Northwestern | INSTITUTE FOR POLICY RESEARCH

RESEARCH EXCELLENCE • POLICY IMPACT

IPR Working Paper Series

WP-25-13

Immigrants' Legalization and Firms: Evidence from the 2007 EU Enlargement

Vittoria Dicandia
Federal Reserve Bank of Cleveland

Silvia Vannutelli
Northwestern University and IPR

\

Version: March 24, 2025

DRAFT

Please do not quote or distribute without permission.

Abstract

How do firms respond to permanent changes in the legal status of a substantial group of migrants? The researchers study the effects of the entry to the European Union of Bulgaria and Romania in the Italian labor market. This event was particularly relevant for Italy, where Romanians constitute approximately one fifth of the immigrant population. They use administrative employer-employee data on the universe of private-sector workers and an IV-DID design to identify the effects of this change in migrants' legal status on firms' personnel and performance. Firms exhibit an increase in the share of migrant workers at the expense of natives, not accompanied by a change in wage growth for either group. Migrant workers' gains are shown in increased job mobility and job security. Despite growing in size, firms show a decrease in per capita business outputs. The results indicate that the change in legal status led to a formalization of undocumented workers and had positive implications for the affected migrant workers.

1 Introduction

Most countries restrict migrants' labor market access, usually by requiring employer-sponsored visas. While originally meant to protect native workers, these restrictions are likely to distort the labor market, particularly in the presence of a sizeable informal sector, giving firms the power to exploit undocumented migrants. This dynamic can put downward pressure on formal labor-market compensation and is often feared to negatively affect natives working in the formal sector (Elias et al. (2024)). It is thus unsurprising that there is a large policy debate on whether countries should relax work visa requirements to downsize the informal sector and promote fairer competition in the labor market. Yet, the evidence on the effects of such policy changes on firms and workers remains scant, mainly for two reasons. First, it is rare to observe large policy changes that would critically affect these distortions. Second, data that allow the study of both migrant and native workers' labor-market outcomes as well as firms' outcomes are hard to come by.

We overcome these limitations by studying the effects of the 2007 European Union enlargement that admitted Romania and Bulgaria (which we collectively refer to as EU07) in the Italian labor market. This event represents a very notable significant episode of relaxing migrants' labor-market restrictions and it is particularly relevant for Italy because Romanians are its largest immigrant group due to the strong language similarity between the two countries. Currently, over 1 million Romanians reside in Italy, representing a fifth of the total foreign-born population (Istat (2023)).

We exploit unique administrative matched employer-employee data from Italy to study the consequences of this large regularization episode on firms and workers. Our empirical strategy combines the natural experiment induced by the EU enlargement in 2007 with an instrument capturing the presence of informal migrants across labor markets. Specifically, we exploit a difference-in-differences design to compare the evolution over time of outcomes of firms located in local labor markets that were differently affected by the regularization shock, based on pre-existing levels of EU07 migrants.

Because migrants might endogenously sort in areas with good economic opportunities, we instrument the local change in the share of migrants around the EU enlargement with the pre-existing change in the share of migrants between 2001 and 2002, when an unexpected large amnesty for informal migrant workers took place. The key idea supporting the relevance of our instrument is that labor markets that experienced a

large change in migrants' share as a result of the amnesty of 2002 are characterized by a high share of informal workers, and thus would be more exposed to the regularization shock induced by the EU enlargement in 2007. Indeed, the change in the share of EU07 migrants between 2001 and 2002 in a local labor market is a good predictor of the change observed between 2006 and 2007.

We provide evidence that labor market outcomes of firms operating in more vs. less exposed labor markets evolved along parallel paths before the EU enlargement, but start diverging afterwards. Furthermore, we show that our instrument does not seem to have other indirect effects on firms' labor-market outcomes. Our main analyses focus on how firms adjust their personnel and compensation decisions in response to the change of legal status for EU07 migrants. First, we investigate whether firms change their relative personnel composition between migrants and natives. Here, we find evidence that the change in relative employment of EU07 migrants suddenly increased at the expense of natives. This pattern is mainly driven by a change in firms' hiring decisions: compared to the trends in the pre-reform period, firms in highly exposed labor markets hire more EU07 workers and fewer native workers. We also observe an increase in the rate of job separations for EU07 migrants, suggesting an increase in job-to-job transitions. This effect is likely explained by the relaxation of pre-existing restrictions in job-to-job mobility imposed by employer-sponsored visas, and is consistent with the findings of Naidu et al. (2016) for the United Arab Emirates.[1] We then turn to investigating the consequences of the EU enlargement on both wages and types of labor market contracts (permanent vs. temporary). We do not find any significant change in wage trends for either native or EU07 workers, but we do observe a significant increase in the share of permanent contracts for EU07 workers, indicating that they experienced enhanced job stability in the aftermath of the enlargement.

We perform a series of heterogeneity analyses aimed at gaining a deeper understanding of the mechanisms behind the observed patterns. More specifically, we investigate how our results vary across firms with different histories in terms of EU07 employment, focusing on firms that already employed EU07 workers before 2007 and firms that par-

[1] Naidu et al. (2016) study a reform that relaxed restrictions on job-to-job transitions for migrant workers, focusing on a setting that differs from ours both in terms of labor-market structure and in terms of the nature of the legalization shock. Italy, unlike the UAE, has a sizeable informal labor market. The National Institute of Statistics reports that in 2007 the value-added that could be imputed to informal labor markets amounted to approximately 102 billion euros, corresponding to 6.6 percent of the country's GDP (Istat (2010)). Furthermore, the reform we analyze has a much wider scope, since it eliminates visa requirements for migrants from Romania and Bulgaria, rather than just affecting job-to-job transitions.

ticipated in a previous amnesty for migrant workers, and across firms with managers of different nationalities, focusing on firms that have only managers of Italian nationality and firms that have at least one non-Italian non-EU07 manager. We show that our results are largely driven by firms that participated in a previous amnesty legalizing migrants or that employed EU07 workers before 2007. This is consistent with previous evidence from Di Porto et al. (2018) showing that firms that employ migrants are likely to do so both formally and informally. We also show that the effects on EU07 workers' employment are larger among firms that have at least one migrant manager, while the effects on EU07 workers' share of permanent contracts are driven by firms with only native managers.

Lastly, we analyze the impact of the change in migrants' legal status on firms' performance. Despite the increase in firms' size, we find no changes in total revenues, and a reduction in per capita revenues and both total and per capita operative value-added, suggesting that the observed employment expansion is not associated with overall firm growth. This offers additional suggestive evidence that after the EU enlargement, firms have formalized existing informal employment relationships.

This paper makes two key contributions to the literature. First, we provide new evidence on how lifting labor restrictions affects the labor-market outcomes of migrant workers and increases their market power compared to firms (Amior and Manning (2020)). While previous work has documented the consequences of amnesties or changes in visa requirements (Naidu et al. (2016); Elias et al. (2024)), we focus on a more significant, permanent change in migrants' legal status that affected the largest immigrant group in the country. In this sense, our treatment closely resembles the one studied by Cascio and Lewis (2019), who focus on the tax consequences of granting migrants permanent resident permits in the US. Second, our unique data sources allow us to track within-firm adjustments in response to the shock and to document the consequences of the change in migrants' status on a wide set of firm-level outcomes. The few papers in this area have mostly focused on the effects of high-skill migrants on firms (Dustmann and Glitz (2015); Ottaviano and Peri (2012); Mitaritonna et al. (2017); Ottaviano et al. (2018); Doran et al. (2022); Signorelli (2024)). Our paper instead focuses on a labor supply shock of low-skill migrants[2] and its effects on firms' outcomes. Thanks to the

[2]The Italian National Institute of Statistics reports that in 2012 only 11 percent of foreigners living in Italy had completed a bachelor's degree or more (available at: http://dati.istat.it/Index.aspx?QueryId=24433). This estimate does not include data on undocumented workers, which is likely to further decrease the share of highly educated migrants.

richness of our data, we can study the resulting changes in firm-level wages and employment dynamics, as well as in business performance measures, providing a wide-ranging collection of evidence.

2 Institutional context

Italy, traditionally known for its emigrant population, has recently experienced a significant demographic transformation, now attracting a substantial influx of foreign workers. The percentage of foreign-born residents in Italy increased significantly from just 1 percent in the early 1990s to 9 percent by 2022 (Istat (2023)). This shift in migration patterns offers both economic and demographic opportunities for Italy, a nation grappling with declining fertility rates and an aging population. However, concerns have arisen in recent years due to the combination of increased migration and sluggish economic growth. Many fear potential wage suppression and a shrinking pool of economic opportunities. Research by Alesina et al. (2022) indicates that Italians have some of the most significant misconceptions about migration; for instance, respondents tend to overestimate the number of migrants in the country and their reliance on welfare. In this context, Italy has implemented a demand-driven approach to immigration, primarily governed by Laws *40/1998* and *189/2002*. This legal framework mandates that economic migrants enter the country with a valid work permit. Each year, the national government determines the number of available work permits based on region and contract type (seasonal or non-seasonal) and may restrict access to migrants from specific countries. Firms must submit permit applications *before* migrants arrive in Italy. Once approved, these migrants, sponsored by their employers, are eligible to enter the country and work legally for two years, with the possibility of renewing their permits for an additional two years. Should they lose their initial job, migrants face a six-month unemployment limit, after which they are required to leave Italy.

