

Labor Market Mobility and Wage Growth: Microdata Evidence from Portuguese Workers

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Agenda

1. Motivation
2. Data and Methodology
3. Labor Market Dynamics in Portugal
4. Wage Growth Among Job Movers and Stayers
5. Worker Mobility and the Wage Premium
6. Concluding Remarks

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Motivation

Why Study Worker Mobility?

Key Idea:

- Worker mobility is central to labor market dynamics, shaping both **job matching efficiency** and **wage formation**.

Context:

- Traditional aggregate indicators (employment, wages) often **suggest smooth adjustments**, but beneath the surface lies **intense worker reallocation**.
- **Hires, separations, and job-to-job transitions occur continuously**, reshaping workforce composition.

Motivation

Economic and Policy Relevance

Why It Matters

- **Reallocates human capital** across firms and sectors, improving efficiency.
- **Influences wage setting** and aggregate **productivity growth**.
- Acts as a **transmission channel for macroeconomic shocks**, linking firm dynamics to the broader economy.

Takeaway:

- **Understanding worker mobility is essential to explain how labor markets adjust, how wages evolve, and how economic shocks propagate.**

Literature

Labor Mobility, Firm Heterogeneity, and Wage Formation

Key Concepts

- Job mobility reflects not only **search frictions**, but also **firm productivity** and **wage-setting practices** (Postel-Vinay & Robin, 2002; Cahuc *et al.*, 2006).
- **Firm heterogeneity** and **bargaining power** interact with worker reallocation to shape wage distributions.
- **Worker reallocation** is cyclical:
- **Expansions**: Higher job-to-job transitions → stronger outside options → upward wage pressure.
- **Downturns**: Lower mobility → weaker bargaining → slower wage growth

Takeaway: Labor mobility acts as a key mechanism linking firm behavior and macroeconomic conditions to wage dynamics.

Literature

Empirical Evidence on Mobility and Wage Cyclicalities

US

- Job-to-job transitions drive **wage growth** especially for early- and mid-career workers (Hahn *et al.*, 2021).
- **Upward reallocation** accelerates in booms and slows in recessions, amplifying wage cycles (Moscarini & Postel-Vinay, 2016, 2018, 2023)

Europe

- **France & Italy**: Mobility explains much of wage dynamics, though effects differ by institutions (Berson *et al.*, 2020).
- **Portugal**: Wage cyclicalities stronger for **new hires**; job mobility is a key **transmission channel** from macro conditions to wages (Carneiro *et al.*, 2012; Félix & Portugal, 2020).

Takeaway: Across countries, **job mobility consistently drives aggregate wage growth and mediates the impact of business cycles on earnings.**

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Data

Portuguese Social Security (SS) records:

- All employer–employee matches with at least one month of SS contributions.
- Monthly frequency, essential for analyzing short-term labor market dynamics.
- Longitudinal structure enabling the tracking of workers across firms and sectors, allowing detailed analysis of job-to-job transitions and wage dynamics.
- For each employee–employer match, we observe the start and end dates of the employment spell. Allows to distinguish between temporary absences and separations from the firm.
- Focus on private-sector employees from 2011 to 2024.
- Detailed information on wages (base, regular, total, and number of paid days), employee characteristics (age, gender, tenure, nationality), and firm characteristics (sector, location).

Methodology

We adopt **standard definitions of worker mobility** from the literature (Davis *et al.*, 1998):

- **Hires**: Workers employed by the firm in month t but not in $t - 1$. The start date of the contractual relationship determines the month of hiring.
- **Separations**: Workers employed by the firm in month $t - 1$ but not in t . The end date of the contractual relationship determines the month of separation.
- **Net hiring**: Difference between total hires and separations.
- **Hiring, separation, and net hiring rates**: computed by dividing the number of hires, separations, and net hires by the average level of employment between $t - 1$ and t .

We further classify **Hires into Job-to-job movers, First jobs, and Other new hires**:

- **Job-to-job movers**: workers who switch employers within a two-month window.
- **First jobs**: Workers aged 16 to 30 who appear for the first time in the SS wage records.

