



JOB MOBILITY AND WAGE DYNAMICS IN PORTUGAL

Nova Economics Club

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Project in partnership with GEE.

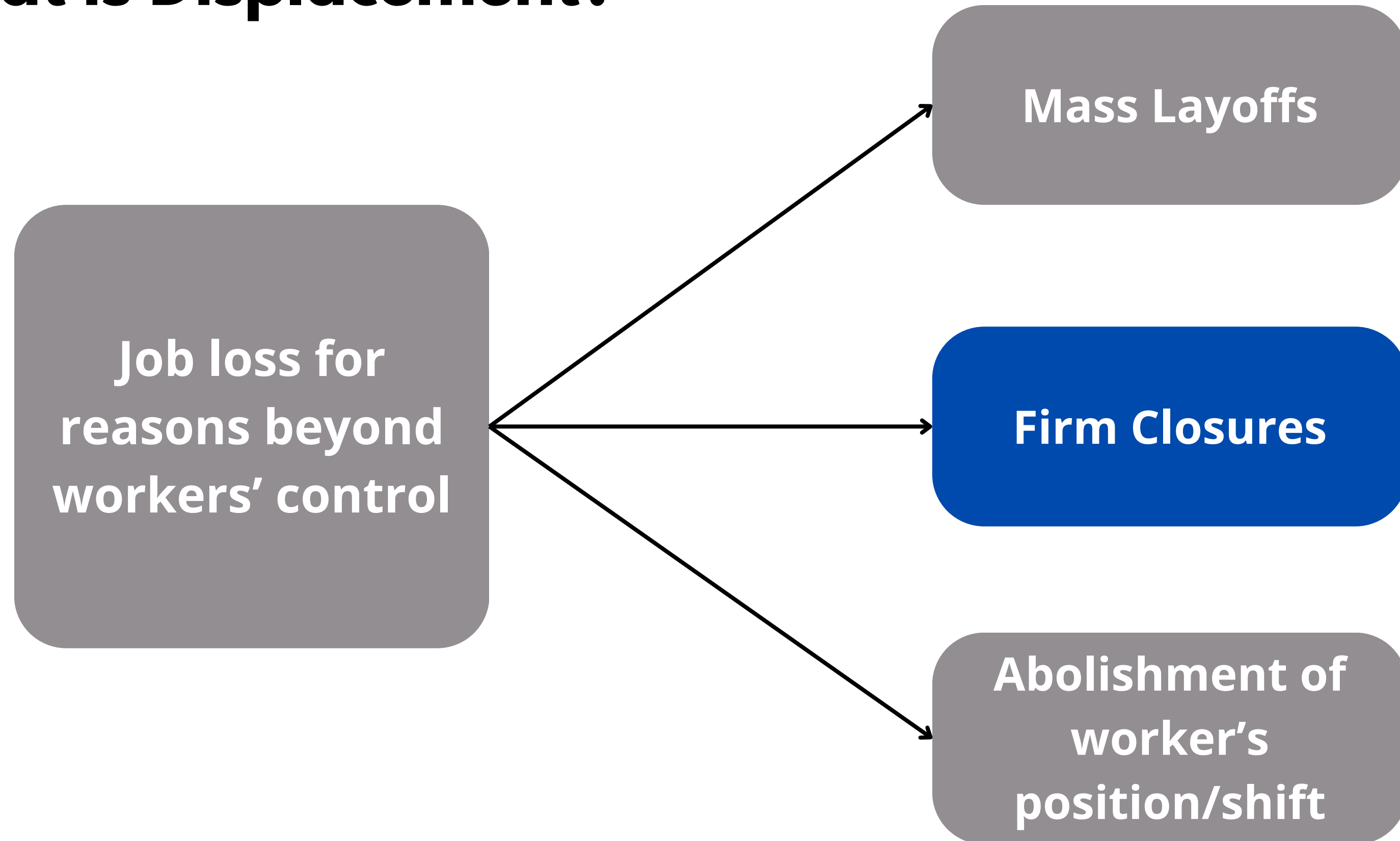
A red rectangular sign with the words 'FOR HIRE' in white, bold, sans-serif capital letters is mounted on a vintage car. The sign is slightly tilted. The background is a blurred image of a car's front end, showing a headlight and a chrome ornament. The overall image has a soft, vintage aesthetic.

Too Many Changes? Post-Displacement Job Mobility and Wages: an Analysis of Displaced Workers in Portugal



Displacement

What is Displacement?



The Impact of Displacement on Wage Dynamics: Literature Review

Empirical Background: Displacement and Wage Dynamics

John Addison and Pedro Portugal (1989)

Provide a foundation for the study of the impact displacement on workers' wage changes.

- Although displacement deeply declines earning prospects:
Increased unemployment duration strongly reduces subsequent earnings meaning that the conventional path to this determination overstated results in previous attempts to do so.

Pedro Raposo, Pedro Portugal and Anabela Carneiro (2021)

The authors analyze the factors behind wage reductions among [displaced workers](#).

- The predominant factor contributing to the monthly wage decrease among displaced workers is the transition to lower-paying job titles, constituting 37% of total average monthly wage decline, compared to 31% attributed to firm effects and 32% to match effects.

A woman in business attire is walking on a moving walkway in an airport, pulling a black rolling suitcase. The scene is brightly lit with large windows on the sides, and the overall tone is professional and modern. The text 'Job Mobility' is centered over the image.

Job Mobility

Definition of Mobility

Movement of employees across grades, positions or even occupations.

Planned or unplanned mobility

Upward, downward or lateral movement



Types of Mobility

By Direction: Intra and Inter Firm Job Mobility

Intra: Job Mobility within the firm.

Inter: Job Mobility between firms.

By Change: Industrial, Occupational and Geographical Mobility

Industrial: Mobility between industries with focus on inter firm mobility.

Occupational: Mobility between job occupations with focus on inter firm mobility.

Geographical: Mobility between job locations with focus also on inter firm mobility.

The Impact of Job Mobility on Wage Dynamics: Literature Review

Empirical Background: Job Mobility and Wage Dynamics

Robert Topel (1991)

Proposes a dynamic wage model where wages rise with job seniority.

- Robust relationship between job tenure and wages increases, suggesting that workers accumulate job-specific human capital over time.
- High separation rates from jobs with longer tenures suggest substantial losses in job-specific human capital upon job displacement.

John Addison, Pedro Portugal and Pedro Raposo (2023)

The authors advance the traditional analysis by accounting for the possibility that wage change may occur with each job switch.

- Job mobility is an important driver of wage growth, particularly during the early stage of the worker, indicating declining return to job mobility over time.

Empirical Background: Job Mobility and Wage Dynamics

Dulce Contreras, Rosario Sánchez and Delfina Soria (2016)

Used the stochastic frontier technique to measure the gap between potential and actual wages.

- Spanish and Italian women, despite exhibiting higher mobility rates, encounter a widened gap between potential and actual wages.
- Mobility apparently fails to translate into expected wage benefits, especially for women, indicating systemic inefficiencies or barriers in the labor market's recognition.

Justine Hervé (2023)

Analyses the impact of industrial specialization on job mobility and earnings for American workers in low- and middle- wage occupations.

- Negative association between industry specificity and workers' wages.
- Supports the idea that industry specificity increases mobility costs.

Empirical Background: Other Variables of Interest

Gender

Women mobility does not improve their wage-earning path while for men, mobility reduces differences between the potential and the observed wage.
-Contreras et. al (2016)

Tenure

Wage increases associated with job changes, especially in the early stages of a worker's career, indicating declining return to job mobility over time.
- T. Addison, Portugal and Raposo (2023)

Institutions and Wage Level

Despite apparent rigidity, institutions in the Portuguese labour market leave ample scope for firm action when setting wages.
- Cardoso (2006)

Research Methodology

Data

- Longitudinal microdata from a matched employer-employee-job title dataset known as *Quadros de Pessoal (QP, Lists of Personnel)* from 2010-2021;
- Information concerning workers encompasses gender, age, educational attainment, and comprehensive details regarding monthly earnings. This includes base wages, regular benefits (e.g., seniority bonuses), irregular benefits (such as profit shares and premiums), overtime compensations, and hours worked (both standard and overtime). Our primary findings rely on the hourly wage, which is computed as the total sum of regular (base wage and regular benefits) and irregular payroll (irregular benefits and overtime payments) for the reference hours worked;
- To be included in the sample, a worker must report positive earnings and have at least two years of tenure in the year immediately preceding the displacement event. Additionally, the worker must report positive earnings at least once afterward. The sample was limited to full-time wage earners in the private, non-farm sector, aged 16-64 years, employed at firms with at least 20 employees, and earning base wages above 80 percent of the mandatory minimum wage. Further restrictions included: (i) removing observations with missing values in the covariates and (ii) excluding singleton observations (groups reduced to a single observation that do not affect the coefficient estimates in the fixed effects model, particularly the coefficients of interest).

Theoretical Framework

The Mincer Equation

Mincer (1974), defined wages as a function of education and experience through the Mincer Equation and, through empirical application, found out that earnings rise with accumulated work experience.

The Augmented Mincer Equation

Mincer and Jovanovic (1981) then relate labor mobility and wage dynamics - the decline in labor mobility as individuals age is influenced by job tenure. Moreover, other authors contribute to findings that variables such as Gender and Firm Conditions also affect individuals wage dynamics.