Since the implementation of this system, the quota for work permits has consistently been set at levels significantly lower than demand. For instance, in 2006, the quota was set at 170,000, yet over 500,000 applications were submitted. This disparity has led to a growing presence of undocumented workers. To tackle this issue, Italy, like other European countries, periodically introduced a one-off random selection process for firms and migrants eligible for work permits, which largely depends on the speed of

application submissions during designated "click-days" (for further details, see Pinotti (2017)). These one-off general amnesties allow undocumented workers to obtain temporary work permits. Applications for an amnesty must be submitted by employers: a successful outcome grants the same permit status as under the quota system described above.

The number of individuals impacted by these legalization episodes has significantly increased over the years. The most recent amnesty prior to the 2007 EU enlargement occurred in 2002 and was the largest in Italy's history, resulting in over 600,000 foreign workers transitioning from the informal labor market into formal employment.

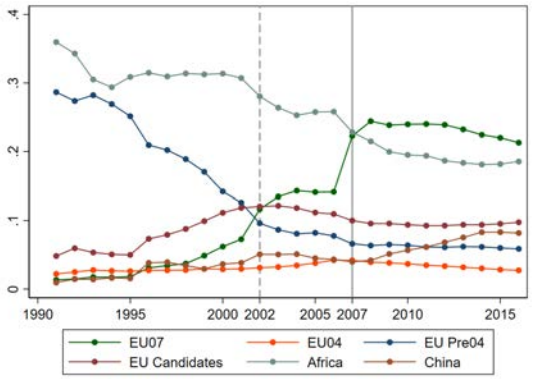
Since Italy is a member state of the EU, Italian immigration legislation does not apply to EU citizens, who enjoy free access to the Italian labor market. Consequently, EU enlargements have altered the pool of potential legal migrants over time. When a new country joins the EU, its citizens gain the right to reside and work in any member state.[3]

The two largest enlargements to date occurred in 2004 and 2007, both of which extended EU membership to Eastern European countries. In 2004, the following countries entered the EU: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia. In 2007, Bulgaria and Romania entered the EU.

Figure 1 illustrates the evolving composition of migrant workers by citizenship over time.

[3]There are some exceptions; for example, countries like the UK and Germany implemented temporary restrictions on workers from Eastern European nations upon their entry into the EU. These restrictions typically limited freedom of movement in certain economic sectors.

Figure 1
Share of migrant workers by citizenship over the total of migrant workers



Notes: Authors' calculations from the universe of non-agricultural private-sector workers (INPS data). "EU07" includes workers from Romania and Bulgaria, "EU04" includes migrants from the countries that joined the European Union in 2004 (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia), "EU Pre04" includes countries that were EU members prior to 2004, "EU Candidates" include Albania, Bosnia, Croatia, Iceland, Kosovo, Macedonia, Montenegro, Serbia, and Turkey.

The 2004 expansion had a minimal impact on the Italian labor market, as the majority of these workers migrated to other, more prosperous countries, like Germany for instance. In contrast, Romania's accession to the European Union in 2007 marked a pivotal moment for migrant workers in Italy.

As shown in Figure 1, EU07 workers already constituted the second-largest immigrant group in Italy prior to 2007. This is almost exclusively driven by the heavy presence of workers from Romania, due to the strong linguistic similarities between the two countries. Additionally, they represented the largest group of migrants affected by the 2002 amnesty. Figure 1 shows a marked increase in the share of EU07 migrants in 2007, as anticipated. Notably, there was no unusual rise in the presence of EU07 workers in 2006, indicating the absence of anticipation effects, at least within the formal labor market. This finding is not surprising, given that work permits are typically approved in the fall; thus, the impact of the EU07 expansion announcement in December 2005 would not have been reflected until the latter months of 2006.[4] While Romanian and Bulgarian migrants were granted immediate freedom of movement in Italy, their access

[4]The lack of an anticipatory response is further supported by aggregate statistics from the International Migration Database of the OECD, which show that the annual inflow of Romanian migrants to Italy in 2006 was approximately 40,000 individuals - substantially lower than the levels observed in the two preceding years.

to the labor market in certain sectors faced delays.[5] Nevertheless, all major employment sectors for Romanian workers—most notably construction, tourism, and services—were fully accessible from the start.

As shown in Figure 1, no other groups of migrants experienced a similar sudden increased presence in Italy. The countries labeled as "EU Candidates" are included in this classification because they too are geographically European, but not EU member states (as of 2007). Albania, which is included in this group, even has a significant history of migration to Italy over the past 20 years. If the observed migration patterns were driven by other factors, it would be reasonable to expect these countries to respond similarly to the EU07 countries. However, that is not the case. This strongly suggests that the surge in the share of Bulgarian and, more notably, Romanian workers was primarily driven by their accession to the EU.

2.1 Labor-market implications of the EU enlargement

The labor-market implications of EU enlargement are markedly distinct from those of previous regularization episodes that arose from general amnesties.

First, both amnesties and quota permits require migrants to secure a sponsoring employer. This means that if a migrant wishes to change jobs, they must obtain formal consent from their current employer, a situation likely to create lock-in effects and severely limit mobility (Naidu et al. 2016).

Second, amnesties and quotas provide only temporary work permits valid for two years and impose a six-month limit on unemployment. In contrast, EU citizens can seek the most suitable job matches and favorable employment conditions, granting them permanent access to the labor market.

Third, amnesties necessitate proof of a prior (informal) employment relationship with the sponsoring employer, while the legal status change resulting from EU enlargement applies broadly to all individuals, regardless of their previous employment status or history.

Overall, EU citizenship allows for greater job, sector, and geographic mobility while also granting strong status security. These considerations point to EU enlargements having potentially different economic impacts from the more commonly studied one-

[5] However, the barriers to access were significantly lower than in the past: employers only needed to notify the prefecture of their intention to hire a migrant, without waiting for formal authorization (https://www1.interno.gov.it/mininterno/export/sites/default/it/sezioni/sala˙stampa/notizie/europa/app˙notizia˙23478.l

time amnesties.

3 Data and sample

We use two sources of high-quality, restricted-access administrative data provided by the Italian Social Security Institute (INPS). First, we use a panel of matched employer-employee records of the universe of non-agricultural firms with at least one employee. The data account for 74 percent of private employment in Italy and 93 percent of private-sector employees. Additionally, we incorporate CERVED data, which provide detailed firm-level balance-sheet information for the universe of companies registered with the Chamber of Commerce in Italy.[6]

For each worker-firm record, the INPS data provide information about the beginning and end date of the contract, weekly wages, number of weeks worked, type of contract (permanent or fixed-term, full-time or part-time), and broad occupation group within the firm (blue-collar, white-collar, or manager) for all workers employed in the firm. Moreover, we also have access to rich demographic information for each worker, such as gender, age, nationality, and municipality of residence. On the firms' side, we observe the sector and industry in which the firm operates,[7] geographic location, and firm creation and exit dates.

From this information, we construct our key outcomes of interest, all measured at the firm level. We analyze employment and wage dynamics for two distinct groups: EU07 workers, whose legal status is changed by EU enlargement, and native workers. We examine the relative employment for each group as a share of total firm employment. The richness of the data also enables us to investigate changes in hiring and separation rates for these groups. We further investigate the effects on average wages for each group relative to firm-level wages, allowing us to capture differences in relative pay across groups. Lastly, we estimate the effects on the share of workers who have a permanent (or open-ended) contract, which is a very desirable feature in the Italian labor market.

Given the high prevalence of very small firms in Italy, the CERVED dataset only covers about one-third of the firms present in the INPS-matched employer-employee dataset.

[6] These data represent the Italian segment of firms present in ORBIS (Aida).

[7] Codified according to "ATECO 2007," the 2007 Italian classification system for economic activities

While this causes a significant reduction in the sample size for our analysis of business outcomes, it still presents us with the unique opportunity to study key measures of firm performance that are usually not available in combination with the type of detailed micro data we utilize in this paper. Hence, we use the balance sheet to estimate the effects of the EU enlargement on costs of labor, revenues, and operative value-added. The analysis of these results will also shed light on the potential mechanisms at play.

