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The impact of migration on wages in Costa Rica

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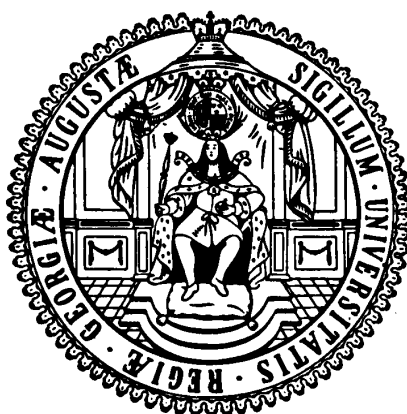
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The Impact of Migration on Wages in Costa Rica

**Adriana Cardozo, Inmaculada Martínez-Zarzoso,
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The Impact of Migration on Wages in Costa Rica

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September 15, 2020

Abstract

Costa Rica experienced in recent years increasing international migration from neighboring countries due to political, economic and social reasons. This paper is the first to disentangle the impact of migration on wages for native Costa Rican from the impact for already settled migrants. We analyze the effect of migration on wages within cells of education-experience-region as suggested by the so-called *spatial correlation approach*. Furthermore, we control for endogeneity by constructing a shift-share instrument and for heterogeneity using different sets of fixed effects. Our results show that on average, immigration has no effect on the wages of both natives and migrant workers with comparable skills for the period 2011 to 2019. The outcomes hold when using the national labor market approach as well as when changing the panel data estimation strategy. We also find that the effects vary depending on workers' educational level and that for some specific levels negative and significant effects are observed, in particular for high skilled workers.

Keywords: immigration, wages, labor markets, Costa Rica

JEL Codes: F22, F66, J61, J31

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1 Introduction

Costa Rica witnessed in recent years increasing flows of immigrants from other Central American countries, attracted by its growing and stable economy, its solid democracy and lack of political and civil conflicts. In contrast, its neighboring country, Nicaragua suffered from a break out of political turmoil, persisting and increasing poverty rates and deterioration of economic conditions. Thus, emigration of Nicaraguans to Costa Rica intensified in the past years due to the subsequent job losses, corruption, higher crime rates and political tensions. These developments, together with the lower migration possibilities to the USA contributed further to an increase in the number of immigrants, not only from Nicaragua but also from countries of the Northern Triangle, choosing Costa Rica as destination. Surprisingly, the impact of this recent migration wave on the Costa Rica labour market has not received sufficient attention in academia and hence, motivates the subject of this paper.

Existent empirical research on the impact of immigration on wages in destination countries shows at best mixed results. As stated by Borjas (2003), competitive labor market models predict a negative effect on wages of natives due to the increase in labor supply. Nevertheless, evidence shows that the impact depends on several factors, like the magnitude of the inflow, whether immigrants are perfect substitutes of native workers due to their skill levels, on labor market rigidities impeding the adjustment of wages and on the responses of native workers. Moreover, if immigration occurs due to higher labor demand in sectors or destinations with increasing wages and good employment prospects, an expansion of the labor force does not necessarily translate into falling wages (Edo and Rapoport, 2018). For these reasons, the effects of immigration on labour market outcomes is an empirical question and deserves further investigation.

The main novelty of this paper is to investigate whether immigration to Costa Rica has had an effect on wages over the period from 2011 to 2019. By using a sound identification strategy and a novel approach we are able to add further evidence to the question. More specifically, following Edo and Rapoport (2018) and Mayda et al. (2018) this paper uses the skill-cell approach developed by Borjas (2003) augmented with the regional dimension to become a particular type of *spatial correlation* approach. To address endogeneity issues, the approach is improved with the use of a shift-share instrument based on the past settlements of migrants from the same country of origin.

The empirical approach consists on estimating models using this particular type of *spatial correlation* approach, which in simple terms is the estimation of the effect of migration on wages within cells of education-experience-region. We first estimate the effect of migration on the real hourly wages of Costa Rican workers and next focus on the effect on wages of already-established migrant

workers. In doing this we are able to analyze whether new migrants are closer substitutes of resident migrants than of natives. We find that in both the FE and FE-IV estimations, migration does not show any significant effect on wages of Costa Rican workers. Differently, in the case of migrant workers the FE estimation shows a negative and statistically significant effect of migration on wages, but after controlling for endogeneity the significance vanishes. These results are validated using the *national labor market approach*, which does not consider the regional dimension to construct the cells. Results also show that there is no effect of migration on wages after controlling for endogeneity. The findings are also robust to estimating the models in first differences (with and without IV).

These findings are in line with the vast literature that rationalize the zero effect of migration on wages via: 1) The rational response of natives by moving from manual tasks to communication intensive tasks (Peri and Sparber, 2009); 2) The change in the output mix in the direction of more low-skill tasks, leading to an increase in demand for these workers due to the increase in supply of their input (Rybczynski, 1955); and 3) Changes in the direction of technology adoption towards a more intensive one in the now more abundant low skill workers, increasing their marginal productivity and canceling out any negative effect on wages (Beaudry and Green, 2005).

Even though these findings challenge the results derived from the law of supply and demand, this does not mean that they are unexpected. Particularly, there are several theoretical explanations that could rationalize these findings. First, there could be complementary skills between recently arrived migrants and workers in Costa Rica with comparable skills (Peri and Sparber, 2010; Ottaviano and Peri, 2012; Dustmann et al., 2016). Second, there could be a change in the job specialization of workers in Costa Rica as a rational response to migration, in which some workers would move from jobs that are intensive in manual tasks to better paid jobs that are intensive in communication intensive tasks (Peri and Sparber, 2009). Third, there could be a change in the output mix towards the production of goods that are more intensive in the now more abundant low-skill tasks, thus, generating an increase in demand for these workers (Rybczynski, 1955). Finally, there could be a change in the direction of technology adoption towards one that is more intensive in the now more abundant low skill workers, increasing their marginal productivity and wages (Beaudry and Green, 2005). From an empirical point of view, our results are in line with previous literature. For instance, using a different approach and a different survey, Gindling (2009) also found an overall zero effect of migration on wages of native workers in Costa Rica for the period 1997-2004.

From a methodological point of view, and according to Abadie (2020), it is important to report findings showing non-significant effects, since they bear relevant information that could be even

more valuable than the expected significant effects ¹. This would be particularly true in empirical contexts like the one in our setting, with large datasets and some theoretical and empirical evidence that suggests the absence of the expected effect.

The remainder of the paper is organized as follows. Section 2 presents a brief literature review summarising the outcomes of related papers on the impact of migration on wages. Section 3 describes the data and variables used in the Costa Rican context. Section 4 outlines the empirical strategy and the main results are presented and discussed in Section 5. Finally, Section 6 concludes with a summary of the main findings and a few suggestions for further research.

2 Literature review

This section first refer to general studies focusing on the theoretical and empirical effects of migration on wages. Next, two subsections focus on more specific research that covers the heterogenous effects of migration (2.1) and the empirical evidence for Latin American countries (2.2).