Raposo, Portugal and Carneiro (2021) & Bertheau *et. al* (2023)

These two papers use a transformed version of the Augmented Mincer Equation to study the consequences of job loss - respectively, the first introduces novel fixed effects and estimation strategy whilst the second one approximates to our event study objective (i.e. studying the effects of job loss and mobility over time).

Estimation Strategy: Difference-in-Differences (DiD)

Firm Closures - Exogenous Shock DiD Analysis

- To study the impact of mobility on wage dynamics we decided to look through the lens of displacement in light of recent literature mentioned previously.
- To do so, we use firm closures as an exogenous shock that allows us to draw comparisons between movers and non-movers in the post-displacement period, though impeding any mention of the intra vs inter-firm realm of mobility.



Estimation Strategy: Difference-in- Differences (DiD)

Step 1 - Generating a Firm Closure Exogenous Shock

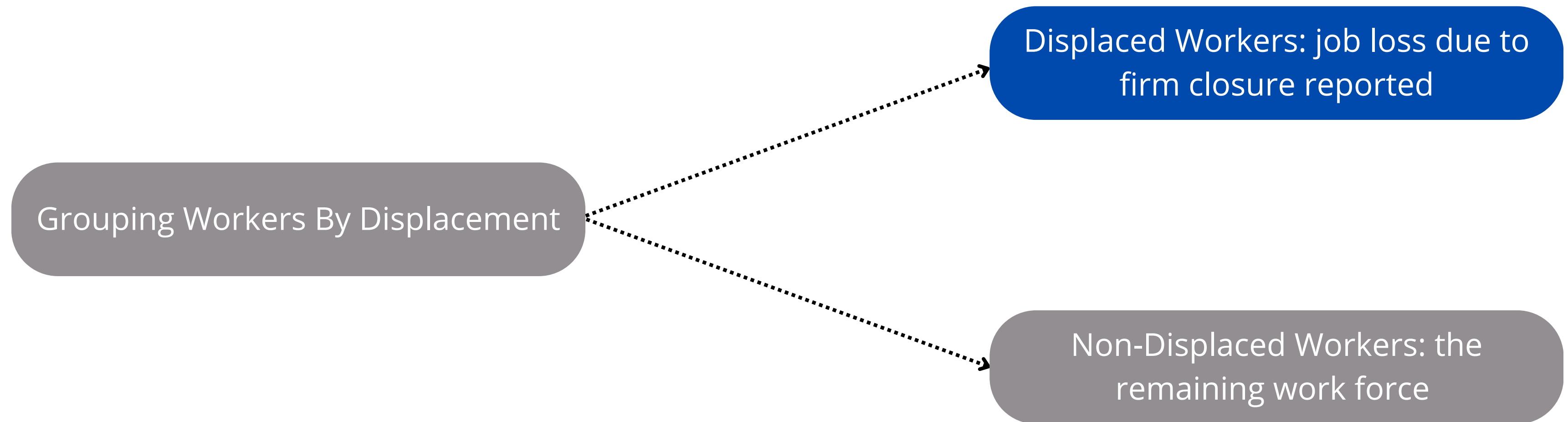
Descriptive Statistics: Number of Displaced Workers

	Non-Displaced	Displaced
N	18,057,711 (80.6%)	4,351,528 (19.4%)
Year of Reference		
2010	1,513,325	447,462
2011	1,489,149	428,102
2012	1,390,535	369,299
2013	1,373,954	358,925
2014	1,400,692	367,482
2015	1,433,595	372,549
2016	1,475,650	370,919
2017	1,530,480	372,495
2018	1,587,463	370,334
2019	1,619,998	348,533
2020	1,566,697	321,467
2021	1,676,173	223,961

Table 1: Displaced Workers by year of displacement

Estimation Strategy: Difference-in-Differences (DiD)

Step 2: Displaced and Non-Displaced Workers



Characteristics of Displaced vs Non-Displaced Workers

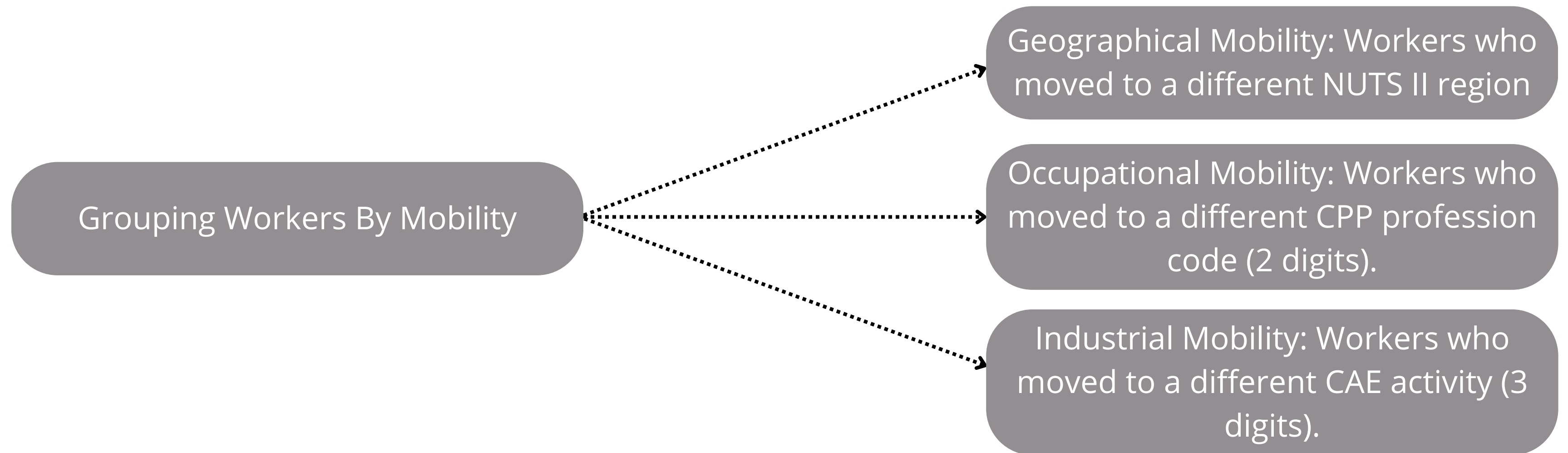
	Non-Displaced	Displaced
N	18,057,711 (80.6%)	4,351,528 (19.4%)
Gender		
Male	9,732,272 (53.9%)	2,395,693 (55.1%)
Female	8,325,439 (46.1%)	1,955,835 (44.9%)
Age (in years)	40.402 (10.945)	40.473 (10.303)
Education (in years)	10.196 (3.924)	9.776 (3.812)
NUTS II Region where the establishment is located (October 31st)		
North Region	6,665,825 (36.9%)	1,680,584 (38.6%)
Algarve	776,785 (4.3%)	197,326 (4.5%)
Centre Region	3,877,946 (21.5%)	842,385 (19.4%)
Lisbon Metropolitan Area	5,116,699 (28.3%)	1,203,458 (27.7%)
Alentejo	949,722 (5.3%)	232,515 (5.3%)
Azores	287,087 (1.6%)	91,017 (2.1%)
Madeira	374,448 (2.1%)	102,292 (2.4%)
Outside of Portugal	9,199 (0.1%)	1,951 (0.0%)
Log of Real Hourly Total Remuneration (in 2012 Euros)	1.792 (0.541)	1.671 (0.492)
Turnover (Euros)	228,895,110.482 (858,966,645.493)	58,261,899.410 (351,900,294.819)
Tenure (in years)	9.426 (9.286)	6.953 (7.893)

Table 2: Descriptive Statistics of Displaced and Non-Displaced Workers

Note: For the total number of workers, gender and region (NUTS II) variables the % of workers in each of the categorical distinctions is shown in the parenthesis. For the age, education, wage, turnover and tenure variables the parenthesis show the standard deviation of the variable.

Estimation Strategy: Difference-in-Differences (DiD)

Step 3: The Target/Treatment Groups



Characteristics of Movers by Mobility Group

- Around 5% of the sampled displaced workers changed occupation, around 1% moved from one region to another and approximately 4% experienced industrial mobility;
- Among occupational movers, the most representative occupations are FAB Intermediate Level Technicians and Fixed Plant and Machine Operators;
- Men make up the majority of geographical movers (around 2/3 of the displaced geographical movers) with the Lisbon MA (32.8%), Northern (28.7%) and Centre (21.9%) Regions comprising over 4/5 of the movers;
- In terms of industrial movers (IM), it is worth noting that the mean tenure of IMs (7.1 years) is half the mean tenure for Industrial Stayers (3.6 years). Moreover, the Construction (13.8%), Wholesale and Retail Trade, Repair of Motor Vehicles, Motorcycles and Personal and Household Goods (23.6%) and Real Estate, Renting and Business Activities (15.7%) industries account for over half of industry-level movements.

Estimation Strategy: Difference-in-Differences (DiD)

Step 4: Firm Closure - Exogenous Shock DiD Analysis

$$w_{it} = \alpha_i + \lambda_t + \phi_{iF(i,t)} + \psi_{F(i,t)} + \sum_{k=-5}^{k=5} \gamma_k \mathbf{1}\{t = t_i^* + k\} \\ + \sum_{k=-5}^{k=5} \theta_k \mathbf{1}\{t = t_i^* + k\} \times Mob_i + X'_{it}\beta + \epsilon_{it} \quad (1)$$

Where:

α_i • Worker Fixed Effects;

λ_t • Time Fixed Effects;

$\phi_{iF(i,t)} + \psi_{F(i,t)}$ • Worker-Firm Match Quality and Firm Fixed Effects, respectively;

X'_{it} • Vector of control variables including age squared and occupational tenure.