3.1 Sample

Our analysis concentrates on the years 2004 to 2009. We exclude the years prior to 2004 to avoid capturing the dynamic effects of the 2002 amnesty.[8] Conversely, we conclude our analysis in 2009 to prevent including the potential effects of the sovereign debt crisis that began affecting Italy shortly after.

We include only workers ages 18 to 64 who worked for at least five weeks in a given year. For each worker, we retain the record of their main job for that year, defined as the highest-paying position; in cases where two jobs offer the same salary, we select the one with the longest duration. Since our primary focus is on firms, we aggregate all information at the firm level.

To ensure a balanced sample, we consider only firms that were consistently present and employed at least one worker during our period of interest (2004-2009).[9] Our final sample comprises 779,552 firms, representing approximately 47 percent of the firms in the full dataset.

Table 1 presents descriptive statistics for the firms in our sample from 2006, the year prior to the EU07 enlargement. On average, firms in our sample employ 11 individuals.[10] These firms typically employ 10 native workers and 0.1 EU07 workers. Although the difference in numbers is not statistically significant, EU07 workers earn, on average, wages that are 10 percent lower than those of their native counterparts.

As indicated by the data above, not all firms employed EU07 workers. However, a non-negligible share did: 9 percent of firms employed one or more EU07 workers, while

[8]Indeed, Di Porto et al. (2018) show that the firm-level employment and wage effects resulting from the 2002 regularization do not exhibit any further dynamic changes after 2003.

[9]Nonetheless, we also examine the effect of our treatment on firm exit and confirm that there is no impact (results not shown), which reassures us that the firms included in our sample are not subject to selection bias.

[10]The median number of employees is 3, which aligns with national firm-size statistics for 2006. Data on firm distribution from ISTAT for that year can be found at `https://www.istat.it/it/archivio/42297`.

Table 1
Firm-level summary statistics

	Mean Employment	Mean Wages
All workers	11.3	418.8
	(156.3)	(136.1)
Native workers	10.4	423.2
	(146.5)	(138.7)
EU07 workers	0.1	383.0
	(2.2)	(108.1)
Number of firms	779552	779552

Notes: Summary statistics for outcomes measured in 2006 for the universe of firms in our sample.

95 percent had at least one native worker. Firms that employed at least one EU07 worker were larger on average, yet the mean wages for native workers were comparable to those in the rest of the sample.

4 Empirical strategy

We measure the EU07 enlargement shock as the change in the local labor supply of formal EU07 workers. We compute the difference between the share of Romanian and Bulgarian workers in 2007 and 2006 over the population in 1991 at the local level.[11]
To study the effects of this shock at the local level, we use local labor markets (in Italian-"Sistemi Locali del Lavoro") as our geographic unit of interest. These non-administrative areas are defined by the Italian National Institute of Statistics (ISTAT) based on daily commuting patterns, with the goal of identifying areas characterized by a shared labor market. In total, there are 611 local labor markets in Italy, constituting the geographic variation exploited in our treatment.
To trace the dynamic effects of this shock, we implement a dynamic difference-in-differences design. More specifically, we regress the change in outcome Y of firm f between years t and $t-1$ on the change in the EU07 migrants' share of the workforce

[11] To avoid potential confounding effects stemming from endogenous population growth, the denominator is fixed at an earlier period compared to the one studied in our analysis. Moreover, as previously reported, in 1991 immigration was still a very low-scale phenomenon in Italy; hence, this choice allows us to steer away from spurious correlations caused by endogenous overall immigration growth.

in the local labor market area l .
Our baseline model is:

$$\Delta Y_{ft} = \sum_{t=2005}^{t=2009} \beta_t * D_t \times \Delta Share\hat{EU}07_{07-06,l} + \delta_{dt} + \delta_{st} + \delta_{rt} + \varepsilon_{ft} \quad (1)$$

where $\Delta Share\hat{EU}07_{07-06,l}$ is the treatment variable (instrumented by $\Delta Share\hat{EU}07_{02-01,l}$), δ_{dt} are time-varying effects of firm size measured at base year 2006, δ_{st} are sector-specific time trends,[12] δ_{rt} are regional trends,[13] and ε_{ft} is the error term. We include a control for firm size in our estimation because Italy applies distinct labor regulations to firms with fewer than 15 employees, with consequences for hiring and firing procedures. Thus, our measure is a dummy of value 1 if there are 15 or more employees in 2006, and 0 otherwise.
We exploit the panel structure of our data to get rid of unobserved firm-level time-invariant components, which could potentially create omitted variable bias. One way to address this is to use firm fixed effects; another is to use a first-difference specification. We prefer the latter for the conceptual and econometric reasons outlined below.
Conceptually, we believe that the most effective way to study how the EU07 enlargement has affected local labor markets is by looking at how the presence of migrants has changed, rather than by observing the EU07 share of workers in a particular year. It is this variation over time, i.e., the comparison between the new share of migrants resulting from the EU enlargement and the share of migrants present in 2006, that best captures the shock that firms in a specific local labor market have to face. This claim is supported by the data, as we observe that places that had a relatively lower share of EU07 workers are those that experienced the largest relative influx of migrants. The explanation behind this phenomenon is not as mysterious as one might think: the sizeable increase in the number of EU07 migrants between 2006 and 2007 led to a diffusion of their presence throughout the country.
From an econometric standpoint, we perform the standard test to verify that an FD estimation is the most appropriate one for our data. In Figure A1 we show that the

[12] We use the ATECO 2007 classification methodology provided by Istat to identify 9 distinct sectors: 1. Mining and Manufacturing; 2. Water and Energy Provision; 3. Construction; 4. Commerce; 5. Transportation; 6. Hospitality and Restoration; 7. Professionals and Services in Communication, Real Estate; 8. Services, including Education, Health, and Entertainment; 9. Services, Personal and Business Support.
[13] Italy has 20 administrative regions.

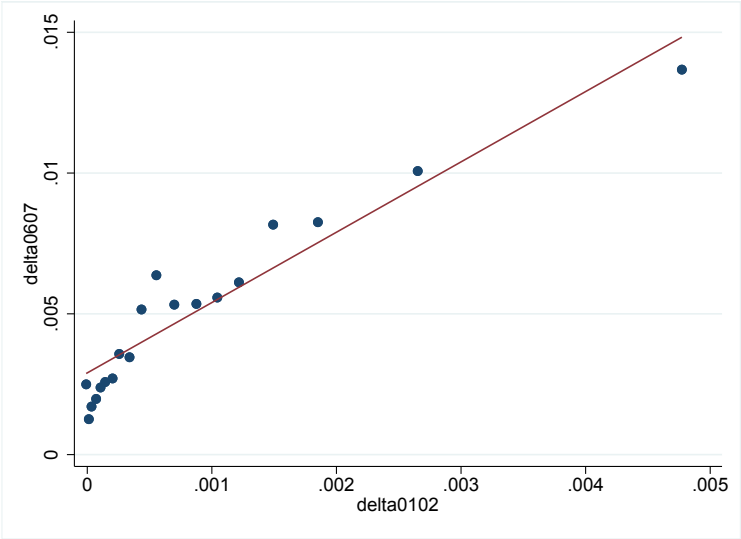
$\Delta_{f,t}$ values, i.e., the first differences in the error term that result from our main specification, are uncorrelated, making FD our preferred approach at the expense of an FE estimation.

As already mentioned, we have chosen to use the difference in shares of EU07 migrants as our main explanatory variable. In addition to this option, we have considered two alternatives, but we deemed them to be more problematic. One possibility was to use the absolute number of EU07 migrants in a local labor market. This measure is problematic because it intrinsically contains geographic characteristics - such as population size and labor-market sector composition - that are correlated with the outcome of interest and might ultimately confound our findings. Another possibility was to use the percentage growth in the share of EU07 workers. This measure falls short in terms of capturing the change in migrants' relevance with respect to the overall population. In fact, growth of 100 percent or more is likely to be related to a negligible number of migrants in a local labor market, rather than a very sizeable influx of migrants. The absolute difference in shares, instead, allows us to fully account for the change in migrants' labor-market penetration in the aftermath of the EU enlargement.

The usual concerns regarding endogeneity apply: areas in which we observe a larger increase in the share of EU07 migrants might be ones that experience some macroeconomic shock that could affect and confound our findings. We therefore instrument the change observed in 2006-2007 with the change observed in 2001-2002, when there was a general amnesty for migrant workers who were employed in the informal labor market. We argue that places that experienced a large change in migrants' share as a result of the past legalization shock would be more prone to experience a large change with the EU07 enlargement. Moreover, the variation taking place between 2001 and 2002 is the most relevant for our period of interest because it too was characterized by an increase in the share of migrants with legal work permits throughout the country.