From a theoretical point of view, one should expect that the effect of migration on wages follow the laws of supply and demand. In this case, an increase of immigration should be equivalent to a supply shock, followed by a decrease in wages. However, empirical research on this topic usually concludes that immigration does not affect wages. Plausible explanations for the findings of zero effect are linked to the related theories and methodologies. First, migrants and natives may not be perfect substitutes as usually assumed by the theory. Specifically, there could be differences in educational levels between them, or there could be complementary skills for workers with the same educational level (Peri and Sparber, 2010; Ottaviano and Peri, 2012; Dustmann et al., 2016). In addition, according to Peri and Sparber (2009) a migration inflow would induce native workers to move from manual tasks to communication intensive tasks as a rational response oriented to avoid competitive pressures on wages. This would in turn offset the expected negative effect, as shown in empirical evidence found for the US (Peri and Sparber, 2009) and Spain (Amuedo-Dorantes and De La Rica, 2011). Second, according to the Rybczynski theorem (Rybczynski, 1955), a migration inflow would generate a change in the output mix via an increase in the output of textiles and a decrease in the output of high-tech and machines. This change in the output mix would keep wages constant via an increase in demand for low-skill workers generated by an increase in supply of its output. Beyond the effect on the output mix, a complementary phenomenon would be the impact of migration on technology adoption. Specifically, firms would change their technology

¹More specifically, through a calibration of posterior probability functions using data from Economics Laboratory Experiments, Abadie (2020) shows that the rejection of a typical null hypothesis often carries little information, while failure to reject is highly informative.

towards one that is more intensive in the now more abundant skill. Therefore, and according to Beaudry and Green (2005), some firms would begin to use relatively more manual tasks, and therefore, they would adopt technology that is complementary to these workers, increasing their marginal productivity and then their wages. Empirical evidence supporting the effect on the output mix and on the technology adoption hypotheses have been reported for the US by (Hanson and Slaughter, 2002; Lewis, 2005; Beaudry et al., 2010), for Spain by (Gonzalez and Ortega, 2011) and for Germany by (Dustmann et al., 2013).

In the long run, however, economic theory predicts a positive effect of immigration on wages, offsetting or dominating the negative short run effect. Jaeger et al. (2018) state that the long run effect is a result of general equilibrium adjustments following the initial local impact. Typical adjustments that take place are skill upgrading, increasing complementarities (Peri, 2010) and specialization. Furthermore, immigration is expected to increase the share of working-age population given that most of the immigrants belong to this group, leading to an increase in GDP per capita and raising average wages. Ruhs (2010) proposed another possible positive effect of immigration. The authors argued that immigration can also expand labor demand by fostering consumer demand for goods and services, leading to an increase in production in sectors where immigrant labor is used. Hence, while there could be an immigration driven increase in the labor supply, it could be offset by an increase in output as a response to larger consumption. One can even think about a case in which the latter effect is greater, leading to a net increase in wages.

From a methodological perspective, immigration driven supply shocks may be endogenous. According to the literature there are two main sources of endogeneity. First, immigrants could sort themselves to job positions or regions with higher wages (Dustmann et al., 2005; Llull, 2018), this is the well-known endogeneity to local labor market conditions -also known as endogeneity of immigrants' location choices-. Second, native workers could respond to migration by acquiring higher skills and moving into other local labor markets with higher wages ((Borjas, 2006; Ortega and Verdugo, 2016). This phenomenon is called the *diffusion* effect. These two endogeneity sources explain why wages do not decrease and could even rise, although the labor supply is increasing, making difficult to find a causal effect of migration on wages.

There are two main econometric approaches to deal with the endogeneity issues. To solve the endogeneity to local labour market conditions Card (2001) proposes the shift-share instrumental variable methodology in the context of *spatial correlation*. This approach consist of creating an instrumental variable that interacts the regional distribution of previous immigrants from each country of origin (share component) and the time varying inflow of immigrants from those countries at the national level (shift component). The second econometric approach is the *national labor*

market one proposed by Borjas (2003), who considers the effect of migration in every skill cell of education-experience at the national level.

It is very important to clarify that these two empirical strategies capture the direct partial effects of immigration on wages in the short run. The *national labor market approach* considers workers with comparable skills, whereas the *spatial correlation* approach considers workers with similar skills within the same region. In addition, results using both approaches separately lead to diverging results, with the skill-cell approach mainly showing a negative effect of immigration on average wages and the *spatial correlation approach* leading to zero effects. Edo and Rapoport (2018) and Borjas and Monras (2017) combine both approaches and, while the former find a relatively small negative effect on wages of native workers with comparable skills for the US with annual data from 2000 to 2013, the latter find a big negative wage elasticity of -1.3 mainly driven by low-skill workers in a replication of the Marielitos study.

2.1 Substitutability between workers and heterogenous effects by skill level

As argued before, the short-term effects of immigration on wages of workers in the host country depends on the substitutability or complementarity of native workers with immigrants. On the one hand, some immigrants and workers could be substitutes because they have similar or similarly perceived skill levels (in the case of migrant downgrading) and hence they compete for the same jobs. Consequently, a migration driven increase in labor supply would depress native wages for that skill level. On the other hand, new immigrants and domestic workers could be complements in some cases. Particularly, a decrease in the cost of a low skilled based activity, like construction, would generate an increase in production and thereafter an increase in demand for high skill construction workers, such as electricians, and for high skill related activities, such as professional installers of air conditioning. The heterogeneous effect of migration would thus depend on the skill level of migrants and native workers. Taking for example the case of the UK, Nickell and Saleheen (2015) find a small negative impact on average British wages using annual data for the period 1992-2014. Ruhs (2018) find that an increase of 1% in EU immigration leads to a 0.8% decrease in wages of UK-born workers at the 5th and 10th percentiles of wages and a 0.6% increase for the 90th percentile. In contrast, using yearly data for the years 1997-2005 Dustmann et al. (2013) find a slightly positive average effect. Nevertheless, these estimations only show a short-run response to migration, which according to Ruhs (2018) is expected to vanish over time. Considering the substitutability issue, Ottaviano and Peri (2012) used in their estimations the elasticity of substitution derived from a structural labor demand function for the period 1990-2006 in the US and concluding that immigration to the US had a modest negative long-run effect on

real wages of least educated natives.

Hence, if there is no significant effect of migration on the wages of native workers due to the imperfect substitutability between migrants and native workers, one should expect that there could be an effect on workers that are themselves immigrants residing in the host country. Particularly, new migrants are likely to be closer substitutes for the skills of migrants already employed. Manacorda et al. (2012) tested this reasoning with data from the UK for the period 1975-2005 using age-education cells. They found that immigration has a negative effect on wages of resident migrant workers relative to the natives. Specifically, this effect was concentrated in university-educated migrants, who suffered a deterioration in their returns to education due to competition from equally highly-educated recently arrived migrants, while native workers did not suffer this deterioration in wages because of the low level of substitutability with immigrants.

2.2 Empirical evidence for Costa Rica and Colombia

Few studies analyze empirically the effect of migration on wages in Latin American countries. We focus in this section on two studies with methodological similarities to our work: Gindling (2009) and (Caruso et al., 2019).

The former use the *national labor market* approach to analyze the effect of Nicaraguan migration on the wage structure of Costa Rican workers. Although there was no evidence of a significant effect on average Costa Rican earnings, the authors find a negative and slightly significant effect (significant only at 10% level) for Costa Rican women who did not finish primary education and a positive and significant effect for Costa Rican women with completed secondary education. According to these findings, the author state that for the first group of women, migrants are substitutes while for the second they are complements. However, that work does not account for the endogeneity of immigrants' location choices and second, the panel structure is made with irregular year gaps as they used the years 1997, 2000, 2001, 2003 and 2004. Therefore, important information about the variation of Nicaraguan migration in each skill-cell and of wages within these skill-cells is missing for some years.

Caruso et al. (2019) analyze the effect of Venezuelan migration to wages in Colombia. The authors use the *spatial correlation* approach with a shift-share instrument accounting for the distance between each Venezuelan province and the Colombian departments where immigrants arrive. This study finds a sizable short-term negative and statistically significant effect on Colombian informal sector workers living in urban areas. Particularly, a 1 percentage point increase in Venezuelan immigration is associated with a 10-percentage point reduction in wages for these workers. According to the authors, this occurs through occupational downgrading of native workers, because

once migrants enter the labor market, natives are only able to get jobs in activities below their qualifications. However, this result does not take into account the diffusion effect derived from natives eventually moving to locations with better job prospects.