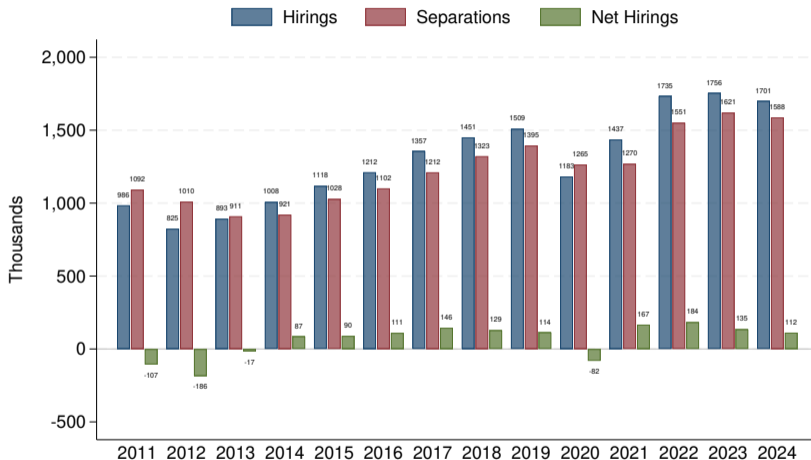
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Worker Flows: Total and Contributions by Nationality

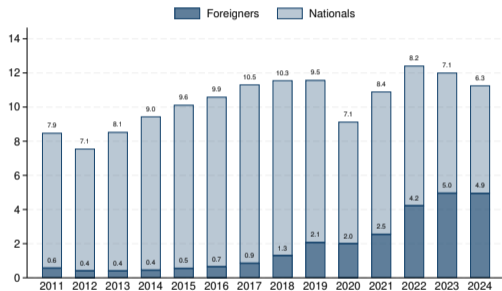
- We begin by analyzing labor market flows, focusing on the total number of hires and separations, along with the respective contributions of foreigners and native workers to overall mobility patterns.
- These measures capture the extent of labor market churning and provide a comprehensive assessment of dynamism, particularly the relative roles of native and foreign workers in shaping mobility.

Worker Flows: Hires, Separations, and Net Hirings

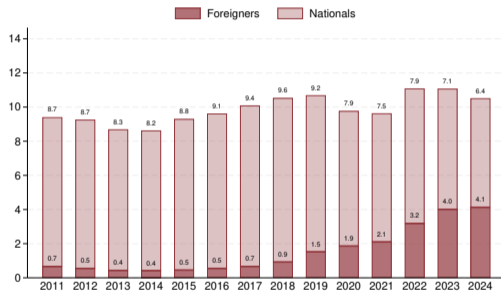


Calculations at the firm level. The start (end) date of the contractual relationship determines the month of hiring (separation).