We perform a series of tests to assess the validity of our chosen instrument. In Figure 2, we show that there is a strong correlation between the change in the share of EU07 migrants in the workforce in 2001-2002 and the change in 2006-2007. Results from a first-stage regression (not shown) also corroborate that our chosen IV is a strong predictor for the exogenous shock of interest.

Figure 2
Evolution of EU07 migration over time: First stage



Notes: Binned scatter plot showing the correlation between the change in share of EU07 resident population resulting from the 2002 general amnesty and the change associated with the EU accession of Bulgaria and Romania. On the y-axis, we show the change in the share of EU07 over total population (as measured in 1991) between 2006 and 2007. On the x-axis, we show the corresponding change for the period between 2001 and 2002.

We might also be concerned that persistent economic shocks taking place before 2002 can predict both the change observed in our instrument and firms' economic outcomes, which would cause a spurious correlation between the two. In Panel A of Table A1, we show that changes in economic outcomes at the local labor-market level in the period 1992-1997 do not predict our instrument. Finally, in Panel B, we also show that our instrument seems to be uncorrelated with changes in labor-market outcomes between 2002 and 2006, thus affecting the outcomes of interest in our specification only through the change of EU07 workers between 2006 and 2007 in a given local labor market.

5 Results

The goal of this paper is to understand how firms adjust to the change in legal status of individuals of Bulgarian and Romanian citizenship, as these workers obtain European Union citizenship in 2007. We begin by showing firms' personnel choices in terms of relative employment of workers having different countries of origin. We then show

how wages and types of contracts have changed for these groups of workers. Lastly, we show how changes in employed personnel and payrolls are reflected in firms' business performance.

5.1 Employment

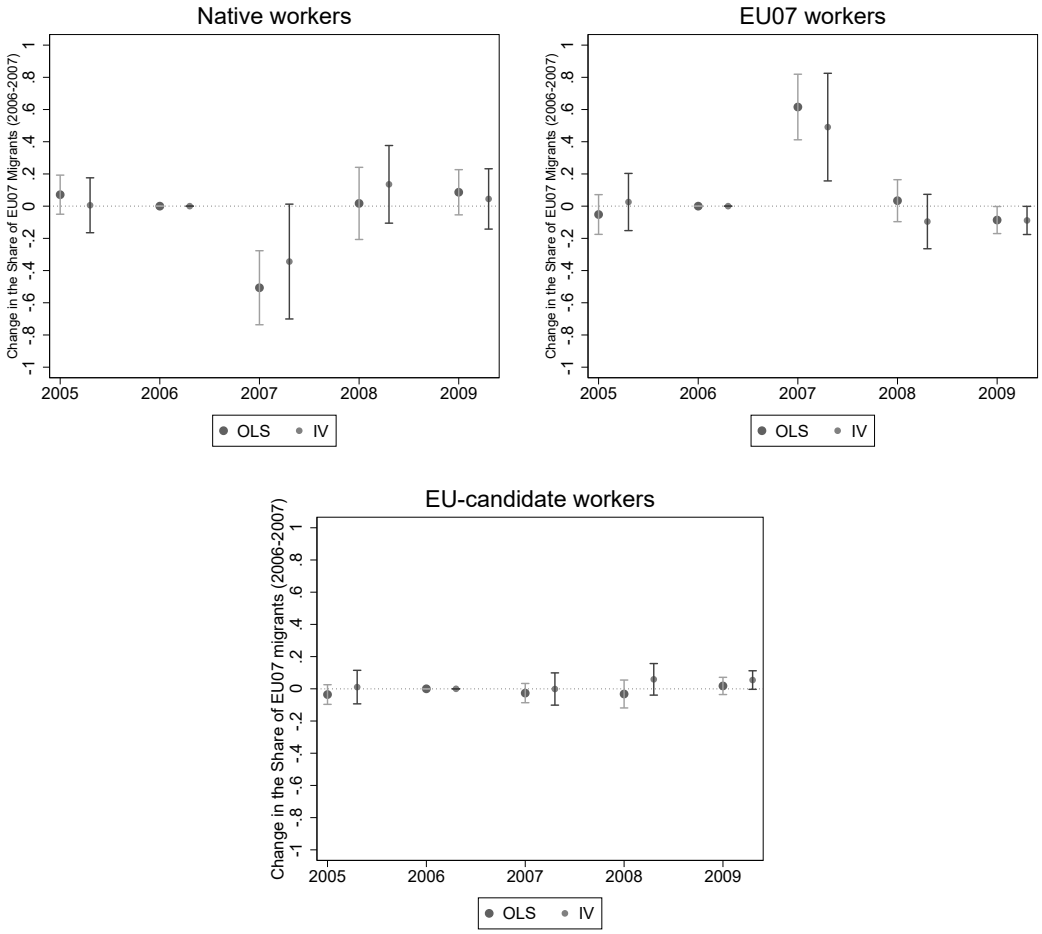
Figure 3 shows the changes in within-firm relative employment of migrant and native workers. We estimate our dynamic difference-in-differences design as in specification 1, and report the coefficients on the interaction term between our time variable, defined at the year level, and the main treatment variable. We report both the OLS and the 2SLS coefficients.

Two contrasting patterns emerge from the data. First, there is a notable and immediate short-run increase in the change of EU07 relative employment in 2007. This effect is substantial at first, but it does not strengthen over time; the estimated coefficient for 2008 is minimal in magnitude and statistically indistinguishable from zero. By 2009, we observe a slight negative effect, though its magnitude is negligible. In contrast, the change in relative employment of natives shows an opposite trajectory: initially, there is a significant decline, but this effect dissipates by 2008.

To demonstrate that these results reflect the effects of changes in legal status for EU07 migrants, we also examine how employment changes for workers from EU candidate countries were affected. Our findings reveal that these workers experienced no significant impact, reinforcing the argument that granting permanent legal status to EU workers made them more similar to and thus more substitutable for native workers.

It's important to interpret our estimates as reflecting how changes in a given year compare to the changes observed between 2005 and 2006. In the context of growing employment, the results shown in Figure 3 indicate that in the immediate aftermath of EU enlargement, the relative employment of EU07 workers increased more significantly, while the relative employment of native workers experienced a smaller increase compared to the pre-enlargement period. The same approach should be applied when interpreting all of our subsequent results.

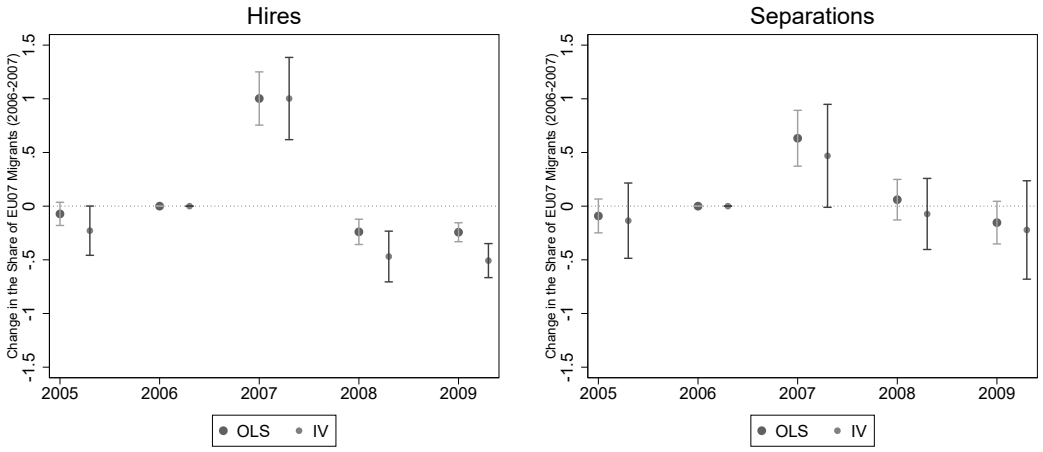
Figure 3
Firm-level relative employment, native, EU07, and EU-candidate workers



Notes: On the y-axis are the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on relative employment for native, EU07, and EU-candidates workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor-market level.

To better understand the factors driving overall employment effects, we analyze the patterns of hires and separations. In Figure 4, we examine the dynamics of EU07 workers' hiring and separations, expressed as a share of total employment. The left panel reveals a significant increase in EU07 hires in 2007, approximately twice the effect observed on the relative share of EU07 workers in total employment. This discrepancy is explained in the right panel, where we note a substantial rise in separations among EU07 migrants in 2007.