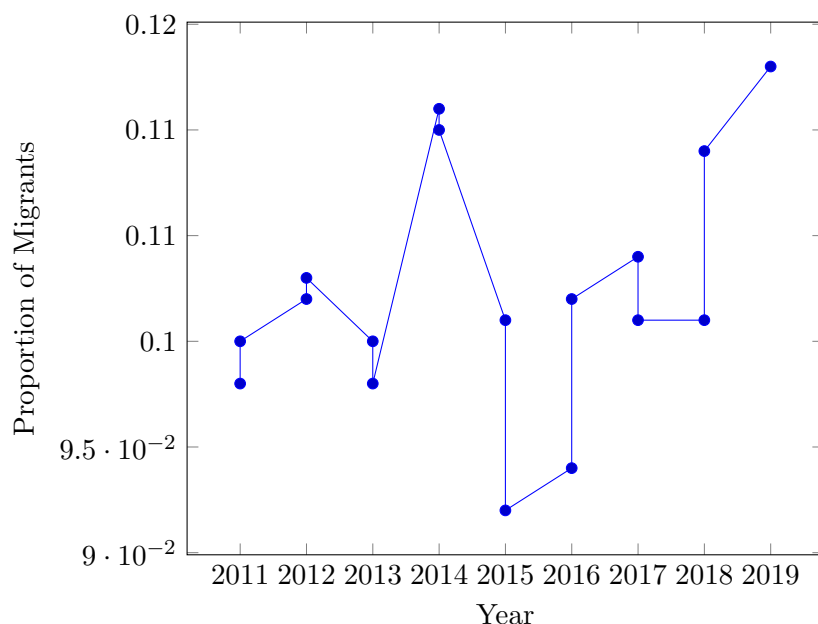
Considering the Costa Rican labor market, characterized by market imperfections, high informality and high wage inequality, we infer that both the *national labor market* and the *spatial correlation* approach need to be used jointly in order to minimize any source of endogeneity generated by the fragile structure of these labor markets. For instance, one could expect a stronger native flight response to migration in light of the high share of precarious jobs and low wages, since migrant workers would be ready to work for an even lower wage than natives, creating large incentives for the latter to look for opportunities in wealthier regions. On the other hand, we could expect the endogeneity of migrants' choice decisions to be present as well due to the high concentration of migrants in certain regions, like the northernmost Huetar Norte, which has a high concentration of Nicaraguan migrants due to its proximity to Nicaragua (24.08% of migrants lived in Huetar Norte in the 2019). Therefore, in order to obtain a consistent estimator of the wage effect of migration for a country like Costa Rica, both endogeneity issues of immigrants' location choices and the diffusion effect must be considered. In this work, we use the combination of both approaches in the line of Jaeger et al. (2018), Peri (2012) and Borjas (2014), who refer to this combination as a particular type of *spatial correlation* approach, denomination that we adopt on this paper.

3 Data and descriptive statistics

We exploit data from the ECE (Encuesta Continúa de Empleo), a labor survey conducted every quarter, covering the period from 2011 to 2019, which provides us with labor characteristics of the Costa Rican population for 33 quarters. The ECE is a continuous labor survey, constructed as a rotating panel, that measures employment throughout the year. The main purpose of the survey is to collect seasonal data on the main labor market indicators (INEC, 2010). The survey targets mainly population in working age.

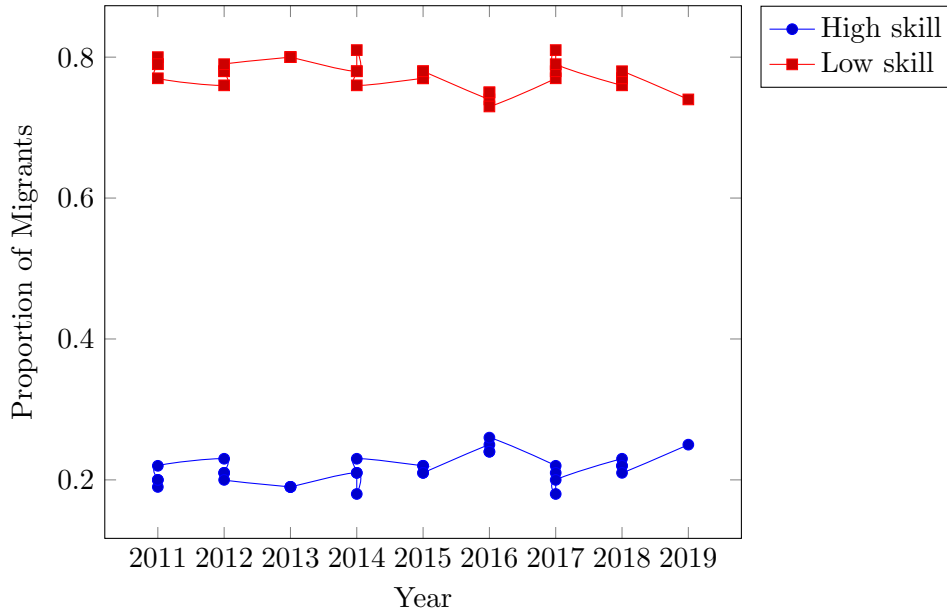
The proportion of migrant workers in Costa Rica experimented relatively small fluctuations over the period 2011-2019, which oscillated between 10% and 12% of the total workforce. After a peak of 11% in 2014 the proportion of migrants gradually decreased until the end of 2015, reaching by then the smallest value observed in the period (8.76%). Thereafter, a continuously smooth increase began until the share approached 12% by the first quarter of 2019 (Figure 1).

Figure 1: Proportion of Migrant workers over the total labor force of Costa Rica



The majority of migrant workers come from Nicaragua. The proportion is rather stable, increasing from 85.4% in the first quarter of 2011 to 88.3% in the first quarter of 2019, the final period in our sample. Other important countries of origin, ordered by the average proportion of immigrants in the whole period, are Panama(3.7%), Colombia (1.7%), El Salvador (1.3%), Honduras (0.9%) and the United states (0.9%). All remaining countries, accounting for 3.9% of total immigrants, are grouped in a single category. Workers with less than complete secondary education, grouped as low skill workers(high school dropouts and lower) account for at least three quarters of the immigrant population (Figure 2). Regarding the maximum educational attainment of these workers, about 30% have incomplete primary education, 26% have complete primary education and 22% report having incomplete secondary education, with a slight increase in overall educational attainment of immigrants over time. With respect to high skill migrants, we observe a clear increase in the proportion of immigrants in the category secondary complete, changing from 10.3% to 14.7% over the whole period. Similarly, the share of immigrants with completed university education increased from 7% to about 9%, while the share of immigrants with university incomplete changed from 1.5% to 2.4%.