Contributions by Nationality to Hiring and Separation Rates

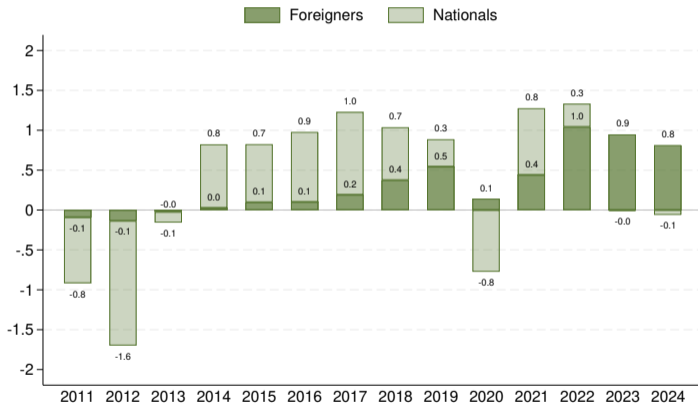


(a) Contributions to hiring rate



(b) Contributions to separation rate

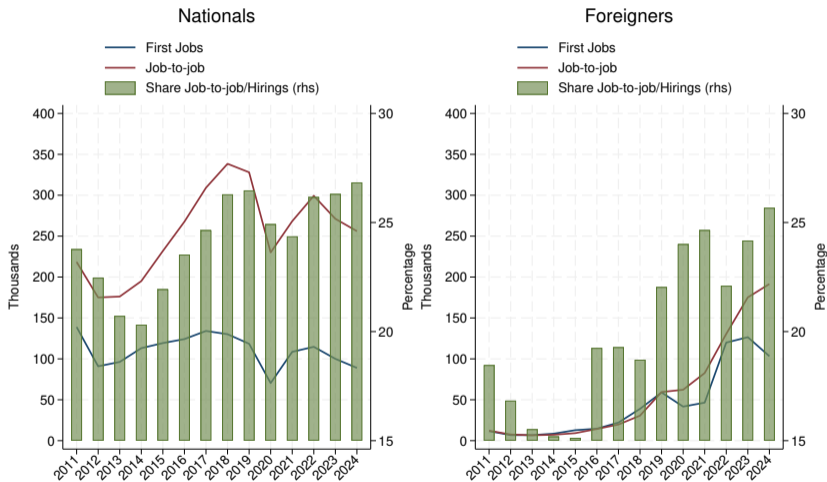
Contributions by Nationality to Net Hiring Rate



Labor Market Transitions: New Contracts, Job-to-Job, and First Jobs

- We now analyze employment transitions within the labor market.
- Differentiating between direct job-to-job moves and first-time job entrants (ages 16–30).
- Highlighting sources of labor market dynamism through youth entry and incumbent worker mobility.

First Jobs and Job-to-Job Transitions by Nationality



Total hires comprise first jobs, job-to-job transitions, and other new hires. The number of first jobs among foreigners may not be fully accurate, as it reflects their first observation in the Portuguese labor market between

Characterization of Job-to-Job Movers

- We now characterize job-to-job movers by age, nationality, and gender.
- Examine how the distribution of these characteristics has evolved over the past 14 years.

Distributions of Age, Gender, and Nationality among Job-to-Job Transitions

Job-to-Job Transitions	2011–2014	2015–2019	2020–2024
<i>Age (years)</i>			
Mean	35.7	35.6	35.4
Median	34.5	34.2	33.4
Standard deviation	10.6	11.1	11.0
P10	22.8	22.2	22.2
P90	50.8	51.6	51.2
<i>Age groups (%)</i>			
<25	15.5	18.8	17.9
25–34	34.7	31.8	34.8
35–44	28.4	27.1	25.6
45–54	15.8	15.9	15.5
≥55	5.7	6.4	6.3
<i>Gender</i>			
Female (%)	54.3	55.8	60.6
<i>Nationality</i>			
Foreign (%)	4.2	7.7	31.5

Job-to-Job Transitions Across Sectors and Firms

Distinguishes job-to-job transitions within the same sector from those across different sectors.

- **Within-sector moves** reflect reallocation among firms with similar technologies and skill needs. They often stem from the search for better conditions or wages and involve **moderate wage changes**.
- **Between-sector moves** represent deeper reallocation, shifting workers to activities requiring different skills. They drive structural change and are linked to **larger wage gains or losses**.

Share of Within-Sector Job-to-Job Transitions

Period	Within-sector moves (%)
2011–2014	44.0
2015–2019	38.7
2020–2024	36.1

Share of job-to-job transitions in which the worker remains in the same 2-digit sector of activity. Shares are computed relative to total job-to-job moves in each period.

