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Global managers, local workers: Wage setting inside a multinational firm

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Abstract
How are wages set within a multinational firm? Combining cross-country data on wages and labor regulations with personnel records of a large multinational firm, I find that wage setting depends on the rank of the employee in the firm hierarchy. For managers, wages are set by the headquarters regardless of local labor market conditions. For factory workers, wages are adjusted according to country-specific wages and labor regulations. These results suggest that the multinational's internal labor market shields managers against changes in external market conditions, while the firm adapts to local labor markets for factory workers.

Keywords: multinationals, firm wage-setting, inequality
JEL Codes: F23; J30; J31; M52

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1 Introduction

Local labor markets are increasingly dominated by large firms operating in many countries (David Autor, David Dorn, Lawrence F Katz, Christina Patterson and John Van Reenen, 2020; Esteban Rossi-Hansberg, Pierre-Daniel Sarte and Nicholas Trachter, 2021). A growing body of evidence suggests that multinationals transpose domestic wages and organizational practices across national borders to their foreign subsidiaries (Alan S Blinder and Alan B Krueger, 1996; Nicholas Bloom, Raffaella Sadun and John Van Reenen, 2012; Alonso Alfaro-Urena, Isabela Manelici and Jose P Vasquez, 2019; Jonas Hjort, Xuan Li and Heather Sarsons, 2022; Jonathon Hazell, Christina Patterson, Heather Sarsons and Bledi Taska, 2022). This paper explores how a multinational firm sets wages for different occupations across countries. The main contribution is to show that the firm's wage-setting encompasses a spectrum of wage policies that differ according to the workers' rank within the organizational hierarchy.

I gather data on workers' wages of a large multinational firm (henceforth, the MNE) operating in over 100 countries to investigate the degree of local adaptation versus adoption of wages set at the headquarters by the foreign subsidiaries. I document three stylized facts. First, the MNE links wages at foreign establishments outside of the home region to the level at headquarters. Second, the degree of wage pass-through depends on the worker's rank within the firm hierarchy. In particular, I find that changes in headquarters' wages transit through jobs across different subsidiaries to a greater extent for managerial occupations compared to white-collar workers and, in turn, for white-collar workers when compared to blue-collar workers. The opposite occurs for changes in countries' average wages, to which blue-collar wages are the most responsive. Third, the responsiveness to headquarters and countries' average wages is influenced by the countries' labor laws, but only for blue-collar workers.

The documented wage anchoring patterns are consistent with multinationals transferring practices across borders for high-skill occupations while adapting to local labor market conditions for low-skill occupations. As a result, the MNE's wage setting across space leads to higher wage inequality within the firm in countries with lower GDP per capita. Moreover, stricter country labor laws exacerbate firm wage inequality in low-income countries as they attenuate the wage pass-through from headquarters and amplify the wage pass-through from the local labor market for blue-collar workers.

2 Institutional context and data

2.1 Institutional context

The MNE has a workforce of about 124,000 employees, of which approximately 69,000 are white collars (WC) and 55,000 are blue collars (BC); 30,000 are in high-income countries and 94,000 are in low/middle-income countries. Typical WC occupations in the MNE consist of sales, engineering, marketing, HR, R&D, and general managerial activities. BC workers are predominantly machine operators. Overall, it is a homogeneous workforce in terms of the educational requirements upon entry, which are standardized across establishments (having a college degree for white collars and secondary education for blue collars). The company's products are used by billions of people every day and turnover in 2019 was in the tens of billions. Virginia Minni (2023) provides an in-depth description of the setting and the data.

2.2 Data

The main variables in the analysis are obtained from the personnel records of the MNE, which provide annual nominal compensation data in euros for the population of employees worldwide from 2015 until 2021. The company is organized into a hierarchy of work levels, which can be grouped into three main categories: blue-collar (henceforth, BC) workers, white-collar (henceforth, WC) workers, and managers. Within each group, there are many sub-functions, which indicate more specific occupational information, e.g. manufacturing excellence, brand development, customer management, and demand planning. I define an occupation as a hierarchy-subfunction pair; there are a total of 237 occupations. The main outcome variable is total compensation in logs (fixed plus variable pay). In addition, the data keeps track of demographic variables of interest (age, gender, tenure) as well as worker hiring and firing. Throughout the analysis, I only consider local employees hired in the country (non-expats).