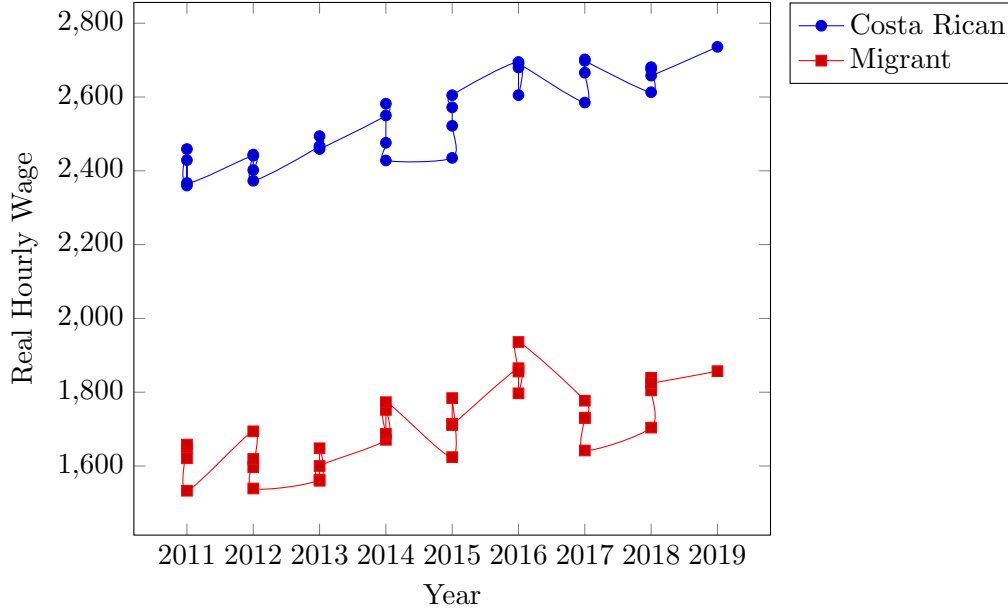
Figure 2: Proportion of High and Low skill workers among Migrants



The low skill level of the average immigrant contrasts with the average skill level of the Costa Rican. Among natives, the share of high skill workers increased from 41% to 49% over the study period. Distinguishing by educational level, we can observe that the proportion of workers with completed university education changed from 21% to 26%, and that of workers with completed secondary increased from 14.7% to 18.1%.

Another important aspect to consider is the evolution of real hourly wages. As shown in Figure 3 there is a systematic difference between real hourly wages of natives and immigrants. Costa Ricans have a 47% higher average real hourly wage compared with immigrants. In addition, we can observe that the real hourly wages have been increasing over time with a similar pattern among regions (not shown in the Figure).

Figure 3: Real hourly wage of Migrant and Costarican workers (In local currency: Costa Rican Colón)



In our data, educational levels are divided into 6 categories: primary incomplete, primary complete, secondary incomplete, secondary complete, university incomplete, and university complete. We define the variable *years of experience* as the time elapsed since the individual finishes her educational process. Considering that Costa Ricans usually begin primary education at the age of 6, this variable equals actual age minus years of education minus 6. We calculate years of experience for individuals aged 16 to 64 years, and exclude from the sample workers with more than 40 years of experience. Once having individual labor market experience, we create 8 groups based on five-year intervals of work experience in order to consider that individuals with almost the same years of experience are likely to influence labour market opportunities of their peers (Welch, 1979). Regarding the regions, we consider the six Costa Rican administrative areas: Central, Chorotega, Pacífico Central, Brunca, Huetar Caribe and Huetar Norte. Therefore, our panel consists of 288 ($6 \times 8 \times 6$) education-experience-region groups over 33 quarters (2011-2019), making a total of 9504 observations.

Analysis using composite groups of education-experience-region presents some advantages in comparison with using only education-region groups. For example, when analysing a supply shock generated by an increase in low skilled migrants, we need to take into account how the distribution of work experience in the immigrant population contrasts with that of natives. In this case, considering a region with a high influx of migrants, only a particular segment of natives with tertiary education would be affected if all new immigrants with similar education were young and hence had low experience. In contrast, a completely different segment of natives with the same educational level would be affected if the new migrants were around 50 years old and in general, with high

experience.

Our target variable is constructed as the ratio of migrants with respect to the total population for each education-experience-group for two subsamples: For native Costa Rican workers and for settled migrant workers. For the former, we only include Costa Rican workers, while for the latter, we only considers migrant workers who have been living more than one year in Costa Rica. More specifically, let's consider a group of workers who have educational level i , experience level j , lives in the region r and is observed in quarter t . In consequence, the measure of the immigrant supply shock for this skill group is:

$$p_{ijrt} = \frac{M_{ijrt}}{M_{ijrt} + C_{ijrt}} \quad (1)$$

Where M_{ijrt} represents the number of immigrants for the specific cell (i,j,r,t) and C_{ijrt} represents the number of native Costa Rican workers. Thus, this expression represents the immigrant share of the labor force in a concrete education-experience-region group in a given quarter. As dependent variable, we use the average log hourly wage of each group of education-experience-region of the two subsamples of native Costa Rican workers and settled migrant workers. To calculate the averages, we consider the hourly gross wage of the first and second main employments, deflated by the consumer price index using as base year 2016 (IMF, 2019). The hourly gross wage is constructed by dividing the monthly gross wage by 4 and then by the amount of weakly worked hours. In addition, and to reduce the influence of outliers, we exclude from the sample the workers with more than 72 weekly working hours and with real hourly wages higher than 40000 colones, values that are implausible for an average worker in Costa Rica. We only consider workers that participate in the labor force, are not enrolled in school and are not self-employed.

The average log hourly wage of the whole sample of workers (Including both Costa Ricans and migrants) belonging to some selected education-experience groups² in the Central region are shown as an example for descriptive purposes in Table 1. Notice that as expected for every educational level the real hourly wage is higher the higher the work experience. In addition, the average real hourly wage of every skill group slightly increased over time. Finally, we observe a significant variation in the wages by educational level. As an example, the average log hourly wage of the skill group of workers with complete primary education and years of experience in the interval 21-25 was 7.26 Colones in 2019, while for the group of workers with university complete education and the same years of experience it was equal to 8.62 in the same year. This variation in wages by education and experience level support our argument of considering them as separate labour

²We consider only Primary Complete, Secondary Complete and University Complete in the table

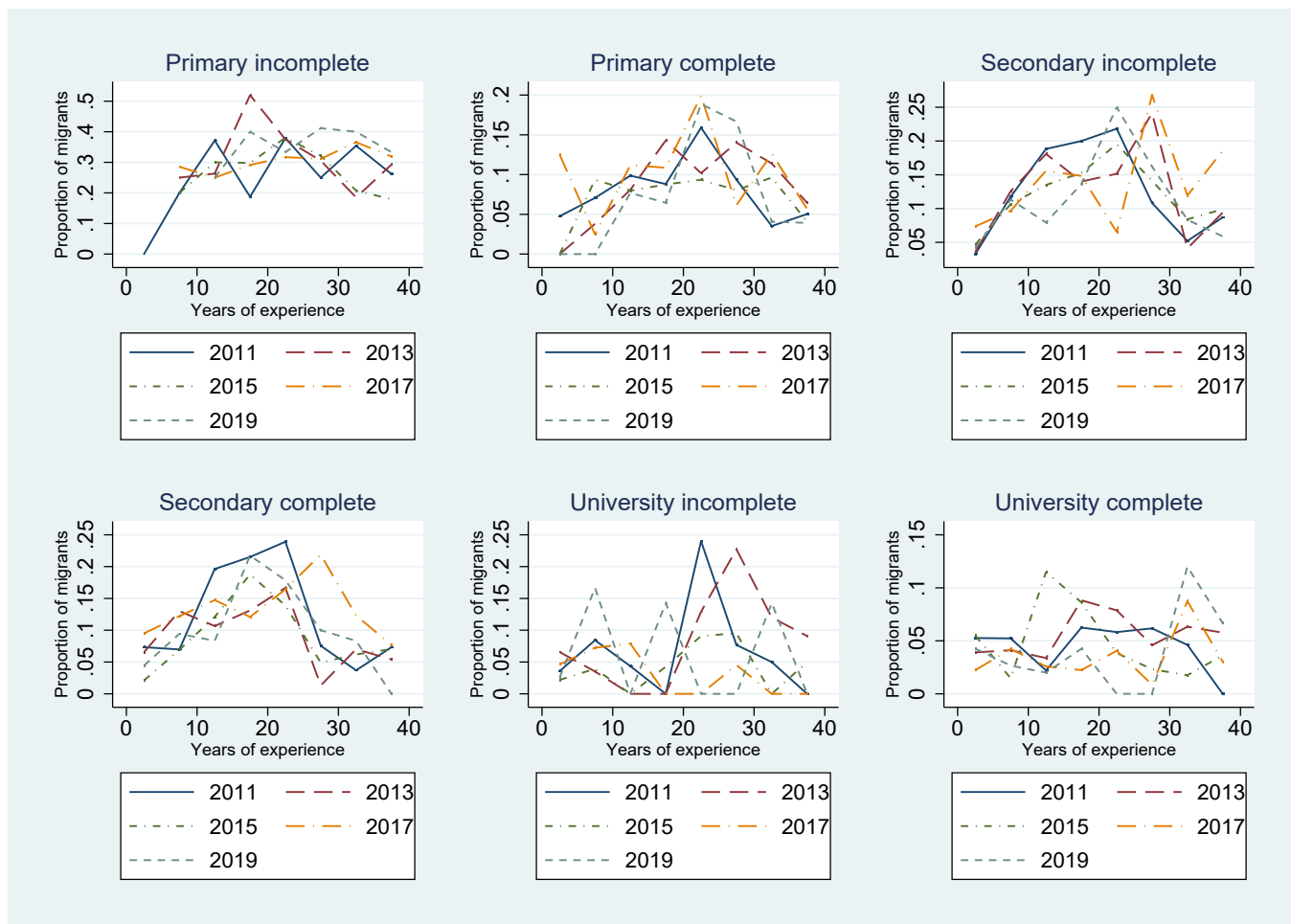
markets, reinforcing the choice of our empirical strategy. A similar pattern is observed for the other five regions of Costa Rica, also when observing results for Costa Rican and settled migrant workers respectively.