Job-to-Job Transitions: High- vs. Low-Wage Sectors

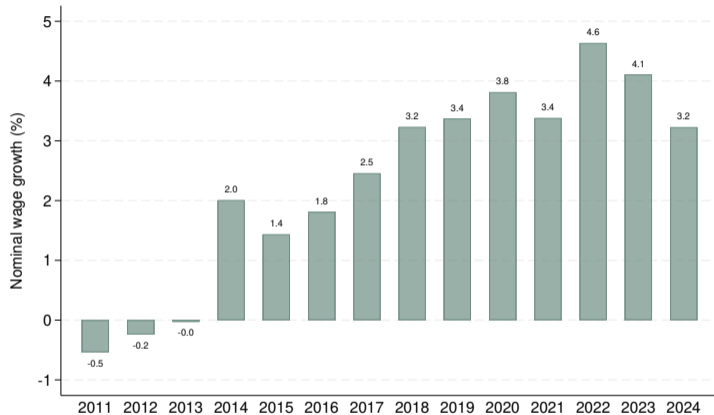
Transition Type	2011–2014	2015–2019	2020–2024
Low-wage sector → Low-wage sector	75.7	76.7	75.6
Low-wage sector → High-wage sector	5.8	6.4	7.3
High-wage sector → Low-wage sector	5.0	5.2	5.6
High-wage sector → High-wage sector	13.6	11.7	11.5

High- and low-wage sectors are defined relative to the economy-wide mean regular wage. Job-to-job transitions are classified based on the annual average wage of the origin and destination sectors. Shares expressed as percentages of total transitions.

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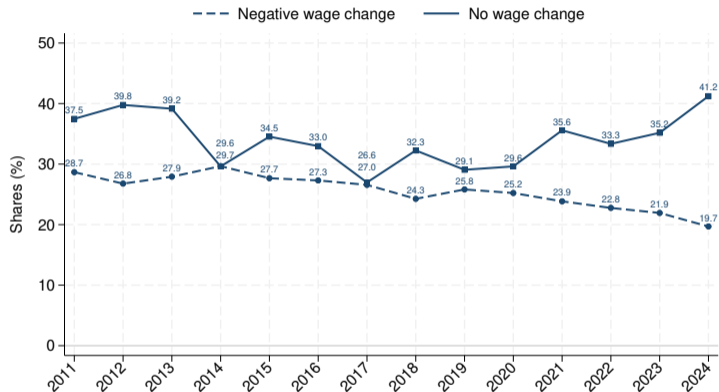
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Average Wage Growth at the Moment of Job-to-Job Transitions



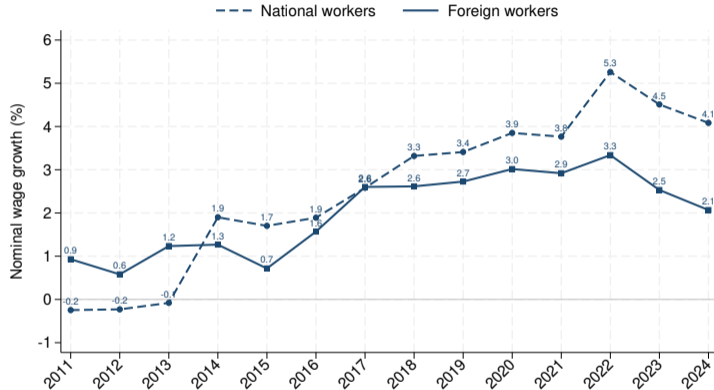
Despite a median of zero, positive skewness raises the average due to a subset of workers experiencing large gains.

Share of Movers with a Wage Reduction or No Wage Change



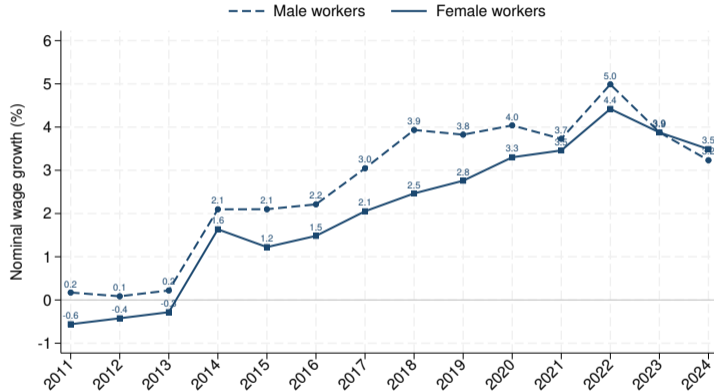
Proportion of job-to-job movers experiencing a nominal wage reduction or no change, relative to all job-to-job transitions (in percentage).