I supplement the MNE records with aggregate country data on local economic conditions: (i) average country wages available at ISCO-08 codes from the International

Labor Organization (ILOSTAT, 1991-2022)[1] and (ii) the World Economic Forum Restrictive Labor Regulations Index from the World Bank (Xavier Sala-i Martín, 2016).[2]

For the analysis, I build a dataset with the log of average wages in the MNE and the log of local wages in the countries at the occupation-gender-country-year level.

3 Wage setting in the multinational

I investigate the relationship between the wages the MNE pays its workers at home and abroad and I find a robust correlation between them. First, the MNE pays higher wages than average country wages in all countries in which it operates: the median ratio of average wages in the MNE to average wages in the country from the ILO is 5 for WC workers and 3 for BCs.[3]

Second, to estimate the extent of wage anchoring to wages in the headquarters, I correlate the wages paid to workers in a particular occupation at the foreign establishments with the wages paid to workers in the same occupation at the headquarters and with the average country wages. I regress log average wages in the MNE against log average wages in the headquarters and local average wages in the country at the occupation-gender-country-year level, both are measured in euros.[4]

I estimate the following regression model:

$$w_{jcgt} = \beta_1 HQw_{jgt} + \beta_2 w^C_{jcgt} + \theta_j + \theta_c + \theta_t + \epsilon_{jcgt} \tag{1}$$

where w_{jct} is the log average wage of workers in occupation j in country c of gender g in year t. HQw_{jt} is the log average wage of workers in the same occupation at head-

[1]The relevant ISCO-08 occupations for the MNE are managers; service and sales workers; plant and machine operators, and assemblers. The two main sources for the ILO earnings data are labor-related establishment surveys and household surveys, which have the advantage of covering all employees regardless of where they work including the public and private sectors, formal and informal enterprises, and all industrial sectors (ILOSTAT COND database).

[2]The WEF Restrictive Labor Regulations Index is available for the period 2008–2020 and is based on an annual survey on the most problematic factors for doing business (e.g., corruption, taxes, inflation, etc.). The survey is administered to a representative sample of around 15,000 business executives in 150 countries. The Restrictive Labor Regulations Index includes measures related to labor-employer relations, wage flexibility, hiring and firing practices, performance pay, labor taxes, attraction and retention of talent.

[3]Results are similar when using data on manufacturing firms from the Orbis database.

[4]Results are unchanged when converting wages to year 2017 international dollars using the 2017 USD PPP exchange rate. All data for the PPP adjustments is from the World Bank (World Bank, 1960-2022).

quarters (HQ) in year t. I include occupation fixed effects to account for differences across occupations in the productivity of workers, and country and year fixed effects so that I only compare establishments located in a given country and at a given point in time. As a benchmark measure of the foreign country "market" wage of workers in occupation j in year t, I use the country-occupation level wages from ILO, w^C_{jct}. I cluster standard errors at the occupation level.

Table I shows that the average wage the MNE pays domestic (non-expat) workers within an occupation at foreign establishments is highly correlated (coefficient of 0.33 in column 3, p-value < 0.001) with the average wage the employer pays workers in the same occupation at the headquarters. Hence, 10 percent higher wages at headquarters are associated with 3.3 percent higher wages in foreign establishments. As a comparison, Hjort, Li and Sarsons (2022) finds that 10 percent higher wages at the headquarters are associated with 1.5 percent higher foreign establishment wages. The results are broadly similar if I only consider bonuses (variable pay) and hold when splitting countries by low, middle, and high income countries using the classification provided by the World Bank. Hence, headquarters and foreign establishment wages are strongly correlated.

The MNE wage setting has implications for worker entry and exit. The semi-elasticity of the net employment change for an increase of 1% in HQ wages is -1.9, where the net employment change is defined as the number of hires minus the number of exits in an occupation-country-year unit. This is mainly driven by a decrease in the number of workers being hired, rather than higher worker exits.

Next, I investigate whether these patterns are heterogeneous by the position of the employee within the organization and by the countries' labor laws.

3.1 Worker rank within the firm hierarchy

Figure I reports the results when allowing for heterogeneity by the hierarchical level of the occupation (BC, WC, Managers).