Figure 4
Firm-level hires and separations, EU07 workers



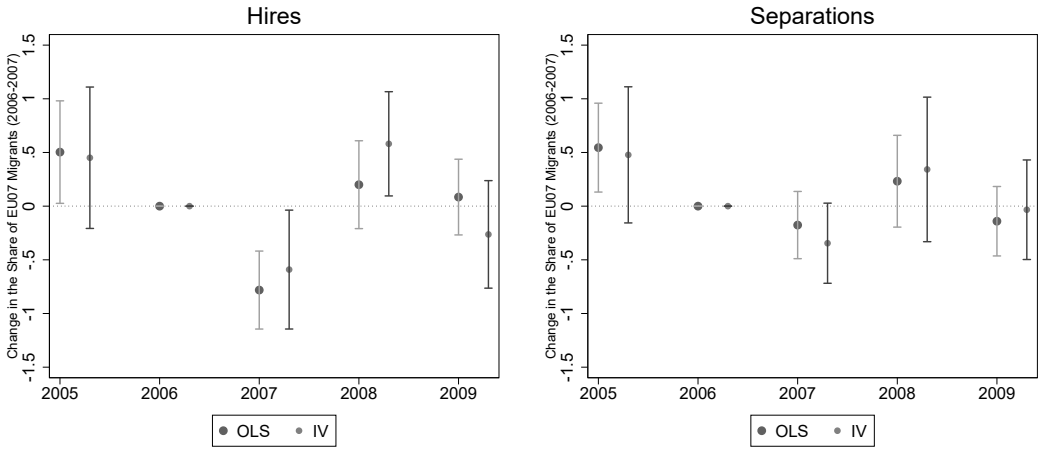
Notes: On the y-axis are the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on relative hires and separations for EU07 workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor-market level.

Interestingly, the trend in hiring reverses in the medium term, with a notable and significant decline in EU07 hires in 2008 and 2009. Overall, these two panels indicate a markedly higher dynamism among EU07 workers, who likely transitioned between firms in response to the EU enlargement. This is perfectly consistent with the removal of a key barrier to job mobility, by removing, de facto, the relevance of employer-sponsored work permits.

In Figure 5 we examine the hiring and separation patterns of native workers. In 2007, there was a negative change in the share of hiring for natives, but this trend reversed in 2008 and 2009. In the right panel, we observe no significant changes in separations. Consequently, as of 2007 firms began to favor hiring EU07 workers in the formal sector.

This shift can be attributed to a combination of factors. First, the change in legal status for EU07 workers enhanced their bargaining power, making them more comparable to native workers. Additionally, many EU07 workers were likely already employed by firms, albeit informally. Thus, starting in 2007, the legalization of EU07 workers facilitated their transition into the formal sector, influencing hiring decisions and temporarily slowing down the hiring of native workers.

Figure 5
Firm-level hires and separations, native workers



Notes: On the y-axis are the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on relative hires and separations for EU07 workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor-market level.

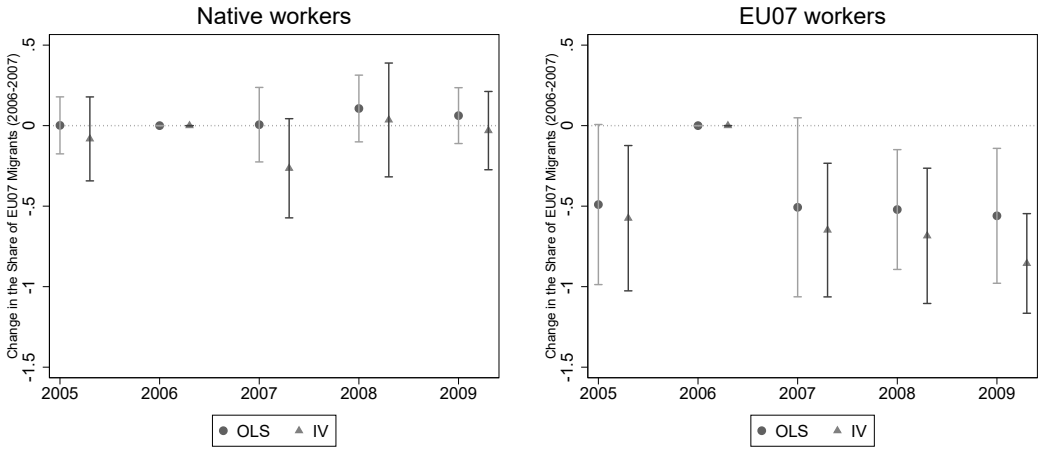
5.2 Wages and types of contracts

Next, we explore how the EU07 enlargement has affected wages for native and EU07 workers.

In Figure 6, we present evidence indicating that the EU07 enlargement had no significant impact on changes in wages for either native or migrant workers. Furthermore, unlike with previous results, there are no notable temporal differences in wage changes. Consequently, we will concentrate our discussion solely on the static DID results.

It may seem surprising that wages for migrants decreased following the EU expansion, especially given the enhanced bargaining power associated with their new legal status. It should be noted that the observed negative effects are not statistically significant from the pre-trend. However, these figures represent average estimates across all legally employed EU07 workers. If it was indeed the case that some of these new workers were previously working informally, they may have experienced increased wages due to their new status, yet they might still be earning less than long-term EU workers in the formal labor market. Unfortunately, without data on undocumented workers, we cannot further explore this hypothesis.

Figure 6
Firm-level wage, native and EU07 workers

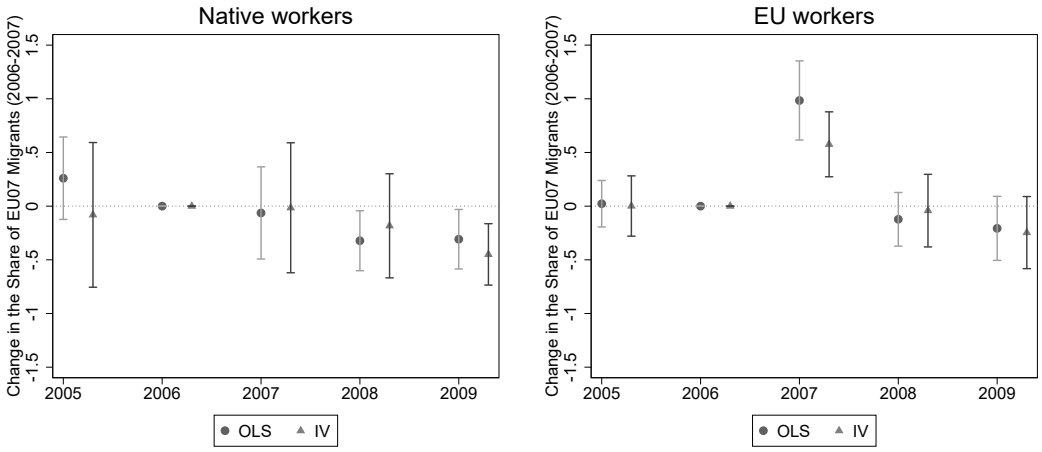


Notes: On the y-axis are the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on relative wages for native and EU07 workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor-market level.

It's important to highlight that Italy has a relatively high wage rigidity, with most workers experiencing stagnant wages over time. As a result, wage increases may not be the primary area where EU07 workers choose to leverage their enhanced bargaining power. Instead, they might prioritize other aspects of employment that could provide greater benefits or stability.

As a matter of fact, one distinct feature of the Italian labor market is the dualism between permanent and temporary contracts. Since employees generally have a strong preference for permanent jobs, it is reasonable to study whether migrants directly affected by the enlargement are better positioned to obtain those contracts.

Figure 7
Share of permanent contracts, native and EU07 workers



Notes: On the y-axis are the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on the share of permanent contracts for native and EU07 workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor-market level.

Figure 7 above illustrates that, after 2007, there has been a noticeable increase in the change of shares of permanent contracts among EU07 migrants. As in other cases, these effects are really taking place in the immediate aftermath of the EU enlargement. For the share of permanent contracts of native workers, the EU enlargement is inconsequential.

5.3 Mechanisms

To gain a deeper understanding of the mechanisms behind these effects, we conduct a series of heterogeneity analyses to identify the types of firms driving the results. Specifically, we will examine two key margins. On one hand, we will explore heterogeneity effects across firms that have different histories in terms of employment of EU07 workers. On the other hand, we will define firms according to the nationality of their managers, focusing on whether at least one manager is a migrant.

In our heterogeneity analysis on different types of firms defined by their past experience with EU07 workers, we analyze whether the observed effects differ for firms that employed at least one EU07 worker prior to 2007 and whether firms with prior experience in participating in a migration amnesty are more likely to respond to changes in legal

status.

Participating in a previous legalization episode may serve as a proxy for a firm's likelihood to hire workers informally, and to formalize their status only when administrative costs decrease. To explore this, we leverage a significant amnesty that occurred in September 2002, which legalized over 700,000 undocumented migrants (see Di Porto et al. (2018) for a detailed description of the policy). Our dataset allows us to identify the firms that participated in this amnesty—namely, those that applied for the legalization of at least one migrant worker at that time.