Table 1: Average log hourly wage of selected education-experience groups in the region Central

Educational level	Years of experience	2011	2012	2013	2014	2015	2016	2017	2018	2019
Primary Complete	1-5	6,40	6,71	6,58	6,73	6,87	6,96	7,04	7,38	6,81
	6-10	7,05	7,02	6,96	6,88	6,97	7,10	7,08	7,05	7,05
	11-15	7,21	7,02	7,10	7,06	7,17	7,22	7,13	7,18	7,13
	16-20	7,10	7,05	7,16	7,18	7,18	7,22	7,25	7,23	7,20
	21-25	7,16	7,20	7,20	7,15	7,20	7,23	7,26	7,25	7,26
	26-30	7,21	7,12	7,15	7,17	7,21	7,19	7,23	7,25	7,15
	31-35	7,15	7,16	7,07	7,17	7,26	7,21	7,28	7,25	7,22
	36-40	7,15	7,16	7,10	7,14	7,19	7,20	7,19	7,23	7,22
Secondary Complete	1-5	7,19	7,18	7,20	7,19	7,20	7,28	7,29	7,28	7,29
	6-10	7,39	7,36	7,35	7,34	7,34	7,38	7,38	7,39	7,40
	11-15	7,53	7,44	7,45	7,48	7,45	7,50	7,46	7,47	7,47
	16-20	7,54	7,53	7,54	7,57	7,54	7,54	7,58	7,54	7,54
	21-25	7,56	7,60	7,58	7,60	7,64	7,65	7,62	7,58	7,59
	26-30	7,62	7,61	7,63	7,66	7,56	7,59	7,63	7,64	7,62
	31-35	7,72	7,72	7,72	7,66	7,68	7,66	7,64	7,62	7,53
	36-40	7,70	7,85	7,85	7,82	7,75	7,78	7,79	7,72	7,62
University Complete	1-5	8,02	7,99	7,95	7,96	8,04	7,96	7,95	8,01	8,00
	6-10	8,25	8,24	8,21	8,19	8,17	8,21	8,23	8,19	8,27
	11-15	8,37	8,37	8,37	8,36	8,37	8,41	8,41	8,43	8,41
	16-20	8,42	8,48	8,47	8,43	8,46	8,54	8,48	8,54	8,56
	21-25	8,46	8,55	8,55	8,54	8,54	8,67	8,59	8,58	8,62
	26-30	8,47	8,49	8,55	8,50	8,57	8,64	8,65	8,60	8,65
	31-35	8,63	8,51	8,56	8,51	8,58	8,67	8,54	8,65	8,49
	36-40	8,45	8,47	8,51	8,55	8,62	8,68	8,64	8,59	8,58

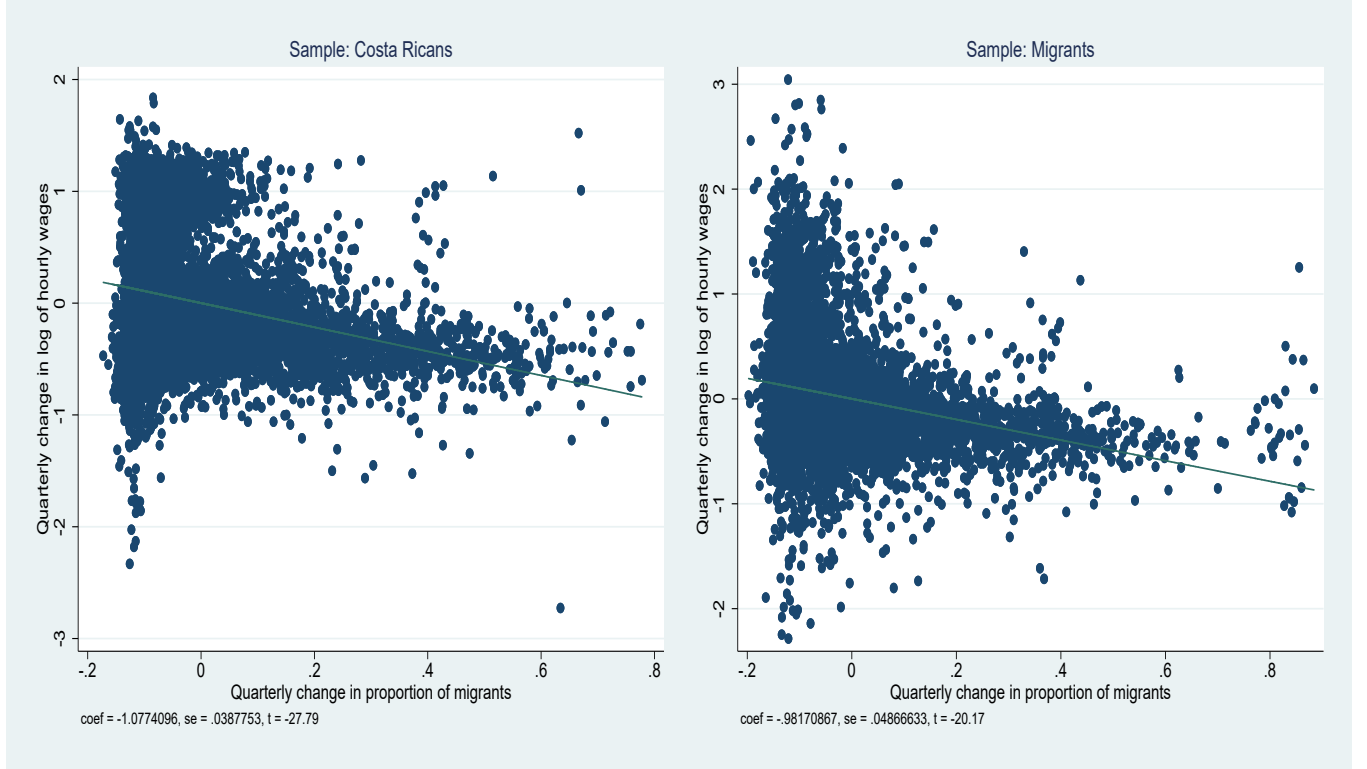
With respect to our target variable, Figure 4 shows that for the whole sample (Including both Costa Rican and settled migrant workers) in the Central Region, there is substantial variation over time in the proportion of migrants in each educational group depending on the years of experience. The same pattern can be observed for the other 5 regions of Costa Rica and for the specific proportions in both subsamples of Costa Rican and settled migrant workers. This evidence together with the information of Table 1, shows that there is substantial variation among education-experience-region groups in both the dependent and target variables.