The estimated wage anchoring is more than twice as large for managers compared to BCs, with the effects for WC workers being in between. Conversely, BC workers' wages are much more responsive to the countries' average wages. As a result, the average coefficient of variation in wages across countries for employees in the same

occupation-year is higher for BC (0.54) compared to WC (0.46), and, in turn, for WC compared to managers (0.33). A variance decomposition exercise using occupation, country, and year fixed effects indicates that half of the variance in log wages is explained by the country fixed effects for BCs while by the occupation fixed effects for WCs and managers.

The fact that BCs' wages are responsive to wage-setting at headquarters is consistent with Hjort, Li and Sarsons (2022) and Hazell et al. (2022)'s evidence of firm wage norms. Yet, it is striking to document that, for BCs, headquarters' changes in wages have roughly the same effect as changes in local country wages. Instead, for managers, the effect of headquarters wages is more than double that effect.

While I find significant differences in wage setting along the hierarchy, I do not find significant heterogeneity by function (the MNE has 14 main functions with the biggest six being Sales, HR, R&D, Supply Chain, Finance, Marketing). I also do not find heterogeneity in the HQ wage pass-through by worker gender. This is noteworthy as the MNE operates in countries with widely different gender norms and suggests that the MNE's wage setting policy might help spread across countries gender norms toward gender equality.

3.2 Labor regulations in the country

Do countries' labor laws influence the HQ wage pass-through? I look at how the relationship between wages in foreign subsidiaries and those in the headquarters vary with labor market regulations at the country level. In particular, I interact the headquarters and countries' average wages with labor regulations at the country-year level using the labor rigidity index from the World Bank. I run the same model as in Figure I but separately for countries with above and below median labor laws' rigidity index.

Results are reported in Figure II. Looking at HQ wages, the degree of pass-through to foreign subsidiaries is smaller in countries with high regulations compared to countries with low regulations. The opposite holds for average wages in the country, which show even starker differences across strict and lax labor laws. Hence, labor laws partly insulate the MNE's influence on foreign establishments' wages. While the patterns hold across BCs, WCs, and managers, the differences in the coefficients across strict and lax labor laws of both HQ wages and local country wages are much larger and

statistically significant for the BC wages. Moreover, I cannot reject the null hypothesis of a zero impact of HQ wages changes on BC wages in foreign establishments in countries with stricter labor laws.

These results cast new light on pro-worker labor policies for low-skill occupations. As previously described in Section 2, the MNE pays higher wages than local levels for all occupations and in all countries. Intuitively, most pro-worker measures, such as restrictions on hiring and firing, make it harder to link pay to the level at headquarters as they restrict firms' options for labor adjustments. By increasing the attachment to local labor market conditions while weakening the link to headquarters' wages, tighter labor policies might backfire by impacting low-earnings workers — the very individuals they aim to protect— more negatively than workers in high-earnings occupations.

4 Implications and concluding remarks

I document that, in a large multinational, the firm-wide wage-setting procedures vary by worker position in the hierarchy. Managerial occupations are characterized by international wages set at headquarters that show little adjustment to local labor market wages. The reverse holds for low-skill occupations. The evidence points to an internal labor market transcending national borders for white-collar/managerial occupations. On the contrary, blue-collars' wages are closely tied to the national wage averages. Furthermore, the stringency of countries' labor laws influences the effects, predominantly for blue-collars: it reduces the sway of headquarters' wages and, conversely, amplifies the impact of domestic wages.

The MNE wage-setting has profound repercussions on the level of wage disparity across countries among employees in different ranks of the same organization. As a measure of wage inequality, I compute the log difference in median wages between managers and workers (WC and BC) in each country[5] and I plot it against GDP per capita in logs, splitting the countries by above and below median labor laws. Figure III illustrates a strong inverse association between the degree of firm wage inequality among employees within the same country and its GDP per capita. Moreover, local economic conditions have a greater influence on firm wage inequality in coun-

[5]Plots are similar when separately looking at the inequality between managers and white collars, managers and blue collars, and white collars and blue collars.

tries with strict labor laws compared to countries with more lenient labor regulations. Hence, rigid labor regulations might end up inadvertently harming lower-paid workers in low-income countries by weakening the connection of their wages to the multinationals' central pay structures.