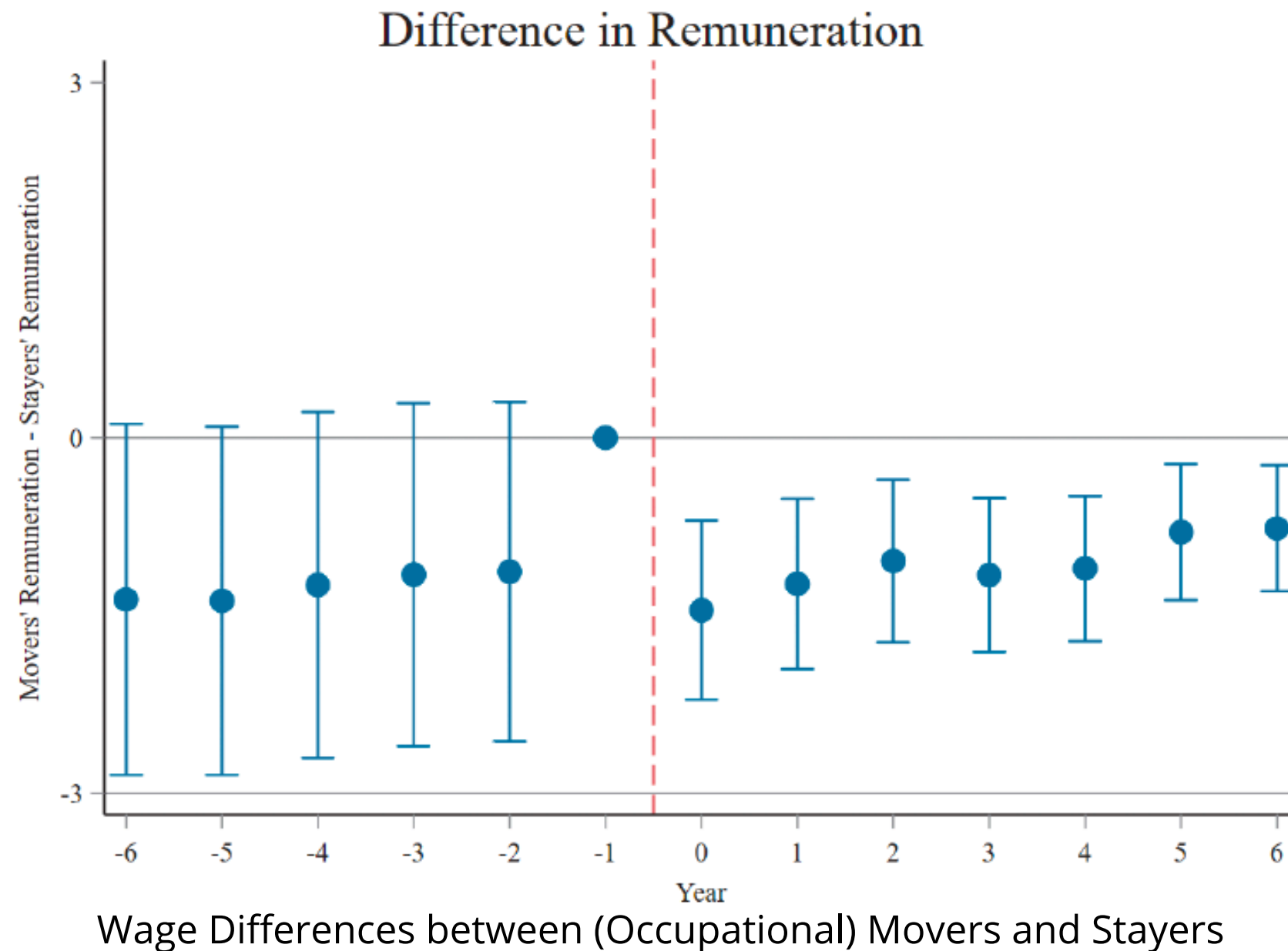
Hypotheses and Results

Hypotheses

- *“Experience/Human Capital Hypothesis”* : Changing occupations will yield negative effects compared to those who do not change occupations;
- *“Reputation/Bargaining Power Hypothesis”* : Changing industries will give way to negative effects compared to those who do not change industries.
- *“Disruption Hypothesis”* : Moving from one region to another will yield adverse impacts in the short-run as opposed to not moving between different regions.
- *“Gender Heterogeneous Vulnerability Hypothesis”* : Given that women may be more strongly affected not only by displacement but also more vulnerable to the aforementioned effects we predict women will face more difficulties in the post-displacement period.

Results - Occupational Mobility

1. Remuneration Difference



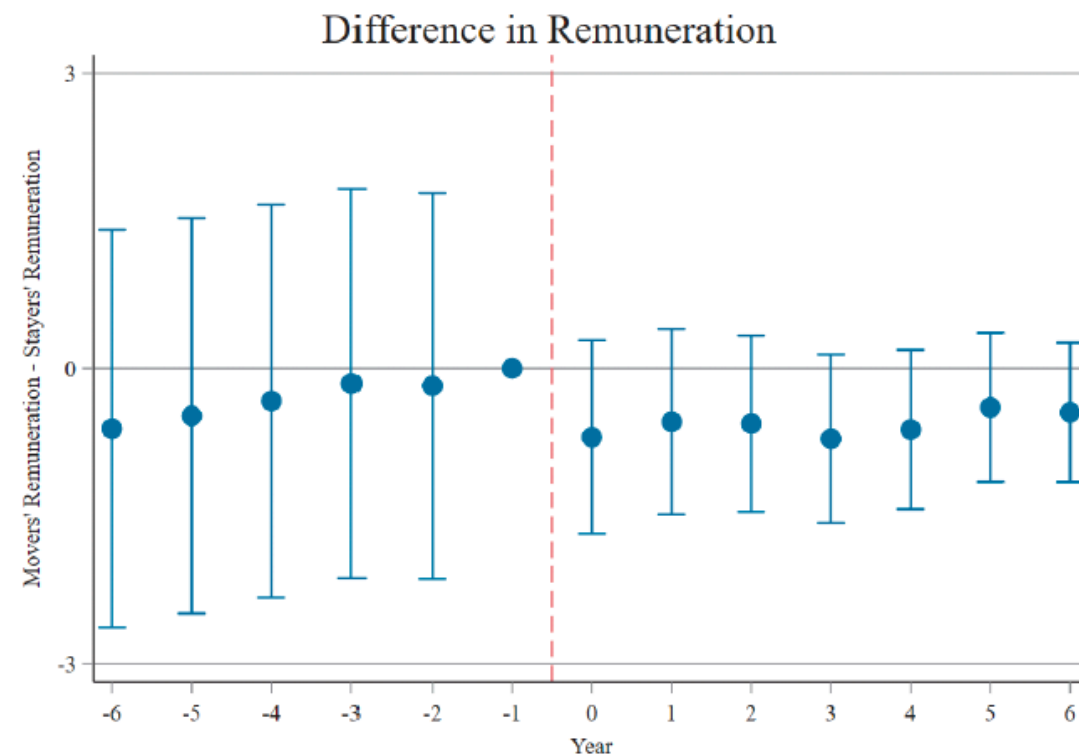
Before displacement (Years -6 to -1), the wage differences between movers and stayers are not significantly different from zero, indicating similar wage trajectories for both groups.

After displacement, workers who change occupations (movers) earn significantly less than those who do not change occupations, reaching a disparity of 1.5%.

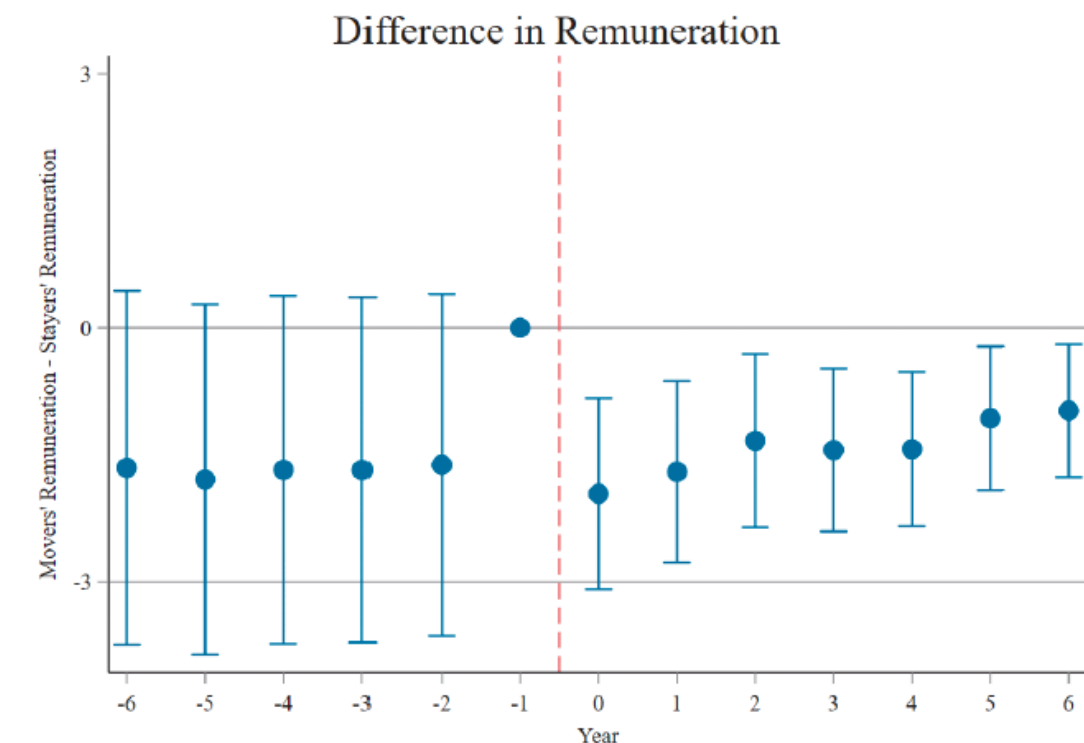
Results are in line with the findings of Pedro Raposo, Pedro Portugal and Anabela Carneiro (2021) which conclude that this change ends up being the most significant change in workers post-displacement wage trajectories.