In Table 2 we present the heterogeneous employment dynamics for natives and EU07 workers. Consistent with our hypothesis, we find effects that are on average twice as large in magnitude for firms that had participated in the 2002 amnesty program for all outcomes.

The second type of firms we identify is those that employed at least one EU07 worker formally prior to 2007. For these firms, it is less straightforward to predict how the change in legal status might affect their personnel choices. On one hand, these firms might be less responsive to the EU07 enlargement, having already absorbed the costs of formalizing workers before the change in legal status. On the other hand, firms that hire migrants in the formal sector may also be more likely to employ them informally and may have better access to their networks. Our findings indicate that the latter effect predominates, with stronger patterns observed in firms that employed EU07 workers before 2007 compared to the average firm.

Table 2
Heterogeneity by past experience with migrants, employment

	Native Relative Employment		
	All	W. EU07 pre-2006	Regularizing in 2002
2005 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	0.005	-0.088	-0.373
	(0.087)	(0.227)	(0.581)
2007 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.344*	-0.419	-1.385**
	(0.182)	(0.294)	(0.630)
2008 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	0.136	0.278	-0.143
	(0.123)	(0.276)	(0.592)
2009 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	0.045	-0.241	0.309
	(0.096)	(0.198)	(0.530)
	EU07 Relative Employment		
	All	W. EU07 pre-2006	Regularizing in 2002
2005 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	0.026	0.138	-0.639
	(0.091)	(0.269)	(0.434)
2007 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	0.491**	0.679*	1.630**
	(0.171)	(0.383)	(0.601)
2008 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.096	-0.330	0.214
	(0.086)	(0.205)	(0.562)
2009 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.089**	0.110	0.126
	(0.045)	(0.173)	(0.438)
N	3,827,560	336,675	164,230

Note: Reporting the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on the relative employment of native and EU07 workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor market level reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Next, we perform the same analysis on wages. Remember that we did not find any particularly significant effects in the overall sample. This heterogeneity analysis does not reveal much additional insight, as the estimates remain consistent across different types of firms. Results are shown in Table A2 in the Appendix.

Lastly, in Table 3 we present the results of our heterogeneity analysis on the change in the share of permanent contracts for native and EU07 workers. Unlike the changes observed in employment, we find that the shifts in the overall sample are primarily driven by firms that already employed EU07 workers formally prior to 2007, rather than those that participated in the 2002 amnesty. In fact, all of our estimates indicating a significant effect of EU enlargement on changes in the share of permanent contracts are substantially larger for firms that were already engaged in the formal employment of EU07 workers in 2006.

Perhaps most notably, we find that the increase in the share of permanent contracts for EU07 workers endures within these firms. While the most significant change occurs in the immediate aftermath of the EU enlargement, the increase observed in the final period of our analysis remains substantial. This suggests that the change in legal status has permanently enhanced job stability for affected workers, particularly in firms that were already engaging with them in the formal labor market.

Table 3
Heterogeneity by past experience with migrants, share of permanent contracts

	Native Share of Permanent Contracts		
	All	W. EU07 pre-2006	Regularizing in 2002
2005 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.081	-1.106	0.962
	(0.344)	(1.121)	(1.163)
2007 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.015	-0.927	-0.424
	(0.309)	(0.872)	(1.389)
2008 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.183	-0.407	0.066
	(0.247)	(0.607)	(13.364)
2009 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.449**	-1.118**	1.330
	(0.146)	(0.391)	(1.348)
	EU07 Share of Permanent Contracts		
	All	W. EU07 pre-2006	Regularizing in 2002
2005 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	0.001	0.405	1.774
	(0.143)	(0.728)	(1.379)
2007 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	0.576**	4.151**	1.296
	(0.154)	(0.854)	(1.522)
2008 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.042	2.568**	1.248
	(0.173)	(0.647)	(1.214)
2009 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.246	1.540**	0.268
	(0.171)	(0.738)	(2.598)
N	3,827,560	336,675	164,230

Note: Reporting the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on the share of permanent contracts of native and EU07 workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor-market level reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

To better understand the mechanisms behind firms' personnel choices, we conduct a second heterogeneity analysis by dividing our sample into firms with at least one non-native manager and those with only native workers in managerial positions.[14] The primary hypotheses guiding these analyses are that 1) migrant managers may have closer networks with EU07 workers, regardless of their country of origin, giving them better access to this labor supply; and 2) because they share the experience of being workers in a foreign country, their attitudes toward migrant workers may be less negatively biased than those of native managers. Once again, we will examine the heterogeneous effects on changes in employment, wages, and the share of permanent contracts for both native and EU07 workers.

We start our heterogeneity analysis by examining relative employment for native and EU07 workers. In Table 4, we see an immediate increase in the change of relative employment of EU07 workers in both types of firms during the first year following the change in legal status. Consistent with our hypothesis, this effect is more pronounced in firms with migrant managers. In contrast, for native workers, we observe a slight, statistically insignificant decline in relative employment in the first year, but only among firms with exclusively native managers.

In Table A3 we examine how wages were affected differently based on the nationality of firm managers, while Table A4 illustrates the changes in the share of permanent contracts across these firms. We find that the effects observed in the overall sample are primarily driven by firms with managers of Italian nationality, which constitute the majority of our sample. Interestingly, there are no significant effects on wages or the share of permanent contracts for migrants in firms with at least one migrant manager. This aligns with our hypothesis that the change in legal status for EU07 migrant workers predominantly enhances their bargaining power in interactions with native managers, who may lack the networks to assess the abilities of EU07 workers and are more likely to be negatively biased toward migrants.

[14] We exclude firms that have at least one manager from EU07 countries, as these workers are also affected by the change in legal status under study.

Table 4
Heterogeneity by manager type, employment

	Native Relative Employment		
	All	Native Manager	Migrant Manager
2005 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	0.005	0.046	0.897
	(0.087)	(0.106)	(0.637)
2007 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.344*	-0.389*	-0.377
	(0.182)	(0.209)	(0.627)
2008 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	0.136	-0.004	0.630
	(0.123)	(0.128)	(0.524)
2009 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	0.045	0.022	0.222
	(0.096)	(0.099)	(0.582)
	EU07 Relative Employment		
	All	Native Manager	Migrant Manager
2005 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	0.026	-0.027	-0.871
	(0.091)	(0.099)	(0.602)
2007 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	0.491**	0.470**	1.709**
	(0.171)	(0.159)	(0.490)
2008 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.096	0.030	0.001
	(0.086)	(0.066)	(0.420)
2009 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.089**	-0.047	-0.128
	(0.045)	(0.039)	(0.219)
N	3,828,560	3,603,910	185,935

Note: Reporting the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on the relative employment of native and EU07 workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor-market level reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.4 Firm performance

In the final section of our analysis, we investigate the impact of the EU07 enlargement on various measures of firm performance. Our primary objective is to assess whether changes in personnel decisions have influenced overall business outcomes.

To this end, we use data from the CERVED dataset. Since this dataset is sourced from the Italian Chamber of Commerce registry, it does not include firms that are not required to register. Nevertheless, we successfully matched approximately 30 percent of our original sample of firms, consistent with the matching success observed in the broader INPS dataset. Table 5 presents summary statistics that align with those in Table 1.

Table 5
Firm-level summary statistics

	Mean Employment	Mean Wages
All workers	23.8	473.6
	(260.5)	(163.3)
Native workers	22.0	478.3
	(245.6)	(165.3)
EU07 workers	0.21	397.6
	(3.1)	(119.7)
Number of firms	240364	240364

Notes: This table refers to summary statistics for outcomes measured in 2006 for the universe of firms in our sample.

As expected due to the nature of the dataset, the firms for which we have business data are larger and offer higher wages compared to the average firm in our overall sample. These firms employ more EU07 workers,[15], who earn about 83 percent less than their native counterparts.

Despite these sample differences, we observe some similar trends regarding the effects of EU enlargement on employment and wages. In 2007, we note an increase in employ-

[15]In line with our observation in Section 3.1 reporting that these workers are more likely to be hired by larger companies

ment change for the average firm, driven by a higher employment level of EU07 workers (whose firm-level share over all employment increases). Unlike with our findings from the original sample, we observe an increase in the change of relative wages of native workers, while relative wage changes for EU07 workers exhibit a downward trend.

Figure 8 reports the effects of the EU enlargement on our outcomes of interest describing firm-level business performance: cost of labor, total revenues, and operative value-added. The analysis performed implements the same empirical strategy used in the previous sections of the paper.