Wage Growth at the Moment of Job-to-Job Transitions by Nationality



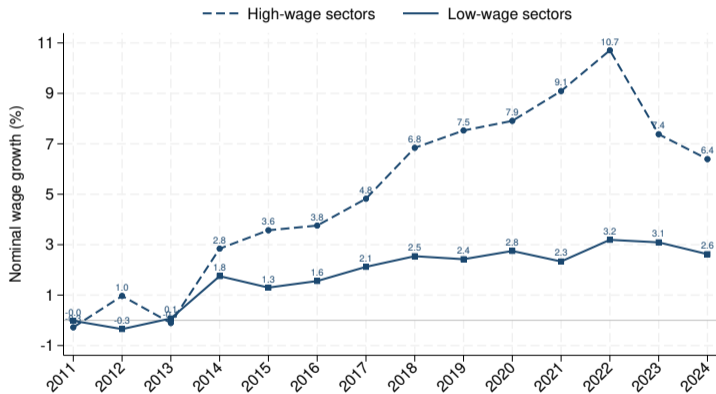
Average wage changes for native and foreign workers. Results highlight weaker gains for foreign workers despite their rising share in total transitions.

Wage Growth at the Moment of Job-to-Job Transitions by Gender



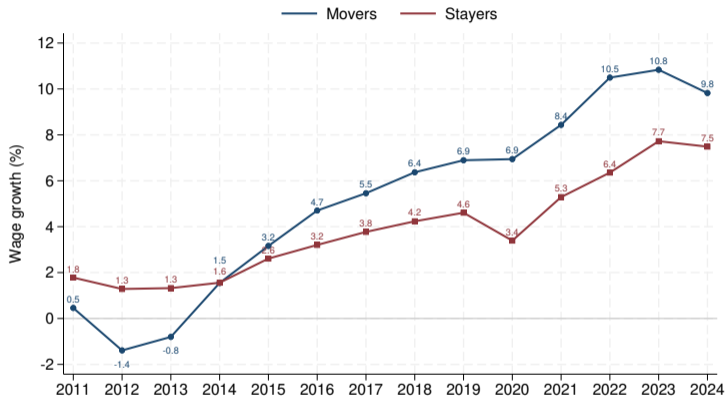
Average wage changes for men and women, highlighting a narrowing gender gap and recent female gains.

Wage Growth at the Moment of Job-to-Job Transitions by Sector of Economic Activity



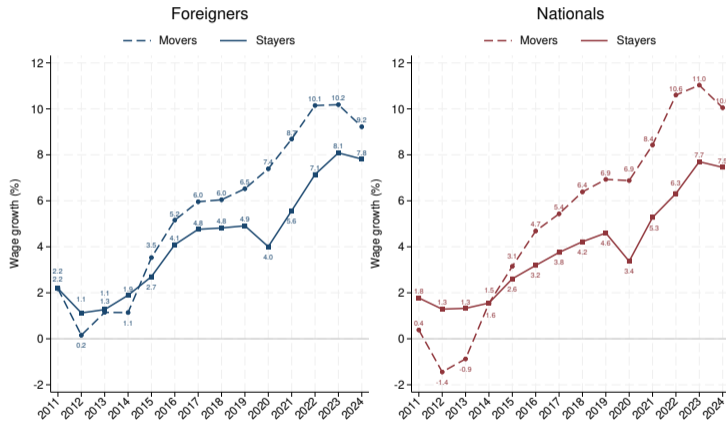
Average wage changes for movers by destination sector, with significantly larger gains in high-wage activities.