There are several candidate explanations for these empirical findings. If international migration plays an important role in high-skill labor markets, higher managers' mobility could help explain these patterns (Sari Pekkala Kerr, William Kerr, Çağlar Özden and Christopher Parsons, 2016). Relatedly, higher management prices could reflect the scarcity of high-quality management (Jonas Hjort, Hannes Malmberg and Todd Schoellman, 2022). Other reasons why employers use firm-wide wage-setting procedures may have to do with the cost of "localizing" wages as it may be particularly costly for high-skill occupations to continuously gather information about the "appropriate" wages to pay in a frictional labor market (Thomas Lemieux, W Bentley MacLeod and Daniel Parent, 2009, 2012). Fairness preferences can be another determinant, as knowledge of pay differentials in similar roles dampens output and satisfaction (David Card, Alexandre Mas, Enrico Moretti and Emmanuel Saez, 2012; Alexandre Mas, 2017; Emily Breza, Supreet Kaur and Yogita Shamdasani, 2018; Arindrajit Dube, Laura Giuliano and Jonathan Leonard, 2019; Zoë Cullen and Ricardo Perez-Truglia, 2022). Crucially, any plausible theory would have to explain the variation in firms' wage-setting practices across the different ranks of the organizational hierarchy.

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6 Tables and figures

Table I: Wage anchoring to HQ versus adapting to local wages

	Log MNE Establishments' Wages		
	(1)	(2)	(3)
Log HQ Wage	1.081	0.787	0.334
	(0.0606)	(0.0886)	(0.0796)
Log Country Wage	0.0864	0.419	0.0270
	(0.0184)	(0.0635)	(0.00410)
Job FE	No	No	Yes
Country FE	Yes	No	Yes
Year FE	Yes	No	Yes
CountryYear FE	No	Yes	No
R-squared	0.807	0.842	0.854
N	20752	20752	20752
p-values			
HQ wages = country wages	0	0.0149	0.000200

Notes. This table reports OLS coefficient estimates of log HQ wages and log average country wages on log MNE foreign establishments' wages. The unit of observation is an occupation-gender-country-year. Specification (1) includes fixed effect controls for country and year separately. Specification (2) includes fixed effects for country$\times$year. Specification (3) includes occupation, country, and year fixed effects. Standard errors are clustered at the occupation level.

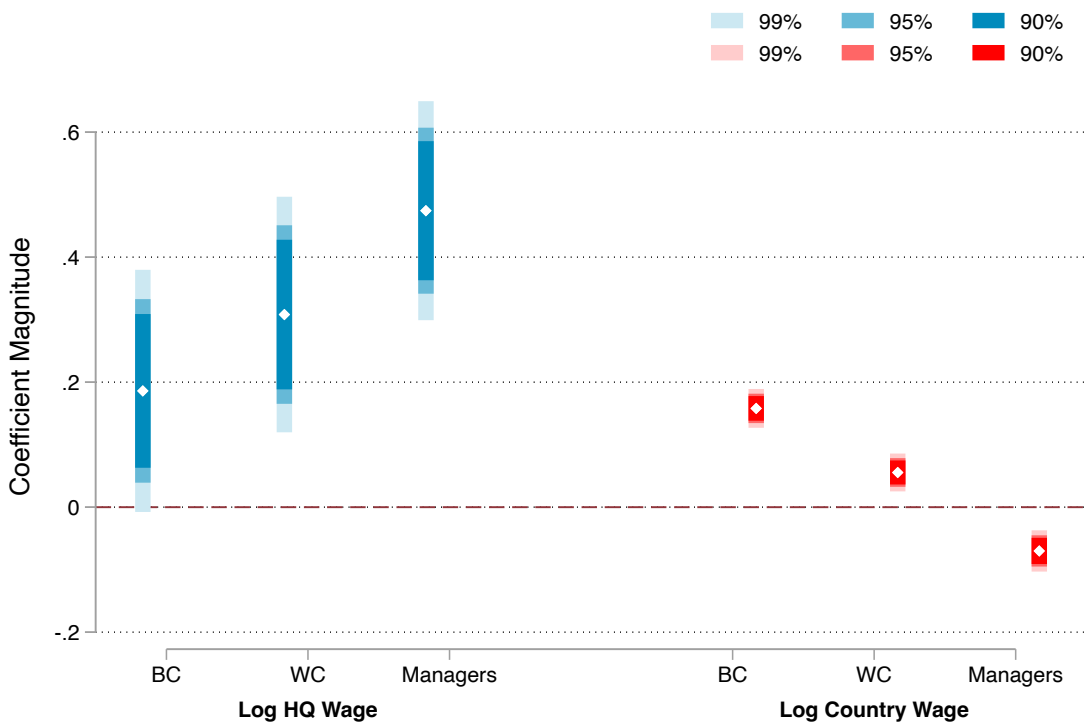

Figure I: Wage anchoring to HQ versus adapting to local wages, by rank in the firm hierarchy