Results - Occupational Mobility

1. Remuneration Differences by Gender



Wage Differences between (Occupational) Movers and Stayers for **men**



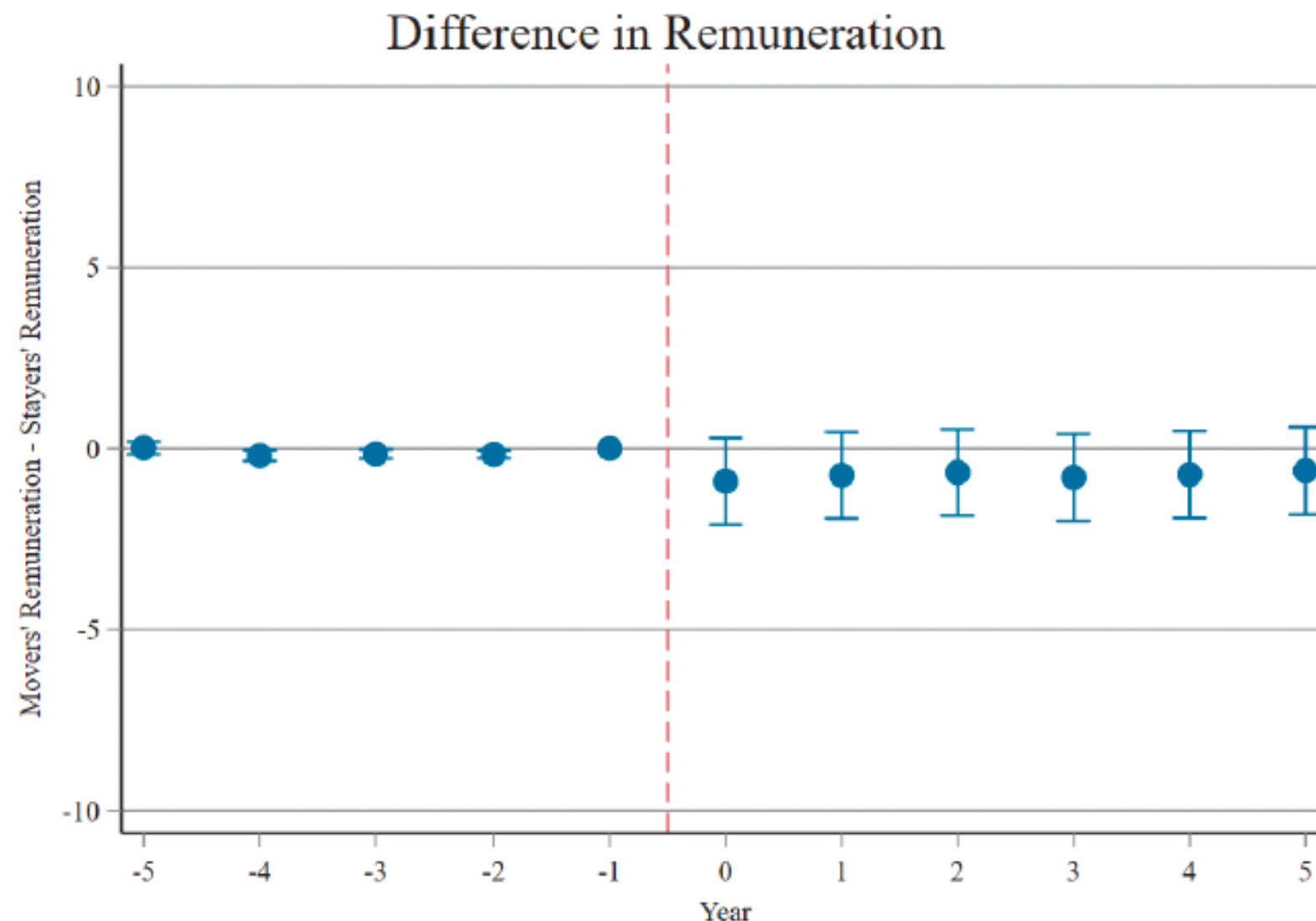
Wage Differences between (Occupational) Movers and Stayers for **women**

Women are the most affected by the loss of occupation specific capital or other factors related to occupational mobility. For men, although movers are worse off, the point estimates are not statistically significant.

For women, these points estimates are statistically significantly different from 0 at the 5% level and indicate that movers may earn up to 2% less than their female stayer and displaced peers.

Results - Industrial Mobility

1. Remuneration Difference



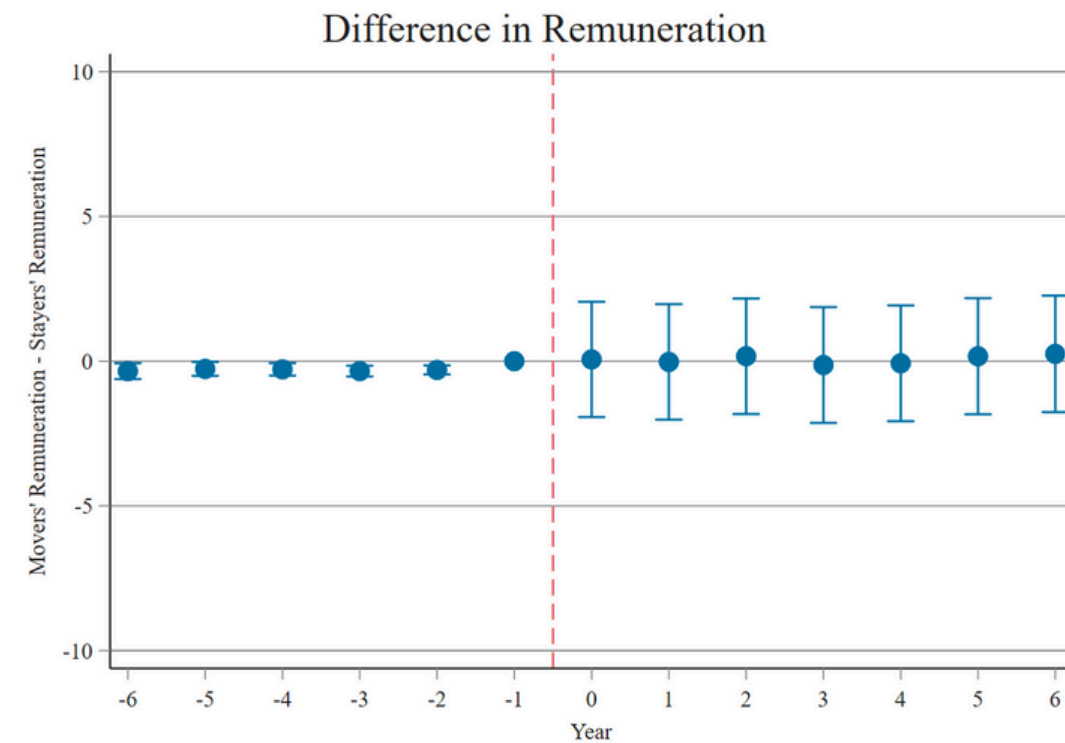
Wage Differences between (Industrial) Movers and Stayers

The assumption of parallel trends between treated and control units is predicted to hold true by looking at the non-significant differences between the treatment and control groups in the pre-displacement period, indicating that the coefficients of interest accurately capture the causal effect of moving industries.