Figure 4: Proportion of migrants by skill group for the period 2011-2019 for the region Central



Before moving to the model specification, we show in Figure 5 the simple correlations between the variables of interest. The scatter diagram illustrates the relationship between the quarterly change in the proportion of migrants and the quarterly change in log hourly wages for our sample of education-experience-region groups of both Costa Rican and already settled immigrant workers. The resulting negative relationship, which shows the correlation between the variables, will be tested in the following section to disentangle the potential causal effect, after controlling for different types of unobserved heterogeneity and endogeneity.

Figure 5: Scatter diagram relating changes in wages and immigration in Costa Rica, 2011-2019



Note: Values plotted correspond to residuals from regressions of the log hourly wage and of the immigrant share on vectors of education-experience-region fixed effects, quarter fixed effects, education-year fixed effects, experience-year fixed effects and region-year fixed effects. These residuals give the log wage or the immigrant share in the specific education-experience-region-quarter cell relative to that group's mean over the sample period, after removing time effects.

4 Model specification and empirical strategy

The main modelling strategy is based on Borjas (2014), Jaeger et al. (2018) and Edo and Rapoport (2018) who proposed a variant of the already mentioned *spatial correlation* approach for analysing the effect of migration on wages within cells of education-experience-region.

Our baseline model specification takes the following form:

$$y_{ijrt} = \beta_0 + \beta_1 p_{ijrt} + \sigma_{ijr} + \phi_t + \gamma_{iyear} + \theta_{jyear} + \lambda_{ryear} + \epsilon_{ijrt} \quad (2)$$

where y_{ijrt} being real hourly wage and p_{ijrt} the proportion of migrant workers over the total labor force of a specific cell of education-experience-region given by equation 1. In order to control for the different kinds of unobserved heterogeneity (in the form of omitted variable bias) that could bias our estimator, we include different types of fixed effects: Education-experience-region fixed effect (σ_{ijr}), quarter fixed effect (ϕ_t) as well as the time-varying fixed effect of education (γ_{it}), experience (θ_{jt}) and region (λ_{rt}). Every regression is weighted by the average quantity of workers belonging to each group of education-experience-region. Moreover, at the time of creating the

groups, every worker from the original sample was weighted according to the weighting factor available in the survey. In each specification, the standard errors are clustered by group cells in order to control for possible autocorrelation and heteroskedasticity. Finally, in order to avoid a problem of overfitting because of excessive fixed effects, we consider years instead of quarters when computing the interactive time-varying fixed effects.

Even if we are controlling for unobservable heterogeneity with the battery of fixed effects, there is still an endogeneity problem in our model that has to be addressed. In particular, the decision to migrate could be endogenous to the migrant, in the sense that they could migrate to the regions where higher wages are offered. Therefore, we are facing a double causality issue that could generate bias in the estimated coefficients in equation 2.

There are several approaches to deal with this endogeneity in the literature. The most popular is the shift-share instrument (also known as the past settlement instrument) proposed by Card (2001) and used in different settings as for instance in Cortes (2008), Peri (2012) and Borjas (2014). We generate an instrument in line with Jaeger et al. (2018). We exploit the fact that immigrants could allocate themselves near previous immigrants from the same country of origin. Native workers could follow a similar behavior, since the native workers in an specific skill-region group may not be exogenous to current economic effects of immigration, and thereafter may internalize the labor market effects of migrations moving to other regions, as is well documented in Peri and Sparber (2010) and Edo and Rapoport (2018). In other words, with this approach we control for the immigrants' choice decision and the subsequent natives' response. To construct the instrument, we consider separately the 6 most common nationalities of migrants in Costa Rica (Honduras, Nicaragua, Panama, El Salvador, Colombia and the US) as well as a 7th category which groups the remaining countries of origin. Hence, our instrumental variable takes the following form:

$$\tilde{p}_{ijrt} = \frac{\tilde{M}_{ijrt}}{\tilde{M}_{ijrt} + \tilde{C}_{ijrt}} \quad (3)$$

where,

$$\tilde{M}_{ijrt} = \sum_{c=1}^C \frac{m_{ijr}^c(1stquarter2011)}{m_{ij}^c(1stquarter2011)} * m_{ijt} \quad (4)$$

In 4 $m_{ijr}^c(1stquarter2011)$ represents the quantity of immigrants of the education-experience group (i,j) in the region r coming from the country c in the the base period; $m_{ij}^c(1stquarter2011)$ is the quantity of immigrants of the same education-experience groups present in the whole country in the base period; and m_{ijt} is the quantity of migrants of the same education-experience group present

in the whole country coming from country c in the specific quarter t . Thereafter we sum these shift-share variables for the different origins. For this, we consider the migrants from Nicaragua, Colombia, El Salvador, Honduras, Panama, the United States and the group with the remaining countries of origin. In addition, we also create a shift-share component for Costa Rican workers, which is defined as:

$$\tilde{C}_{ijrt} = \frac{c_{ijr}(1stquarter2011)}{c_{ij}(1stquarter2011)} * c_{ijt} \quad (5)$$

Here, $c_{ijr}(1stquarter2011)$ represents the quantity of natives of the education-experience group (i,j) living in region r in the base period; $c_{ij}(1stquarter2011)$ represents the quantity of natives of the same education-experience group present in the whole country in the base period; and $c_{ijt}(1stquarter2011)$ represents the quantity of natives of the same education-experience group living in the whole country in the specific quarter t . We estimated this new model using a Second Stage Least Square estimator (2SLS), which first and second stages take the following form,

First stage:

$$\hat{p}_{ijrt} = \beta_0 + \beta_1 \tilde{p}_{ijrt} + \sigma_{ijr} + \phi_t + \gamma_{it} + \theta_{jt} + \lambda_{rt} + \epsilon_{ijrt} \quad (6)$$

Second stage:

$$y_{ijrt} = \beta_0 + \beta_1 \hat{p}_{ijrt} + \sigma_{ijr} + \phi_t + \gamma_{it} + \theta_{jt} + \lambda_{rt} + \epsilon_{ijrt} \quad (7)$$

Additionally, in order to differentiate the effect by the skill of immigrants, we split our explanatory variable into two: One representing the share of high skill immigrants in each education-experience-region cell and the other representing the share of low skill immigrants in the same cell. In each case workers who at least finished high school are considered as high skilled and the rest as low skilled. In line with Mayda et al. (2018), we also constructed an instrumental variable for high skill and low skill workers respectively and we proceed to instrument them separately. Therefore, the second stage regression turns into:

$$y_{ijrt} = \beta_0 + \beta_1 \hat{p}h_{ijrt} + \beta_2 \hat{p}l_{ijrt} + \sigma_{ijr} + \phi_t + \gamma_{it} + \theta_{jt} + \lambda_{rt} + \epsilon_{ijrt} \quad (8)$$

We test for the validity of our instrumental variable approach by examining the results of the first stage estimations in each estimated model. More specifically, we check the actual correlation of the instrument with the explanatory variable of interest, as well as the value of the F-test robust to autocorrelation and heteroskedasticity. As we can observe in the first stage estimates of the sample for Costa Rican workers in Table A.2.1, the coefficients of the different past settlement instruments are positive and statistically significant for the proportion of immigrants, proportion of high skill immigrants and proportion of low skill immigrants, and the F-test is higher than 10

for our basic past Settlement instrument (48.92) and for the past Settlement instrument of low (525) and high skill (134) workers as well, hence, we confirm their relevance. Furthermore, for the sample of immigrant workers we found similar results, which are shown in Table 3.