Year-on-Year Wage Growth for Movers vs Stayers

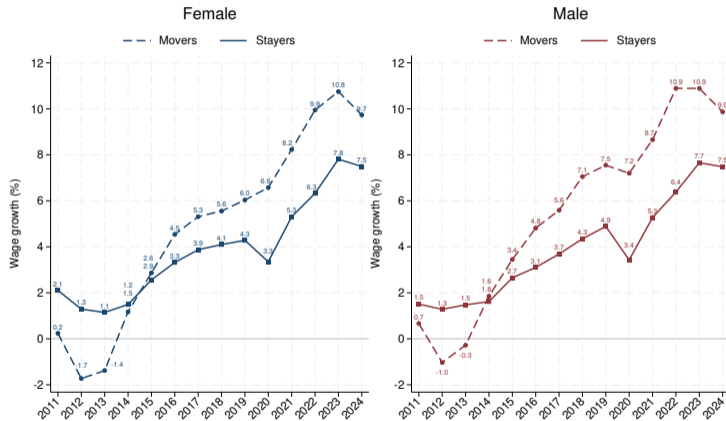


Job movers in a given month are defined as workers who start a new contract with a different employer compared with one year earlier.

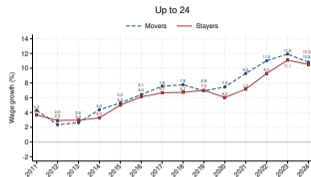
Year-on-Year Wage Growth for Movers and Stayers by Nationality



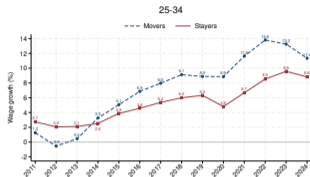
Year-on-Year Wage Growth for Movers and Stayers by Gender



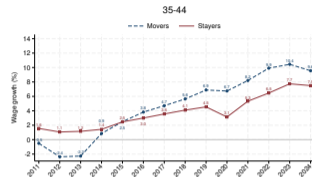
Year-on-Year Wage Growth for Movers and Stayers by Age Class



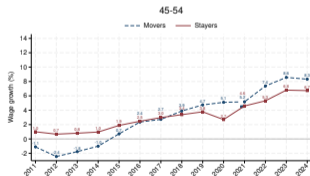
(a) Up to 24 years old



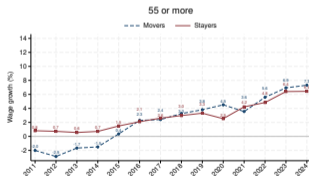
(b) 25-34 years old



(c) 35-44 years old

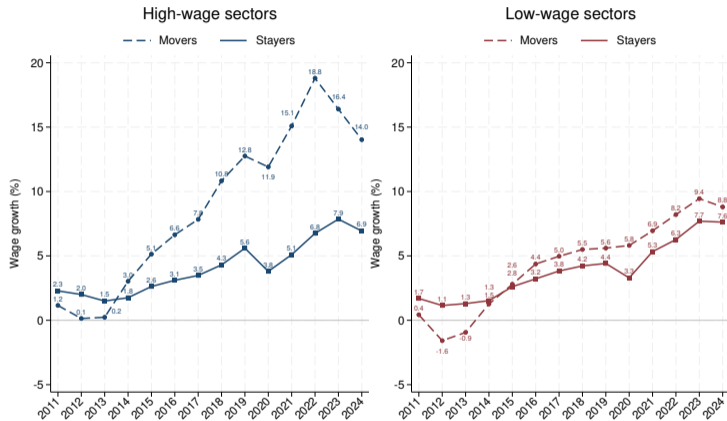


(d) 45-54 years old



(e) 55 years or more

Year-on-Year Wage Growth for Movers and Stayers by Destination Sector



High- and low-wage sectors are defined relative to the economy-wide mean regular wage.

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Wage Regressions

To quantify the wage premium (or penalty) associated with job-to-job mobility:

$$\ln w_{it} = \alpha + \beta \text{Mover}_{it} + \gamma \mathbf{X}_{it} + \alpha_i + \delta_f + \theta_t + \varepsilon_{it},$$

- $\ln w_{it}$ is the log of real regular wage of worker i at time t ;
- Mover_{it} equals 1 if worker i experiences a job-to-job transition at time t , and 0 if remains with the same employer;
- \mathbf{X}_{it} includes observable time-varying worker characteristics;
- α_i , δ_f , and θ_t denote worker, firm, and time FE;
- The estimation sample comprises ≈ 403 million observations, 5.8 million workers employed in 603 thousand firms.