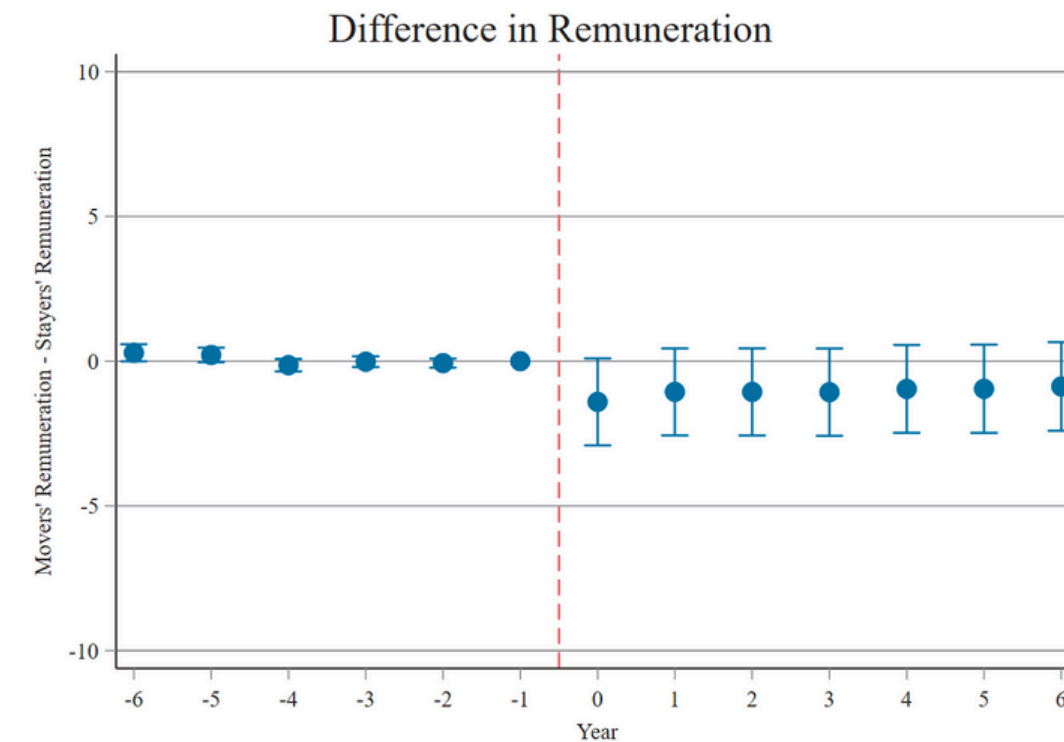
However, after displacement there also seems to be no significant difference between those who move to another industry after displacement and those who do not.

Results - Industrial Mobility

1. Remuneration Difference by Gender



Wage Differences between (Industrial) Movers and Stayers for **men**

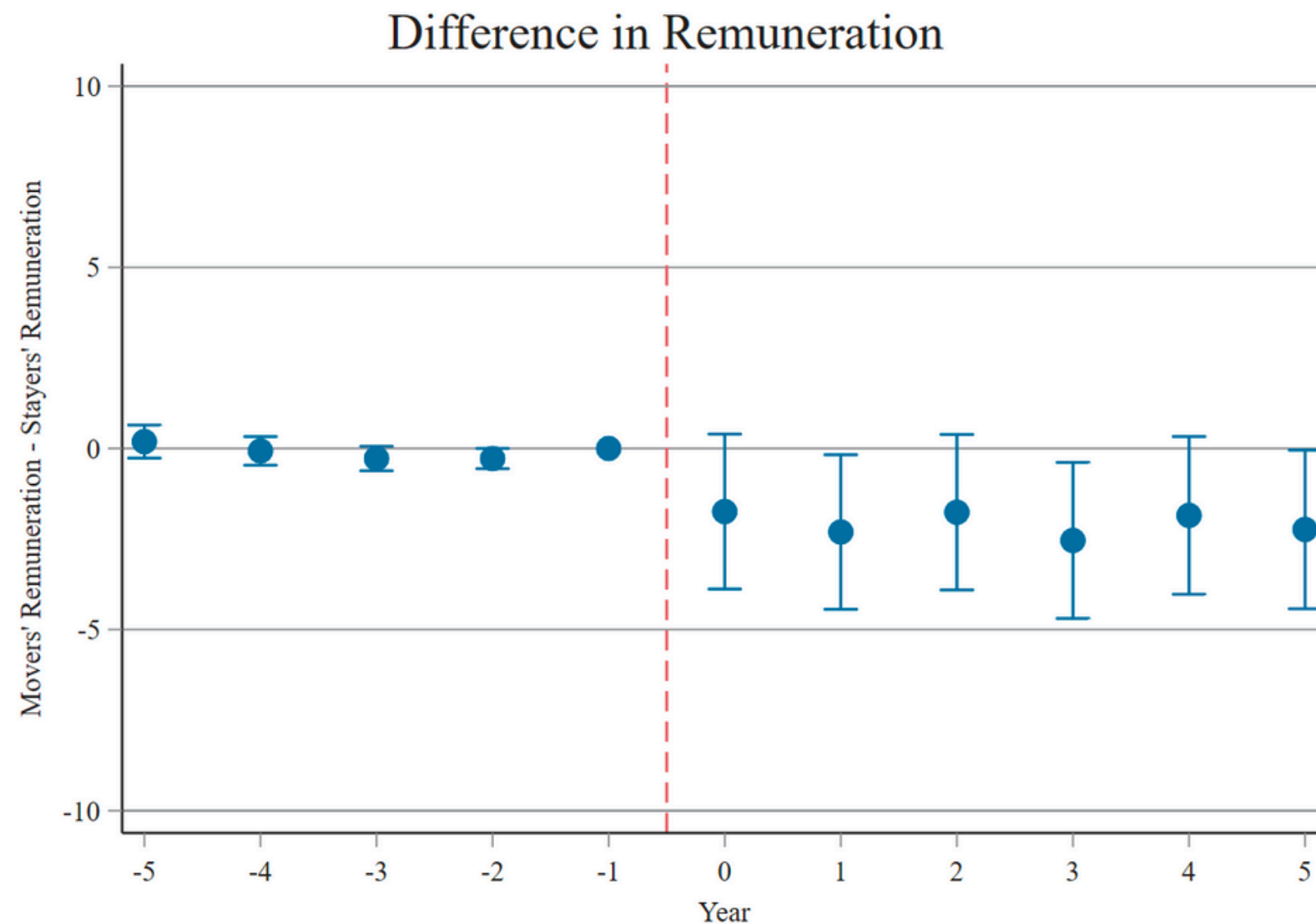


Wage Differences between (Industrial) Movers and Stayers for **women**

The same conclusion holds true for both men and women, meaning that **moving industries in the post-displacement period does not affect significantly the wage trajectories** of those who do so compared to those who do not.

Results - Geographical Mobility

1. Remuneration Difference



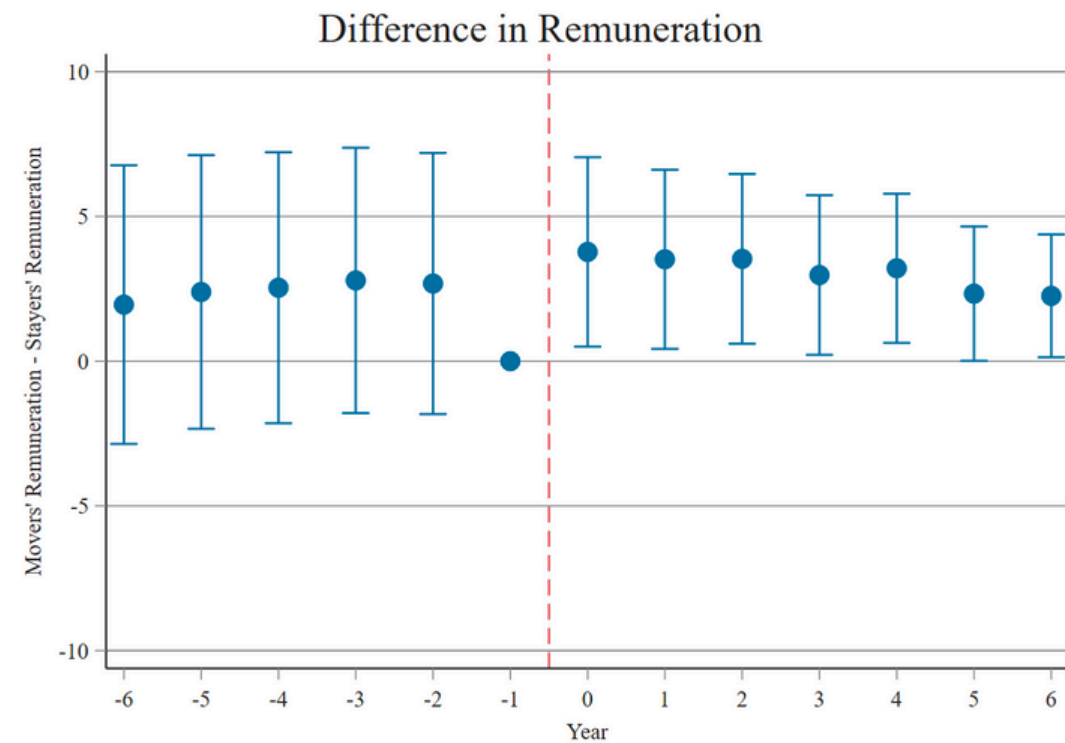
Wage Differences between (Geographic) Movers and Stayers

The assumption of parallel trends between treated and control units is predicted to hold true yet again (presence of parallel pre-trends), indicating that the coefficients of interest accurately capture the causal effect of moving from one region to another in the post-displacement period.