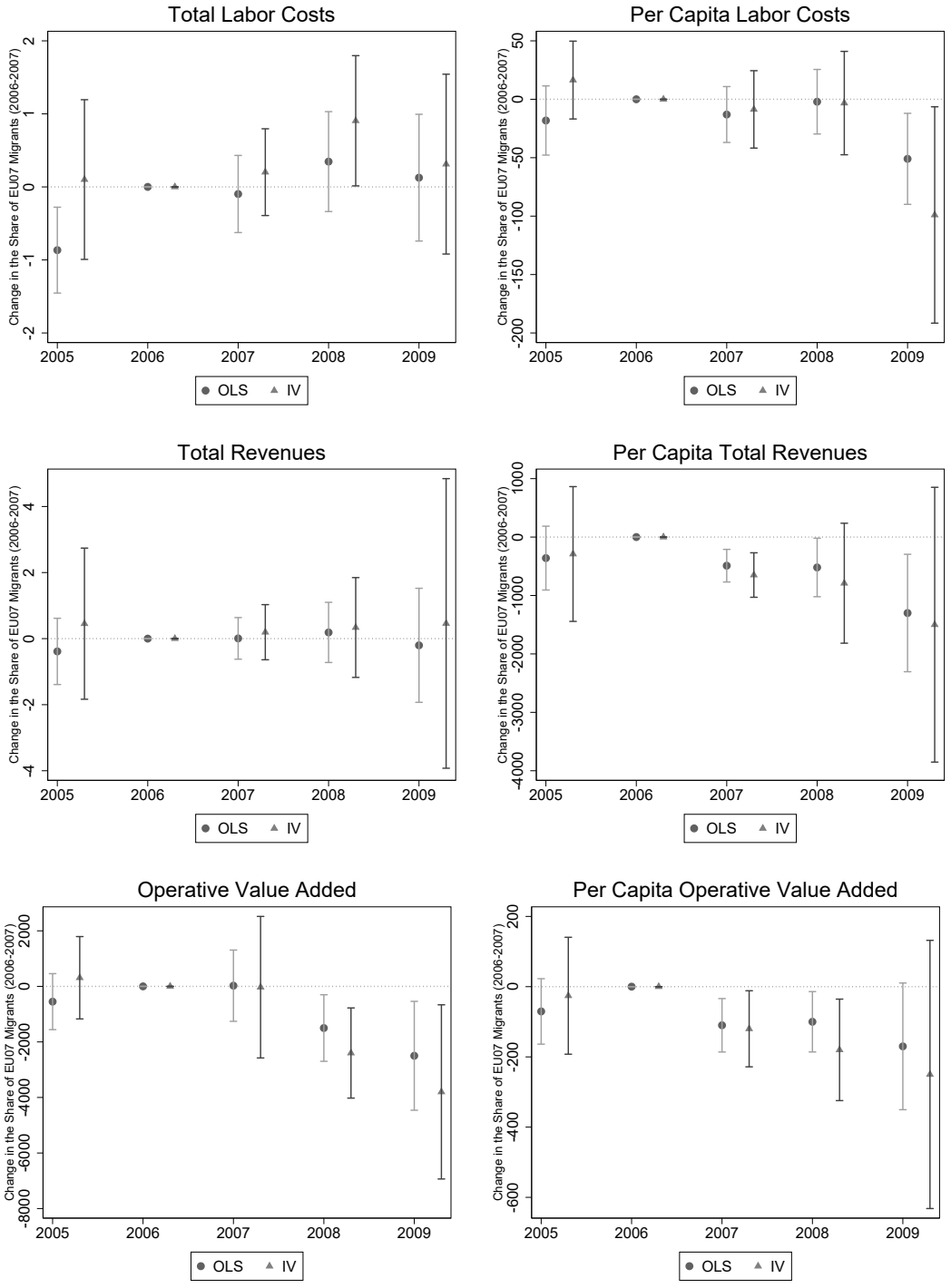
The top panels show the results of this analysis for both total and per capita labor costs, which encompass all employee-related expenses, including non-wage costs such as social security contributions and benefits. While our estimates are not very precise, we observe a trend of increasing total labor costs alongside a decrease in per capita labor costs. The rise in total labor costs is a mechanical outcome of the slight increase in overall employment, while the decline in per capita costs reflects the growth in employment among EU07 workers, who typically receive lower wages.

The middle panels explore the impact of EU enlargement on firms' total and per capita revenues. The findings indicate no significant change in total revenues, suggesting that the decision to increase employment was not driven by business growth, nor did it result in an expansion of business activities. Consequently, per capita revenues show a downward trend from 2007 onward, primarily driven by the rise in the number of employees.

Lastly, the bottom panels show a decline in both total and per capita operative value-added, which measures the revenue generated by a firm's core operations after accounting for resource costs. This decrease, combined with unvaried total revenues, indicates that the new resources employed by firms—including a larger workforce—are not as productive as those utilized before the EU07 enlargement.

Given the insights from the middle and bottom panels of Figure 8, it is pertinent to question why firms would choose to increase their workforce and associated costs if this does not lead to improvements in business performance. One possible explanation is that the rise in EU07 employment was largely driven by EU07 workers who were already employed, but informally. After 2007, EU citizenship granted these workers the possibility to seek formal employment, which increased their labor-market power, and may have compelled firms to hire them formally.

Figure 8
Firm-level business performance outcomes



Notes: On the y-axis are the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on firm business outcomes. Robust standard errors are clustered at the local labor-market level.

Overall, the analysis of changes in firms' business outcomes is not only interesting in its own right, but offers valuable insights into the underlying mechanisms at play. These findings suggest that the rationale behind the increase in employment cannot be attributed to a rise in less-costly yet equally productive labor supply. If that were the case, we would expect to see the trends in Figure 8 for overall and per capita labor costs being accompanied by an increase in total revenues and operative value-added, and unvaried per capita revenues and operative value-added.
If the increase in labor supply consisted not only of cheaper workers but also of less productive ones, we would expect to see a corresponding rise in total revenues or operative value-added to justify the decision to expand the workforce.
Unfortunately, the lack of reliable data on the presence of undocumented workers and on workers' histories outside the scope of non-agricultural private-sector firms limits our ability to interpret these results with greater detail and certainty. However, we believe that the evidence collectively suggests that an important channel through which the EU07 enlargement has affected local labor markets has been the formalization of previously undocumented working arrangements.

6 Conclusion

We analyze the impact of Romania's and Bulgaria's inclusion in the European Union on the Italian labor market. The EU enlargement in 2007 led to a change in legal status for a group of migrants, particularly from Romania, who already had a significant presence in Italy, largely due to the linguistic similarities between Italian and Romanian. To investigate firms' responses in terms of personnel choices, we utilize a unique administrative employer-employee dataset that encompasses the entire private-sector workforce in Italy.
We observe short-term effects on firm-level employment: an increase for EU07 migrants at the expense of natives. This is explained by a rise in hires and separations for migrant workers and by a decrease in hires of native workers. At the same time, employment per firm increases, while per capita revenues and operative value-added contract. Our evidence suggests that these findings are primarily driven by the formalization of labor relations of migrant workers who were already part of the informal labor market: on one hand, most of our findings are short-lived and mainly present in 2007, the year in which the EU enlargement took place; on the other hand, the increase in overall firm

employment is not accompanied by evidence of firms' business growth.

Our results also indicate a shift in market power in favor of EU07 migrants. With EU enlargement, their ability to remain in Italy is no longer tied to a specific employer, which is reflected in the increased rate of separations among these workers. Interestingly, while the change in legal status did not lead to a rise in wages for EU07 migrants, it did increase the share of workers among them with a more stable type of employment (permanent contracts), which is a very desirable contract feature in the Italian labor market.

References

Alberto Alesina, Armando Miano, and Stefanie Stantcheva. Immigration and redistribution. *The Review of Economic Studies*, 90(1):1–39, 2022. doi: 10.1093/restud/rdac011.

Michael Amior and Alan Manning. Monopsony and the wage effects of migration. CEP Discussion Paper 1690, May 2020. URL `http://eprints.lse.ac.uk/id/eprint/108454`.

Elizabeth U Cascio and Ethan G Lewis. Distributing the Green (Cards): Permanent residency and personal income taxes after the Immigration Reform and Control Act of 1986. *Journal of Public Economics*, 172:135–150, 2019. doi: 10.1016/j.jpubeco.2018.11.005.

Edoardo Di Porto, Enrica Maria Martino, and Paolo Naticchioni. Back to black? The impact of regularizing migrant workers. CSEF Working Papers 517, December 2018. URL `https://ideas.repec.org/p/sef/csefwp/517.html`.

Kirk Doran, Alexander Gelber, and Adam Isen. The effects of high-skilled immigration policy on firms: Evidence from visa lotteries. *Journal of Political Economy*, 130(10): 2501–2533, 2022. doi: 10.1086/720467.

Christian Dustmann and Albrecht Glitz. How do industries and firms respond to changes in local labor supply? *Journal of Labor Economics*, 33(3):711–750, 2015. doi: 10.1086/679684.