Regarding the exclusion restriction, in order to fulfill it, our instrumental variable should only affect real hourly wage through its effect on the proportion of migrants. It means that past immigrants should have to chose destination places following specific labor demand shocks that do not have any long-run persistence in our study period of 8 years. Hence, the critical assumption of our instrumental variable approach is that in an 8-year period any long-run persistence of labor demand shocks should vanish.

5 Main results

The main results are shown in Tables 2 and 3. Table 2 shows the effects of migration on the wages of Costa Rican workers, whereas Table 3 refers to the effects on already established migrants. Columns 1 to 4 show the results for the baseline specification in Equation 2 for all educational groups (columns 1 and 2) and also after splitting into high and low skilled (columns 3 and 4). In each case we estimated the equation with fixed effects (FE) and in first differences (FD). Overall, the results in Table 2 do not show any statistically significant effect of migration on wages of Costa Rican natives. This holds for average migration and also for migration splitted into high or low skilled migrants. Columns 5 to 8 show results when addressing endogeneity using the instrumental variable approach. Coefficients remain non-statistically significant for average migration. The only significant effect is that of low skill migration (column 7), which is positive and statistically significant at the 10% (Table 2).

Table 2: Estimations of the Impact of Migration on Wages of Costa Rican Workers (Group ID: education-experience-region)

	(1) FE b/se	(2) FD b/se	(3) FE b/se	(4) FD b/se	(5) IV-FE b/se	(6) IV-FD b/se	(7) IV-FE b/se	(8) IV-FD b/se
Proportion of Migrant workers	0.005 (0.028)	0.002 (0.035)			0.089 (0.063)	0.007 (0.086)		
Proportion of High skill migrants			0.035 (0.048)	0.021 (0.061)			-0.003 (0.130)	-0.091 (0.194)
Proportion of Low skill migrants			-0.008 (0.034)	-0.006 (0.042)			0.128* (0.070)	0.045 (0.093)
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Experience*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9063	8626	9063	8626	8957	8550	8957	8550
R-squared	0.132	0.0168	0.132	0.0168	0.133	.	0.131	.

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

Table 3 shows the results obtained when the models are estimated using the wages of already established migrants as dependent variable. The coefficients in columns 1 (FE) and 2 (FD) indicate a negative and statistically significant effect of average migration on these wages. Similarly, as shown in column 3 (FE model), high and low skill migration has a negative and significant effect on wages, while the same holds only for low skill migration in the first differences model (column 4). The magnitude of the coefficient is -0.16, significant at 5% (FE column 1) for all migrants, whereas is higher for high skill migrants (-0.32), significant at 10%, than for low-skill (-0.11), and significant at 10% (FE, column 3). We do not interpret the coefficients since we must convert them into elasticities (see first section of the Appendix). It is important to note that the coefficients of the FD specification (columns 2 and 4) show a similar pattern but are higher in magnitude. The effect of average migration and low skill migration is significant at 1% and there is no statistically significant effect of high skill migration. The rest of the table (columns 5-8) shows the results obtained when using instrumental variables in the FE and FD models respectively. Notice that none of the coefficients are statistically significant any longer (Table 3).

Table 3: Estimations of the Impact of Migration on Wages of Migrant Workers (Group ID: education-experience-region)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FE	FD	FE	FD	IV-FE	IV-FD	IV-FE	IV-FD
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Proportion of Migrant workers	-0.160** (0.066)	-0.237*** (0.081)			-0.058 (0.187)	-0.105 (0.227)		
Proportion of High skill migrants			-0.322* (0.193)	-0.243 (0.264)			-0.102 (0.820)	0.079 (1.032)
Proportion of Low skill migrants			-0.117* (0.065)	-0.235*** (0.078)			-0.049 (0.136)	-0.137 (0.198)
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Experience*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5718	4531	5718	4531	4361	3707	4361	3707
R-squared	0.0464	0.0289	0.0465	0.0289	0.0614	.	0.0615	.

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

5.1 Robustness checks: National labor market approach and heterogeneous effects by educational level

As a first robustness check, we estimated our main model (2) as well as the model with the splitted target variable using the *national labor market* approach of Borjas (2003). Basically, this model considers education-experience groups omitting the regional dimension. One drawback of this approach is that we cannot use the regional past settlement instrument since migrants are considered to be spread equally among education-experience groups in the whole Costa Rican labor market. The results obtained are not very different from those of the *spatial correlation* approach.

The estimated coefficients and corresponding standard errors indicate that there is no statistically significant effect of any type of migration neither on Costa Rican workers nor on migrant workers as shown in tables 4 and 5, respectively.

Table 4: Estimations of the Impact of Migration on Wages of Costarican Workers (Group ID: education-experience)

	(1) FE b/se	(2) FE b/se	(3) IV-FE b/se	(4) IV-FE b/se
Proportion of Migrant workers	-0.012 (0.069)	0.001 (0.068)		
Proportion of High skill migrants			-0.015 (0.089)	0.056 (0.135)
Proportion of Low skill migrants			-0.010 (0.089)	-0.024 (0.077)
Quarter FE	Yes	Yes	Yes	Yes
Education*Year FE	Yes	Yes	Yes	Yes
Experience*Year FE	Yes	Yes	Yes	Yes
Observations	1558	1505	1558	1505
R-squared	0.451	0.0800	0.451	0.0803

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

Table 5: Estimations of the Impact of Migration on Wages of Migrant Workers (Group ID: education-experience)

	(1) FE b/se	(2) FE b/se	(3) IV-FE b/se	(4) IV-FE b/se
Proportion of Migrant workers	-0.180 (0.164)	-0.205 (0.201)		
Proportion of High skill migrants			-0.565 (0.459)	-0.145 (0.629)
Proportion of Low skill migrants			-0.049 (0.143)	-0.227 (0.186)
Quarter FE	Yes	Yes	Yes	Yes
Education*Year FE	Yes	Yes	Yes	Yes
Experience*Year FE	Yes	Yes	Yes	Yes
Observations	1446	1357	1446	1357
R-squared	0.150	0.0661	0.150	0.0661

Note:*** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

It could be the case that migration flows affect workers differently depending on their educational level. To address this issue we re-estimated the model with a set of interactions. We interact our migrant share with dummy variables of 'primary complete', 'secondary complete' and 'university complete'. We also address the endogeneity issue in this specification, by using instrumental variables generated as interactions of each educational dummy variable with the past settlement instrument used in the previous section. The second stage results, shown in tables A.3.1 and A.3.2, indicate that most of the effects are non-statistically significant, with two exceptions. On the one hand, we find a negative effect (significant at 5%) of migration on Costa Rican workers with secondary complete education in the FD specification (Table A.3.1, column 4). On the other hand,

we also find a negative effect (10% significance level) of migration on wages of migrant workers with primary complete education in the FD specification (Table A.3.2). Finally, we analyze the heterogenous effect depending on the educational level using the "national labor market" approach. The results, in tables A.4.1 and A.4.2 in the Appendix, do not show any heterogenous effects of migration on wages of any workers, when those are splitted according to their educational level.

The main insight of this section is that the result of non-significant effects of migration on wages of both Costa Ricans and migrants is robust both to changes in the estimation method and to changes in the composition of the groups ("national labor market" approach). Regarding the heterogenous effects by educational level of Costa Ricans and migrant workers, we observe some effects, but those are very specific and sensitive to changes in the specification and hence, are non-robust.

6 Conclusions

In this paper, we analyzed the effect of migration in Costa Rica on wages of both Costa Rican and already settled migrant workers. We exploit the variation within education-experience-region groups, which are built using quarterly labor force survey data from 2011 to 2019. The main estimation framework is based on panel data techniques and instrumental variables that allow us to control for unobserved heterogeneity and reverse causality, respectively.