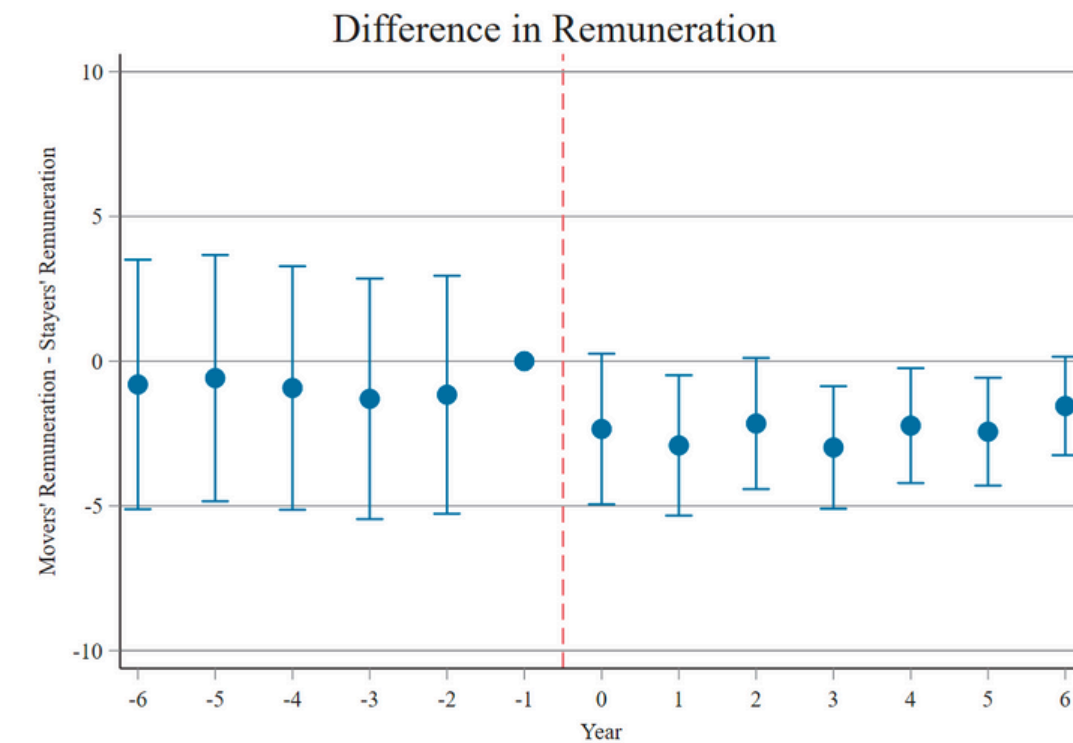
Movers, despite not differing significantly from stayers before displacement, are worse off after the displacement - though not significantly worse off for the majority of the years (except in the second and fourth years post-displacement).

Results - Geographical Mobility

1. Remuneration Difference by Gender



Wage Differences between (Industrial) Movers and Stayers for **men**



Wage Differences between (Geographic) Movers and Stayers for **women**

However, in line with the findings of Contreras, Sánchez and Sofia (2016), there are very distinct outcomes for men and women who move from one region to another.

Whilst women who choose / are obliged to move after displacement are, in general, worse off compared to their women counterparts who did not choose / were not obliged to do so, men who move are actually significantly better off compared to men who do not.

Policy Implications

Occupational Mobility

'Severe losses in the returns to the job title may be due to depreciation of (occupation) specific human capital or to the difficulty of finding a new job requiring skills similar to those acquired in the pre-displacement job. Here, retraining programs may be of some help.' - Raposo, Portugal and Carneiro (2021)

Not only retraining programs can contribute to overcome the losses - on-the-job training, improved job matching services (both at the local and central levels), providing early access to potential employment (professional) networks and promoting a lifelong learning culture are all aspects where governments, either by direct intervention or by ways of subsidies, grants and other tools, can intervene to cushion the wage losses of displaced workers.

Policy Implications

Geographical Mobility

Reasons why the barrier of (women's) geographic mobility might exist according to previous literature:

- Literature has shown that French women have a higher priority order in their wage reservation preferences for lower commute time/distance than men (Barbanchon et. al, 2021) and, thus, trade off lower commuting times for lower wages.
- Voldman (2020) and the National Women's Law Center (US, NWLC) (2021) relate labor and housing market outcomes whilst arguing that (french and american) women's discrimination in one of these markets leads to inequalities in the other.

Discussion & Conclusion

Caveats of the Project

The control variable choice, the chosen regression command/strategy and the initial data cleaning process, which, though referring back to Raposo, Portugal and Carneiro (2021), might have been misimplemented are some issues which need to be discussed to address the validity of our results.

Directions for Future Research

Given that there is still little research in Portugal about the consequences/results of the before mentioned retraining programs or regarding the gender disparities of geographical mobility, we think that, since the results on both topics are already established in previous literature it could be the next logical step to study these issues.

Open Questions & More Policy Implications

Do you think that the premises discussed previously regarding policy implications (e.g. the fact about French women) is replicable/ed in Portugal? And what other reasonings behind these issues/policy implications might there be?

Thank You!



Appendix

Characteristics of Occupational Movers vs Stayers

	Occupational Mobility	
	<i>Stayers</i>	<i>Movers</i>
N	4,144,773 (95.2%)	206,755 (4.8%)
Gender		
Male	2,285,550 (55.1%)	110,143 (53.3%)
Female	1,859,223 (44.9%)	96,612 (46.7%)
Age (in years)	40.473 (10.315)	40.471 (10.061)
Education (in years)	9.760 (3.812)	10.099 (3.797)
Portuguese Classification of Occupations (2-digits)		
Representatives of the legislature and executive bodies, senior leaders of the Public Administration, specialized organizations, directors and managers of companies	24,680 (0.6%)	2,764 (1.3%)
Directors of administrative and commercial services	57,037 (1.4%)	4,900 (2.4%)
Production and specialist service managers	37,060 (0.9%)	3,564 (1.7%)
Hotel, catering, retail and other service managers	63,138 (1.5%)	5,234 (2.5%)
Specialists in the physical, mathematical, engineering and related technical sciences	80,990 (2.0%)	3,200 (1.6%)
Health Professionals	41,539 (1.0%)	1,626 (0.8%)
Teachers	32,144 (0.8%)	754 (0.4%)
Specialists in finance, accounting, administrative organization, public relations, and commercial (specialists)	85,184 (2.1%)	5,904 (2.9%)
Information and Communication Technology (ICT) Specialists	52,626 (1.3%)	2,148 (1.0%)
Experts in legal, social, artistic and cultural affairs	34,547 (0.8%)	1,096 (0.5%)
Technicians and professions in science and engineering, intermediate level	144,899 (3.5%)	11,492 (5.6%)
Technicians and professionals, intermediate level of health	51,776 (1.2%)	2,888 (1.4%)
Intermediate level technicians from the financial, administrative and business areas	163,549 (3.9%)	14,358 (7.0%)
Intermediate level technicians in legal, social, sporting, cultural and similar services	17,078 (0.4%)	1,522 (0.7%)
Information and communication technology technicians	34,951 (0.8%)	1,707 (0.8%)
Office workers, general secretaries, and data processing operators	238,082 (5.7%)	10,388 (5.0%)
Direct customer support staff	100,490 (2.4%)	4,519 (2.2%)
Data, accounting, statistical, financial services and related operators registration	155,034 (3.7%)	9,494 (4.6%)
Other administrative support staff	51,818 (1.3%)	5,168 (2.5%)
Personal service workers	286,958 (6.9%)	11,506 (5.6%)
Sellers	464,216 (11.2%)	13,974 (6.8%)
Personal care and similar workers	77,412 (1.9%)	3,842 (1.9%)
Safety and security services personnel	68,757 (1.7%)	574 (0.3%)
Farmers and skilled workers in agriculture and animal production, oriented towards the market	15,829 (0.4%)	543 (0.3%)
Skilled market-oriented forestry, fishing and hunting workers	3,720 (0.1%)	184 (0.1%)
Skilled construction and similar workers, except electricians	265,741 (6.4%)	8,799 (4.3%)
Skilled workers in metallurgy, metalworking and the like	199,472 (4.8%)	5,583 (2.7%)
Skilled workers in printing, precision instrument manufacturing, jewellers, craftsmen and the like	34,009 (0.8%)	2,325 (1.1%)
Skilled electrical and electronics workers	66,931 (1.6%)	2,853 (1.4%)
Workers in food processing, wood, clothing and other industries, and handicrafts	251,040 (6.1%)	13,909 (6.7%)
Fixed plant and machine operators	273,917 (6.6%)	14,142 (6.9%)
Assembling Workers	31,043 (0.7%)	1,906 (0.9%)
Vehicle drivers and mobile equipment operators	197,159 (4.8%)	3,858 (1.9%)
Cleaning Workers	135,962 (3.3%)	3,964 (1.9%)
Unskilled workers in agriculture, animal husbandry, fisheries and forestry	9,095 (0.2%)	453 (0.2%)
Unskilled workers in mining, construction, manufacturing and Transport	133,995 (3.2%)	9,379 (4.5%)
Meal preparation assistants	51,923 (1.3%)	3,799 (1.8%)
Street vendors (except food vendors) and street service providers	5,292 (0.1%)	673 (0.3%)
Workers in waste and other basic services	104,624 (2.5%)	11,375 (5.5%)
Log of Real Hourly Total Remuneration (in 2012 Euros)	1.670 (0.491)	1.691 (0.514)
Turnover (Euros)	57,894,604.552 (349,030,416.969)	65,623,865.722 (405,089,396.816)
Tenure (in years)	7.015 (7.917)	5.710 (7.293)

Table 3: Descriptive Statistics for Displaced Occupational *Stayers* and *Movers*

Note: For the total number of workers, gender and occupation (CPP) variables the % of workers in each of the categorical distinctions is shown in the parenthesis. For the age, education, wage, turnover and tenure variables the parenthesis show the standard deviation of the variable.