Key findings:

- Regular wages increase with both age and tenure, at a decreasing rate.

	Dependent variable: $\ln(\text{real regular wage})$	
	(1) Benchmark	(2) Full specification
Job-to-job mover	0.0925*** (0.0005)	0.0104*** (0.0002)
Age (years)	0.0367*** (0.0001)	(
Age ²	-0.0004*** (0.0000)	
Tenure (years)	0.0149*** (0.0001)	0.0086*** (0.0000)
Tenure ²	-0.0004*** (0.0000)	-0.0002*** (0.0000)
Gender (Male = 1)	0.1432*** (0.0005)	
Nationality (Foreigner = 1)	-0.1137*** (0.0008)	
Log of firm size	0.0592*** (0.0001)	0.0339*** (0.0002)
Constant	5.5823*** (0.0022)	7.2578*** (0.0016)
Time FE	✓	✓
Worker FE		✓
Firm FE		✓
Observations	402,780,686	402,780,686
Adjusted R^2	0.1687	0.9292

Key findings:

- Regular wages increase with both age and tenure, at a decreasing rate.
- Men earn 15.4% more than women (14.3 log points), while foreign workers earn 12.1% less than nationals (11.4 log points).

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Key findings:

- Regular wages increase with both age and tenure, at a decreasing rate.
- Men earn 15.4% more than women (14.3 log points), while foreign workers earn 12.1% less than nationals (11.4 log points).
- *Benchmark vs. Full Specification:* The estimated wage premium for job movers is 9.7%, but it drops sharply to 1.0% once we control for unobserved heterogeneity.

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Time FE	✓	✓
Worker FE		✓
Firm FE		✓
Observations	402,780,686	402,780,686
Adjusted R ²	0.1687	0.9292

Gelbach Decomposition of the Movers' Wage Premium

The decomposition proposed by Gelbach (2016) allows us to attribute the change in the coefficient – *from Benchmark to Full Specification* – to Worker and Firm FE:

Benchmark	Full Specification	Decomposition into:	
		Worker FE	Firm FE
(1)	(2)	(3)	(4)
0.0925	0.0104	0.0609	0.0212
(0.0005)	(0.0002)	(0.0004)	(0.0016)

Columns (3) and (4) shows the results of the Gelbach decomposition that regresses the worker and firm fixed-effects on the benchmark controls, showing each component's contribution to the overall wage premium.

Summing the values in (2), (3), and (4) yields the benchmark coefficient in (1).

Key findings:

- Worker FE accounts for $\approx 2/3$ of the total wage differential (6.1 log points out of the 9.3 overall premium).
 - Wage premium would fall by 2.12 log points if workers were randomly distributed across firms.
- ⇒ **Observed wage premium is primarily an individual phenomenon**, reflecting worker characteristics (education, ability, and motivation) independently of the firm, while a **smaller portion arises from sorting higher-quality workers into better-paying firms.**

Benchmark	Full Specification	Decomposition into:	
		Worker FE	Firm FE
(1)	(2)	(3)	(4)
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Concluding Remarks

Labor Market Dynamics and Wage Patterns

- Aggregate wage and employment indicators mask significant underlying turbulence.
- Social Security microdata reveal large offsetting flows among **movers, entrants, and stayers**.
- **These flows are highly heterogeneous** across workers, with outcomes differing by age, gender, nationality, and sector.
- Regression evidence confirms that mobility is associated with a wage premium relative to staying, but the size of this premium **depends critically on controlling for worker and firm heterogeneity**.

Concluding Remarks

Interpreting the Wage Premium and Policy Implications

- Regression results show a **wage premium for movers** declining from $\approx 9\%$ to $<1\%$ when controlling for worker and firm effects.
- Most of the observed premium stems from **individual worker characteristics**, not firm sorting.
- **Key takeaway:** headline aggregates hide a **continuous reallocation process** shaping wage dynamics.
- **Job mobility** supports upward progression, especially in tight labor markets.
- **Policy focus:** improve **match quality**, lower **barriers to mobility**, and support **entrant integration**.