The main results indicate that, on average, immigration has no effect on the wages of both natives and migrant workers with comparable skills. These results are robust to changes in the composition of the groups. Results are similar using education-experience groups instead of education-experience-region groups as the unit of the panel. The outcomes also hold when changing the panel data estimation strategy, that is, departing from the within transformation and estimating the main models with the variables in first differences. We also find that the effects vary depending on workers' educational level and that for some specific levels negative and significant effects are observed, in particular for high skilled workers. Nevertheless, these outcomes are very specific and sensitive to changes in the model specification.

These outcomes suggest that over the period 2011-2019 the expected negative effect of migration on wages of workers with comparable skills has possibly been counteracted by some micro- or macro-economic phenomena. For instance, the potential complementary between recently arrived migrants and domestic workers with comparable skills; the rational response of domestic workers by moving from manual tasks to communication intensive tasks; an increase in the demand of the abundant skill-type workers due to a change in the output mix of firms; or a change towards a more intensive technology in the increasing abundant skill-type. Since the first explanation is

more related to structural parameters (elasticities of substitution) of the production function, while the last three are more related to adjustment mechanisms, there are two possible explanations to rationalize the results. Either there is an important degree of complementarity between recently arrived migrants and domestic workers in Costa Rica, or the response of workers and firms in Costa Rica is fast. We leave these two issues for further research. A second topic for further investigation is the validation of any of the potential explanations given for the suggested counteracting effects.

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A Appendix

A.1 Calculation of marginal effects

To interpret the final coefficient, we must convert it to an elasticity which represents the percent change in wages with respect to a percent change in labor supply originated by the migration flow. Lets define for example $m_{ijrt} = \frac{M_{ijrt}}{C_{ijrt}}$ as the percentage increase in labor supply attributable to immigration. Then, the final effect of migration on the wage of Native Costa Ricans is estimated as follows: We have that:

$$p_{ijrt} = \frac{M_{ijrt}}{M_{ijrt} + C_{ijrt}} = \frac{\frac{M_{ijrt}}{C_{ijrt}}}{\frac{M_{ijrt}}{C_{ijrt}} + 1} = \frac{1}{1 + \frac{C_{ijrt}}{M_{ijrt}}} = \frac{1}{1 + \frac{1}{m_{ijrt}}} \quad (9)$$

Then, according to the chain rule:

$$\frac{dlogy_{ijrt}}{dm_{ijrt}} = \frac{dlogy_{ijrt}}{dp_{ijrt}} \frac{dp_{ijrt}}{dm_{ijrt}} = \frac{\beta_1}{(1 + m_{ijrt})^2} \quad (10)$$

In where β_1 is the coefficient of our regression and m_{ijrt} is evaluated at the means.

A.2 First stage regressions

Table A.2.1: FE First Stage Estimations of the impact of Migration on wages of Costarican workers (Group ID: education-experience-region)

	(1)	(2)	(3)
	First stage	First stage	First stage
	Prop.Migrants	Prop.High Skill Migrants	Prop.Low Skill Migrants
Pastsettlement_Instrument	0.670*** (0.043)		
Pastsettlement_InsHighskill		0.497*** (0.048)	-0.000 (0.007)
Pastsettlement_InsLowskill		0.001 (0.005)	0.772*** (0.056)
Quarter FE	Yes	Yes	Yes
Education*Year FE	Yes	Yes	Yes
Experience*Year FE	Yes	Yes	Yes
Region*Year FE	Yes	Yes	Yes
Observations	9042	9042	9042
F-test Robust	11.86	21.00	62.68
R-squared	0.151	0.111	0.174

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

Table A.2.2: FE First Stage Estimations of the impact of Migration on wages of Migrant workers (Group ID: education-experience-region)

	(1) First stage Prop.Migrants	(2) First stage Prop.High Skill Migrants	(3) First stage Prop.Low Skill Migrants
Pastsettlement_Instrument	0.670*** (0.043)		
Pastsettlement_InsHighskill		0.497*** (0.048)	-0.000 (0.007)
Pastsettlement_InsLowskill		0.001 (0.005)	0.772*** (0.056)
Quarter FE	Yes	Yes	Yes
Education*Year FE	Yes	Yes	Yes
Experience*Year FE	Yes	Yes	Yes
Region*Year FE	Yes	Yes	Yes
Observations	9042	9042	9042
F-test Robust	11.86	21.00	62.68
R-squared	0.151	0.111	0.174

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

A.3 Heterogenous effects by educational level (spatial correlation approach)

Table A.3.1: Fixed Effects and Instrumental Variable-Fixed Effect Estimations of the impact of Migration on wages of Costa Rican workers (Group ID: education-experience-region)

	(1) FE b/se	(2) FD b/se	(3) IV-FE b/se	(4) IV-FD b/se
Effect by educational level				
Primary complete	0.020 (0.041)	0.013 (0.052)	0.090 (0.088)	-0.010 (0.073)
Secondary complete	-0.034 (0.042)	-0.018 (0.052)	0.063 (0.084)	-0.170** (0.083)
University complete	0.035 (0.071)	0.007 (0.085)	0.176 (0.291)	0.046 (0.254)
Quarter FE	Yes	Yes	No	No
Education*Year FE	Yes	Yes	No	No
Experience*Year FE	Yes	Yes	No	No
Region*Year FE	Yes	Yes	No	No
Observations	9063	8626	8957	8550
R-squared	0.132	0.0166	0.132	0.920

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

Table A.3.2: Fixed Effects and Instrumental Variable-Fixed Effect Estimations of the impact of Migration on wages of Migrant workers (Group ID: education-experience-region)

	(1)	(2)	(3)	(4)
	FE	FD	IV-FE	IV-FD
	b/se	b/se	b/se	b/se
Effect by educational level				
Primary complete	-0.116 (0.072)	-0.223** (0.089)	0.046 (0.140)	-0.237* (0.122)
Secondary complete	-0.141 (0.121)	-0.208 (0.143)	-0.004 (0.317)	0.382 (0.267)
University complete	-0.480 (0.334)	-0.438 (0.484)	-1.410 (2.074)	-2.253 (1.583)
Quarter FE	Yes	Yes	No	No
Education*Year FE	Yes	Yes	No	No
Experience*Year FE	Yes	Yes	No	No
Region*Year FE	Yes	Yes	No	No
Observations	5718	4531	4361	3707
R-squared	0.0467	0.0293	0.0612	0.579

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

A.4 Heterogenous effects by educational level (national labor market approach)

Table A.4.1: Fixed Effects and Instrumental Variable-Fixed Effect Estimations of the impact of Migration on wages of Costarican workers (Group ID: education-experience)

	(1)	(2)
	FE	FD
	b/se	b/se
Effect by educational level		
Primary complete	0.017 (0.109)	0.018 (0.093)
Secondary complete	-0.052 (0.079)	-0.060 (0.092)
University complete	-0.039 (0.134)	0.035 (0.212)
Quarter FE	Yes	Yes
Education*Year FE	Yes	Yes
Experience*Year FE	Yes	Yes
Observations	1558	1505
R-squared	0.452	0.0803

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.

Table A.4.2: Fixed Effects and Instrumental Variable-Fixed Effect Estimations of the impact of Migration on wages of Migrant workers (Group ID: Skill)

	(1) FE b/se	(2) FD b/se
Effect by educational level		
Primary complete	-0.173 (0.147)	-0.298 (0.199)
Secondary complete	0.058 (0.303)	0.223 (0.343)
University complete	-0.885 (1.025)	-0.738 (1.218)
Quarter FE	Yes	Yes
Education*Year FE	Yes	Yes
Experience*Year FE	Yes	Yes
Observations	1446	1357
R-squared	0.151	0.0671

Note: *** stands for significant at the 0.01 level, ** at the 0.05 level and * at the 0.1 level. Robust SE in parenthesis.