Characteristics of Geographical Movers vs Stayers

	Geographical Mobility	
	<i>Stayers</i>	<i>Movers</i>
N	4,318,279 (99.2%)	33,249 (0.8%)
Gender		
Male	2,373,171 (55.0%)	22,522 (67.7%)
Female	1,945,108 (45.0%)	10,727 (32.3%)
Age (in years)	40.474 (10.303)	40.336 (10.362)
Education (in years)	9.776 (3.811)	9.672 (3.948)
NUTS II Region where the establishment is located (October 31st)		
North Region	1,671,056 (38.7%)	9,528 (28.7%)
Algarve	195,613 (4.5%)	1,713 (5.2%)
Centre Region	835,099 (19.3%)	7,286 (21.9%)
Lisbon Metropolitan Area	1,192,550 (27.6%)	10,908 (32.8%)
Alentejo	229,874 (5.3%)	2,641 (7.9%)
Azores	90,727 (2.1%)	290 (0.9%)
Madeira	101,720 (2.4%)	572 (1.7%)
Outside of Portugal	1,640 (0.0%)	311 (0.9%)
Log of Real Hourly Total Remuneration (in 2012 Euros)	1.670 (0.491)	1.809 (0.550)
Turnover (Euros)	58,087,715.629 (352,045,132.763)	80,863,685.164 (331,801,854.191)
Tenure (in years)	6.967 (7.899)	5.182 (6.825)

Table 4: Descriptive Statistics for Displaced Geographical *Stayers* and *Movers*

Note: For the total number of workers, gender and region (NUTS II) variables the % of workers in each of the categorical distinctions is shown in the parenthesis. For the age, education, wage, turnover and tenure variables the parenthesis show the standard deviation of the variable.

Characteristics of Industrial Movers vs Stayers

	Industrial Mobility	
	<i>Stayers</i>	<i>Movers</i>
N	4,188,862 (96.3%)	162,666 (3.7%)
Gender		
Male	2,303,032 (55.0%)	92,661 (57.0%)
Female	1,885,830 (45.0%)	70,005 (43.0%)
Age (in years)	40.487 (10.308)	40.115 (10.166)
Education (in years)	9.762 (3.813)	10.123 (3.767)
Firm's Harmonized Sector of Economic Activity		
Mining and Quarrying of Energy Producing Materials	1 (0.0%)	1 (0.0%)
Mining and Quarrying, Except of Energy Producing Materials	15,612 (0.4%)	515 (0.3%)
Manufacture of Food Products, Beverages and Tobacco	161,761 (3.9%)	5,249 (3.2%)
Manufacture of Textiles and Textile Products	297,375 (7.1%)	5,950 (3.7%)
Manufacture of Leather and Leather Products	96,026 (2.3%)	1,115 (0.7%)
Manufacture of Wood and Wood Products	40,865 (1.0%)	1,252 (0.8%)
Manufacture of Pulp, Paper and Paper Products, Publishing and Printing	71,468 (1.7%)	1,373 (0.8%)
Manufacture of Coke, Refined Petroleum Products and Nuclear Fuel	229 (0.0%)	18 (0.0%)
Manufacture of Chemicals, Chemical Products and Man-Made Fibers	17,860 (0.4%)	780 (0.5%)
Manufacture of Rubber and Plastic Products	26,914 (0.6%)	959 (0.6%)
Manufacture of Other Non-Metallic Mineral Products	47,286 (1.1%)	1,115 (0.7%)
Manufacture of Basic Metals and Fabricated Metal Products	118,486 (2.8%)	6,179 (3.8%)
Manufacture of Machinery and Equipment n.e.c.	65,627 (1.6%)	3,720 (2.3%)
Manufacture of Electrical and Optical Equipment	26,313 (0.6%)	1,053 (0.6%)
Manufacture of Transport Equipment	27,410 (0.7%)	1,526 (0.9%)
Manufacturing n.e.c.	80,437 (1.9%)	2,162 (1.3%)
Electricity, Gas and Water Supply	9,963 (0.2%)	379 (0.2%)
Construction	457,390 (10.9%)	22,371 (13.8%)
Wholesale and Retail Trade, Repair of Motor Vehicles, Motorcycles and Personal and Household Goods	932,514 (22.3%)	38,387 (23.6%)
Hotels and Restaurants	377,699 (9.0%)	15,164 (9.3%)
Transport, Storage and Communications	182,139 (4.4%)	6,545 (4.0%)
Financial Intermediation	98,099 (2.3%)	3,893 (2.4%)
Real Estate, Renting and Business Activities	587,942 (14.1%)	25,475 (15.7%)
Public Administration and Defense, Compulsory Social Security	10,681 (0.3%)	65 (0.0%)
Education	63,199 (1.5%)	3,028 (1.9%)
Health and Social Work	209,942 (5.0%)	9,718 (6.0%)
Other Community, Social and Personal Service Activities	159,158 (3.8%)	4,506 (2.8%)
Extra-Territorial Organizations and Bodies	62 (0.0%)	0 (0.0%)
Log of Real Hourly Total Remuneration (in 2012 Euros)	1.669 (0.492)	1.716 (0.487)
Turnover (Euros)	57,279,227.646 (347,926,305.847)	83,543,259.736 (441,271,930.323)
Tenure (in years)	7.082 (7.913)	3.641 (6.535)

Table 5: Descriptive Statistics for Displaced Industrial *Stayers* and *Movers*

Note: For the total number of workers, gender and industry (CAE) variables the % of workers in each of the categorical distinctions is shown in the parenthesis. For the age, education, wage, turnover and tenure variables the parenthesis show the standard deviation of the variable.

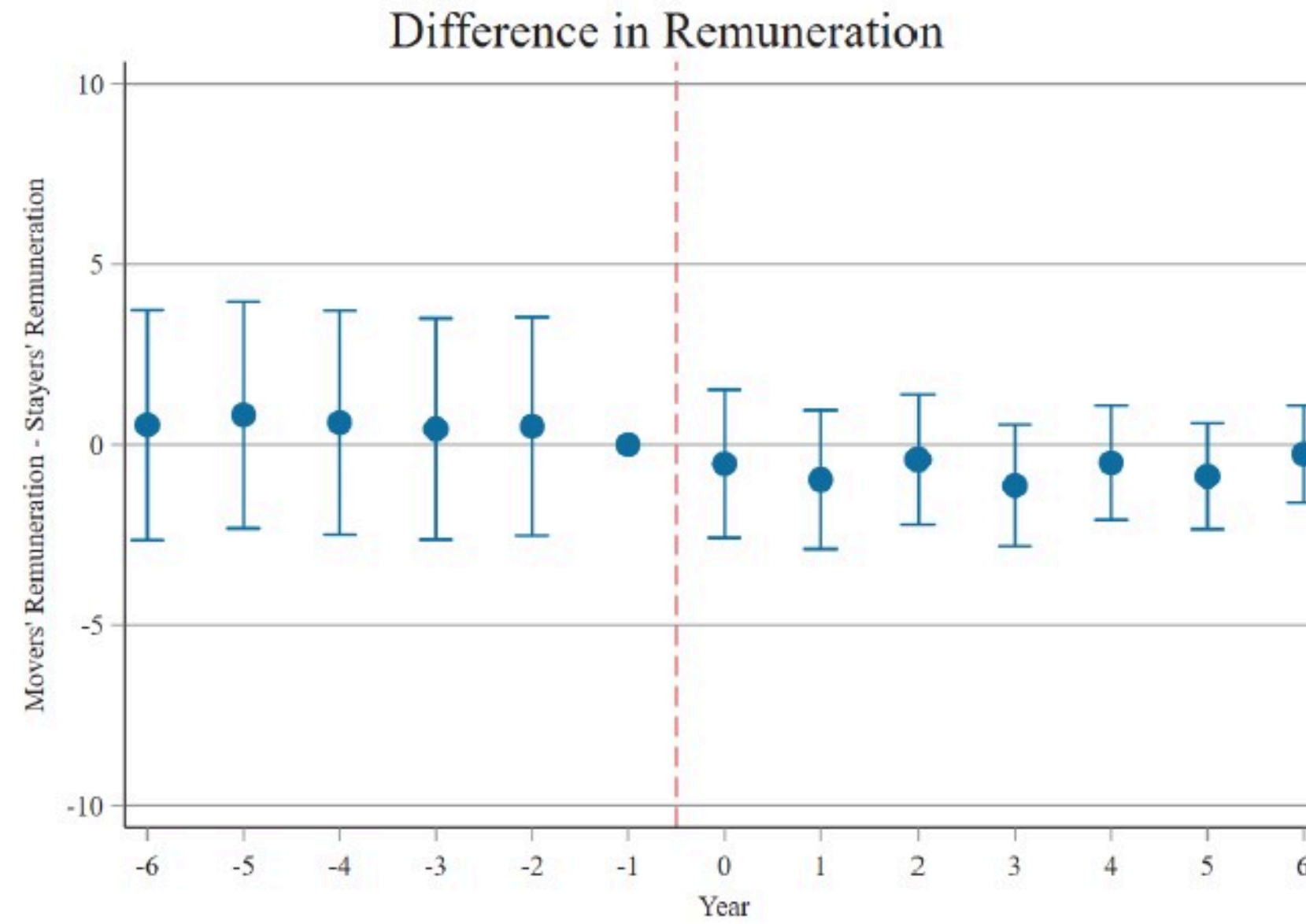


Figure 10: Wage Differences between (Geographic) *Movers* and *Stayers* Without Controls

Note: The coefficients of interest θ_k are represented by the point estimates of the graph. The coefficients are in percentage units (i.e. difference in % between both groups' earnings). The confidence intervals are represented at the 95% confidence level. As observable, the non-inclusion of the control variables vector does not change the outcome of the investigation, though we feel that it is important to include the vector of control variables in accordance with the literature on the topic. The fixed effects are necessary to control for individual and time-specific characteristics of the workers, firm characteristics and match quality effects.