Ferran Elias, Joan Monras, and Javier Vàzquez Grenno. Understanding the effects of legalizing undocumented immigrants. *Journal of Labor Economics*, 2024. doi: 10.1086/730122.

Istat. La misura dell'economia sommersa secondo le statistiche ufficiali, 2010. URL `https://www.istat.it/wp-content/uploads/2011/01/testointegrale20100713.pdf`.

Istat. Popolazione residente e dinamica demografica, 2023. URL `https://www.istat.it/it/files//2023/12/CENSIMENTOEDINAMICADEMOGRAFICA2022.pdf`.

Cristina Mitaritonna, Gianluca Orefice, and Giovanni Peri. Immigrants and firms' outcomes: evidence from France. *European Economic Review*, 96:62–82, 2017. doi: 10.1016/j.euroecorev.2017.05.001.

Suresh Naidu, Yaw Nyarko, and Shing-Yi Wang. Monopsony power in migrant labor markets: Evidence from the United Arab Emirates. *Journal of Political Economy*, 124(6):1735–1792, 2016. doi: 10.1086/688877.

Gianmarco I. P. Ottaviano and Giovanni Peri. Rethinking the effect of immigration on wages. *Journal of the European Economic Association*, 10(1):152–197, February 2012. doi: 10.1111/j.1542-4774.2011.01052.x.

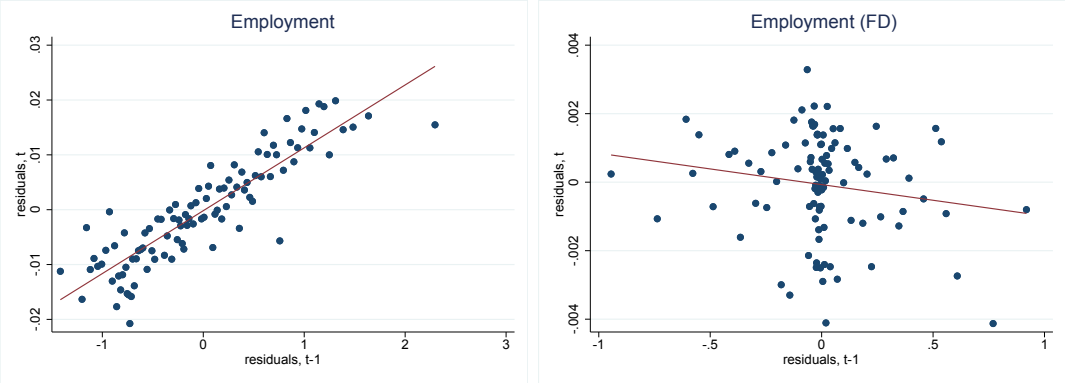
Gianmarco IP Ottaviano, Giovanni Peri, and Greg C Wright. Immigration, trade and productivity in services: evidence from UK firms. *Journal of International Economics*, 112:88–108, 2018. doi: 10.1016/j.jinteco.2018.02.007.

Paolo Pinotti. Clicking on heaven's door: The effect of immigrant legalization on crime. *American Economic Review*, 107(1):138–168, January 2017. doi: 10.1257/aer.20150355.

Sara Signorelli. Do skilled migrants compete with native workers? *Journal of Human Resources*, 2024. doi: 10.3368/jhr.0922-12535R3.

Appendix - Additional Tables and Figures

Figure A1
Specification validity



Notes: Binned scatter plot comparing two alternative specifications for our main analysis. For both panels, we first estimate our main specification on total employment and retrieve the residuals for each period. In the left panel, we implement the Fixed Effects specification. In the right panel, we implement the First Difference specification. We then show the correlation between residuals at time t on the y axis and at time t-1 on the x-axis. These figures clearly illustrate that the First Different estimation is better suited for our analysis as it eliminates residuals' serial correlation.

Table A1
Instrument validity

PANEL A:	$\Delta ShareEU07_{llm,02-01}$
Employment Natives (1992-1997)	-0.083
	(0.312)
Wages Natives (1992-1997)	0.072
	(0.112)
Employment EU07 (1992-1997)	-0.450
	(0.291)
Wages EU07 (1992-1997)	-1.932
	(1.791)
PANEL B:	$\Delta ShareEU07_{llm,06-07}$
Employment Natives (2002-2006)	-2.363
	(2.568)
Wages Natives (2002-2006)	-0.983
	(1.776)
Employment EU07 (2002-2006)	0.338
	(0.235)
Wages EU07 (2002-2006)	-0.251
	(0.291)
N	611

Notes: We perform two tests in the form of simple regressions at the local labor market level to corroborate the hypothesis that our instrument is not predicted by previous economic trends (in Panel A, natives and EU07 workers' changes in employment and wages, measured between 1992 and 1997), nor it has an effect on economic trends immediately preceding the EU07 enlargement (in Panel B, natives and EU07 workers' changes in employment and wages, measured between 2002 and 2006). See the main text for discussion. Robust standard errors are clustered at the local labor market level reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A2
Heterogeneity by Past Experience with Migrants, Wages (in logs)

	Native Relative Wage		
	All	W. EU07 pre-2006	Regularizing in 2002
2005 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.082	-0.138	-0.436
	(0.133)	(0.277)	(0.609)
2007 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.265*	-0.241	-0.338
	(0.157)	(0.190)	(0.535)
2008 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	0.035	-0.259	0.263
	(0.180)	(0.274)	(0.545)
2009 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.031	-0.310**	-0.269
	(0.124)	(0.147)	(0.511)
	EU07 Relative Wage		
	All	W. EU07 pre-2006	Regularizing in 2002
2005 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.575**	-0.577**	0.396
	(0.230)	(0.230)	(0.928)
2007 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.649**	-0.650**	-0.531
	(0.212)	(0.212)	(0.973)
2008 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.684**	-0.377	-0.544
	(0.214)	(0.298)	(0.790)
2009 $\times\hat{\Delta}\text{ShareEU07}_{llm,07-06}$	-0.856**	-0.674**	-1.541**
	(0.158)	(0.183)	(0.744)
N	3,827,560	336,675	164,230

Note: Reporting the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on log wages of native and EU07 workers. The coefficients represent the corresponding change in percentages for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor market level reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A3
Heterogeneity by Manager Type, Wages (in logs)

	Native Relative Wage		
	All	Native Manager	Migrant Manager
2005 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.082	-0.060	-0.142
	(0.133)	(0.133)	(0.572)
2007 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.265*	-0.303*	0.520
	(0.157)	(0.155)	(0.515)
2008 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	0.035	0.022	0.933*
	(0.180)	(0.163)	(0.495)
2009 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.031	-0.070	0.541
	(0.124)	(0.122)	(0.465)
	EU07 Relative Wage		
	All	Native Manager	Migrant Manager
2005 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.575**	-0.421	-1.579
	(0.230)	(0.262)	(1.876)
2007 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.649**	-0.536**	0.551
	(0.212)	(0.256)	(1.453)
2008 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.684**	-0.557**	-1.413
	(0.214)	(0.219)	(1.188)
2009 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.856**	-0.782**	-0.988
	(0.158)	(0.162)	(1.305)
N	3,828,560	3,559,650	104,962

Note: Reporting the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on log wages of native and EU07 workers. The coefficients represent the corresponding change in percentages for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor market level reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A4
Heterogeneity by Manager Type, Share of Permanent Contracts

	Native Share of Permanent Contracts		
	All	Native Manager	Migrant Manager
2005 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.081	-0.080	0.621
	(0.344)	(0.342)	(1.163)
2007 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.015	-0.141	1.072
	(0.309)	(0.329)	(1.233)
2008 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.183	-0.237	-0.260
	(0.247)	(0.258)	(1.197)
2009 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.449**	-0.445**	-0.755
	(0.146)	(0.116)	(1.569)
	EU07 Share of Permanent Contracts		
	All	Native Manager	Migrant Manager
2005 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	0.001	-0.108	-0.329
	(0.143)	(0.175)	(0.797)
2007 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	0.576**	0.657**	0.853
	(0.154)	(0.160)	(0.913)
2008 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.042	-0.075	1.298
	(0.173)	(0.178)	(0.843)
2009 $\times\hat{\Delta}$ShareEU07$_{llm,07-06}$	-0.246	-0.270	-0.137
	(0.171)	(0.183)	(0.717)
N	3,828,560	3,526,154	179,534

Note: Reporting the estimates of β from specification 1, showing the effect of interaction of the treatment variable with the time variable on the share of permanent contracts of native and EU07 workers. The coefficients represent the corresponding change in percentage points for a 1-unit increase in the share of EU07 migrant workers in a given local labor market. Robust standard errors are clustered at the local labor market level reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$