search: Evidence from Hungary*. *The Quarterly Journal of Economics*, 132(4):1969–2018.

Enchautegui, M. E. (1997). Welfare Payments and Other Economic Determinants of Female Migration. *Journal of Labor Economics*, 15(3):529–554.

Fields, G. S. (1979). Place-To-Place Migration: Some New Evidence. *The Review of Economics and Statistics*, 61(1):21.

Ganong, P. and Noel, P. (2019). Consumer Spending during Unemployment: Positive and Normative Implications. *American Economic Review*, 109(7):2383–2424.

Goss, E. and Paul, C. (1990). The Impact of Unempoyment Insurance Benefits on the Probability of Migration of the Unemployed*. *Journal of Regional Science*, 30(3):349–358.

Gruber, J. (1997). The Consumption Smoothing Benefits of Unemployment Insurance. *The American Economic Review*, 87(1):192–205.

Krueger, A. B. and Mueller, A. (2010). Job search and unemployment insurance: New evidence from time use data. *Journal of Public Economics*, 94(3-4):298–307.

Marinescu, I. and Skandalis, D. (2021). Unemployment Insurance and Job Search Behavior. *The Quarterly Journal of Economics*, 136(2):887–931.

McKinnish, T. (2005). Importing the Poor: Welfare Magnetism and Cross-Border Welfare Migration. *Journal of Human Resources*, XL(1):57–76.

McKinnish, T. (2007). Welfare-induced migration at state borders: New evidence from micro-data. *Journal of Public Economics*, 91(3-4):437–450.

Meyer, B. D. (1990). Unemployment Insurance and Unemployment Spells. *Econometrica*, 58(4):757–782.

Nekoei, A. and Weber, A. (2017). Does Extending Unemployment Benefits Improve Job Quality? *American Economic Review*, 107(2):527–561.

Nunn, R., Kawano, L., and Klemens, B. (2018). Unemployment Insurance and Worker Mobility. *Tax Policy Center*.

Tatsiramos, K. (2009). Geographic labour mobility and unemployment insurance in Europe. *Journal of Population Economics*, 22(2):267–283.

8 Appendix

8.1 Mobilità Spells

As mentioned in the paper, the Mobilità program is a special type of program that exists for workers who have been dismissed from their employers due to large restructuring of firms or economic reasons, especially macroeconomic trends. This program provides a form of unemployment insurance and benefits to unemployed workers that include the need of their former employers to prioritize workers in the Mobilità lists in case they are in need of labor. Because of this structure, workers are likely to experience multiple spells of the Mobilità benefits for the same dismissal event, as they are temporarily called back to the firm, and then re-sent home to receive the benefits again. It is possible that the elimination of the program for all terminations occured starting in 2017 led to a fewer recipiency days because it decreased the number of Mobilità spells each worker dismissed towards the end of the program experiences. While technically workers who were dismissed up to the end of December 2016 had access to benefits in the same way as workers who were dismissed prior to that, the elimination of the program might have interfered with such access.

To check for this possibility, I plot the average number of spells for each worker and the date of dismissal over the years in Figure 12. While lower generosity may lead to fewer Mobilità spells, we would expect workers who are terminated while the program is still ongoing to have similar access to the Mobilità spells even as the reform decreased the maximum number of months they can be on the program. The Figure does not show a particularly lower average number of spells in the most recent years. The number of Mobilità spells for each worker's dismissal is, on average, higher in the last few years or very similar, to preceding years. Figure 12 supports that the drop in effective days of recipiency observed in the post-reform and shown in Table 6 is indeed an effect of the policy change and not due to some other issues related to the progressive elimination of the program.

Figure 12: Number of Mobilità Spells for each Dismissal and Worker over time