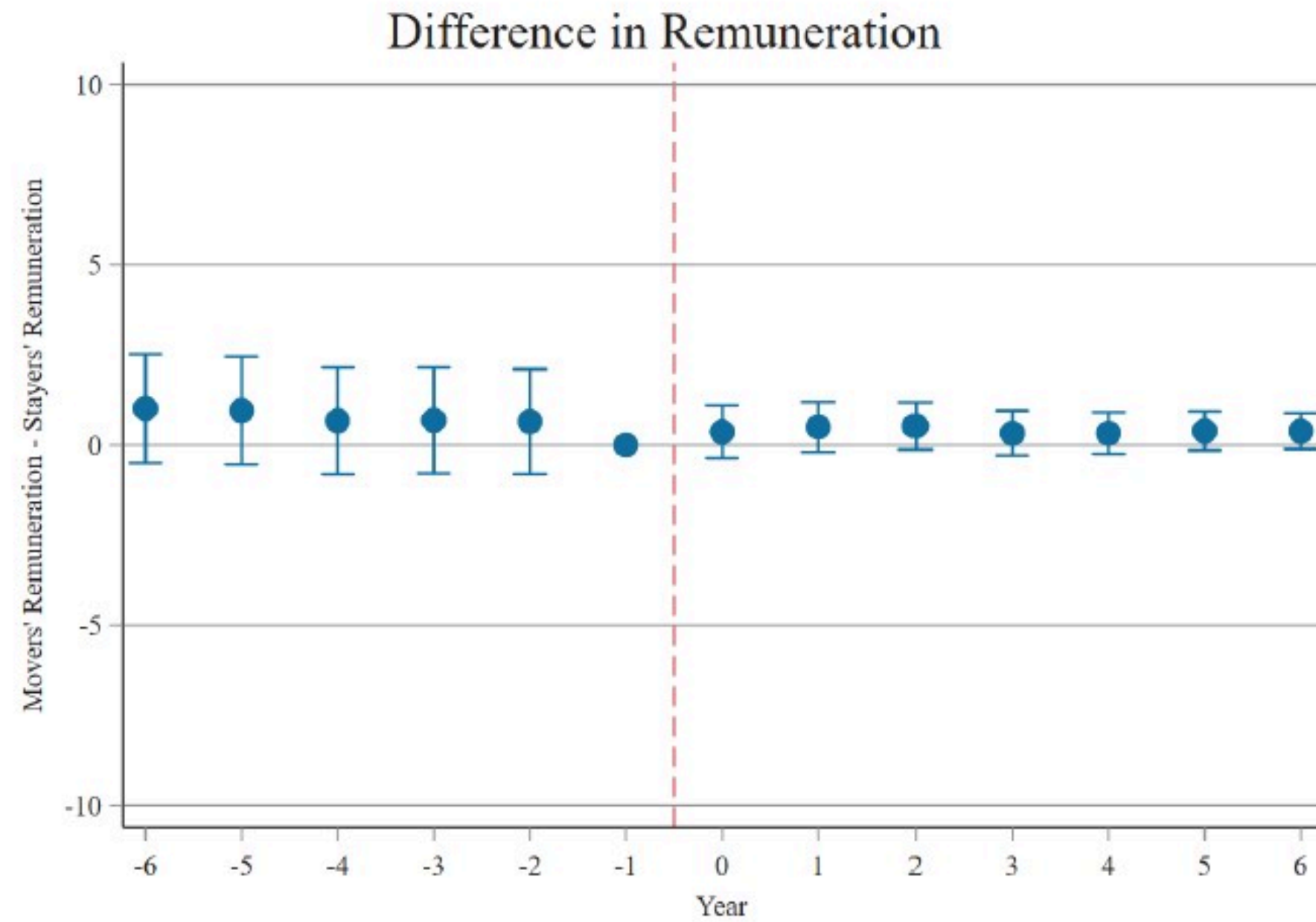


Figure 11: Wage Differences between (Industrial) *Movers* and *Stayers* Without Controls

Note: The coefficients of interest θ_k are represented by the point estimates of the graph. The coefficients are in percentage units (i.e. difference in % between both groups' earnings). The confidence intervals are represented at the 95% confidence level. As observable, the non-inclusion of the control variables vector does not change the outcome of the investigation, though we feel that it is important to include the vector of control variables in accordance with the literature on the topic. The fixed effects are necessary to control for individual and time-specific characteristics of the workers, firm characteristics and match quality effects.

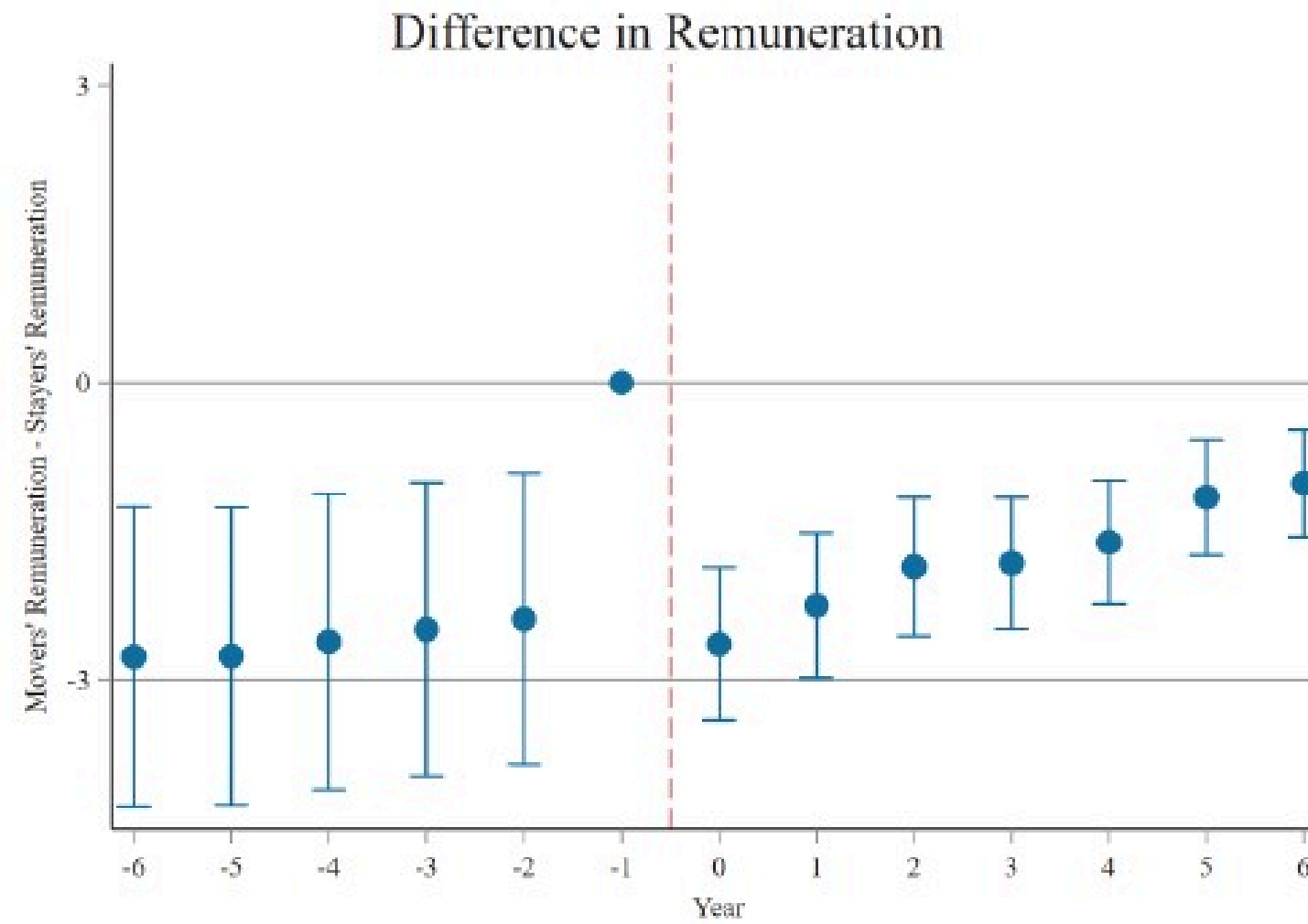


Figure 12: Wage Differences between (Occupational) *Movers* and *Stayers* Without Controls

Note: The coefficients of interest θ_k are represented by the point estimates of the graph. The coefficients are in percentage units (i.e. difference in % between both groups' earnings). The confidence intervals are represented at the 95% confidence level. Regarding occupational mobility, we can see that the inclusion of the control variables are key to the results - if not for their inclusion, the parallel pre-trends assumption would be violated and, therefore, preclude any causal inference on the effect of occupational mobility. Furthermore, we argue even further - we believe that there might be other variables unaccounted for, given the point estimates for the remuneration difference pre-displacement seen in 7. Because we are unsure which control(s) we are missing, we have decided to not include variables in a "trial and error" fashion, though we admit that this could be investigated further and is a major weakness of the report. The fixed effects are necessary to control for individual and time-specific characteristics of the workers, firm characteristics and match quality effects and also contribute to the failure of the pre-trends assumption.