Notes. This figure plots OLS coefficient estimates of log HQ wages (in blue) and log average country wages (in red) interacted with indicators for the hierarchy level of an occupation (BC, WC, Managers). The unit of observation is an occupation-gender-country-year. The shaded bars represent the confidence intervals at 90% (darkest shading), 95%, and 99% (lightest shading) levels; standard errors are clustered at the occupation level. The regression includes occupation, country, and year fixed effects.

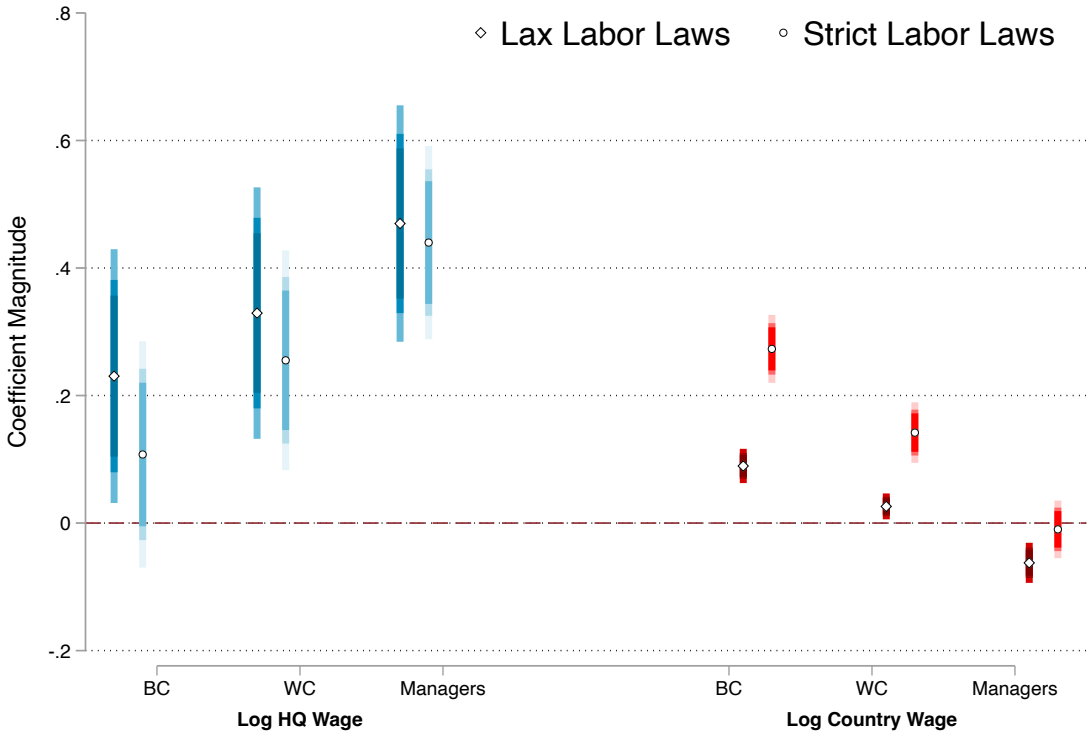

Figure II: Wage anchoring to HQ versus adapting to local wages, by countries' labor laws

Notes. This figure plots the OLS coefficient estimates of HQ and country wages interacted with indicators for the hierarchy level of an occupation (BC, WC, Managers) on foreign MNE establishments' wages, separately by strict (circle symbol) and lax (diamond symbol) labor laws. The unit of observation is an occupation-gender-country-year. The regression controls for occupation, country, and year fixed effects. Standard errors are clustered at the occupation level. The labor law rigidity data is the WEF Restrictive Labor Regulations index (0-30), which is obtained from the World Bank (Sala-i Martín, 2016); the data is available for 2008-2017, and the 2018-2021 values are extrapolated from 2017. This index is used to compute an indicator variable for strict and lax labor laws, wherein a country with strict (lax) labor laws has an index value above (below) the median.

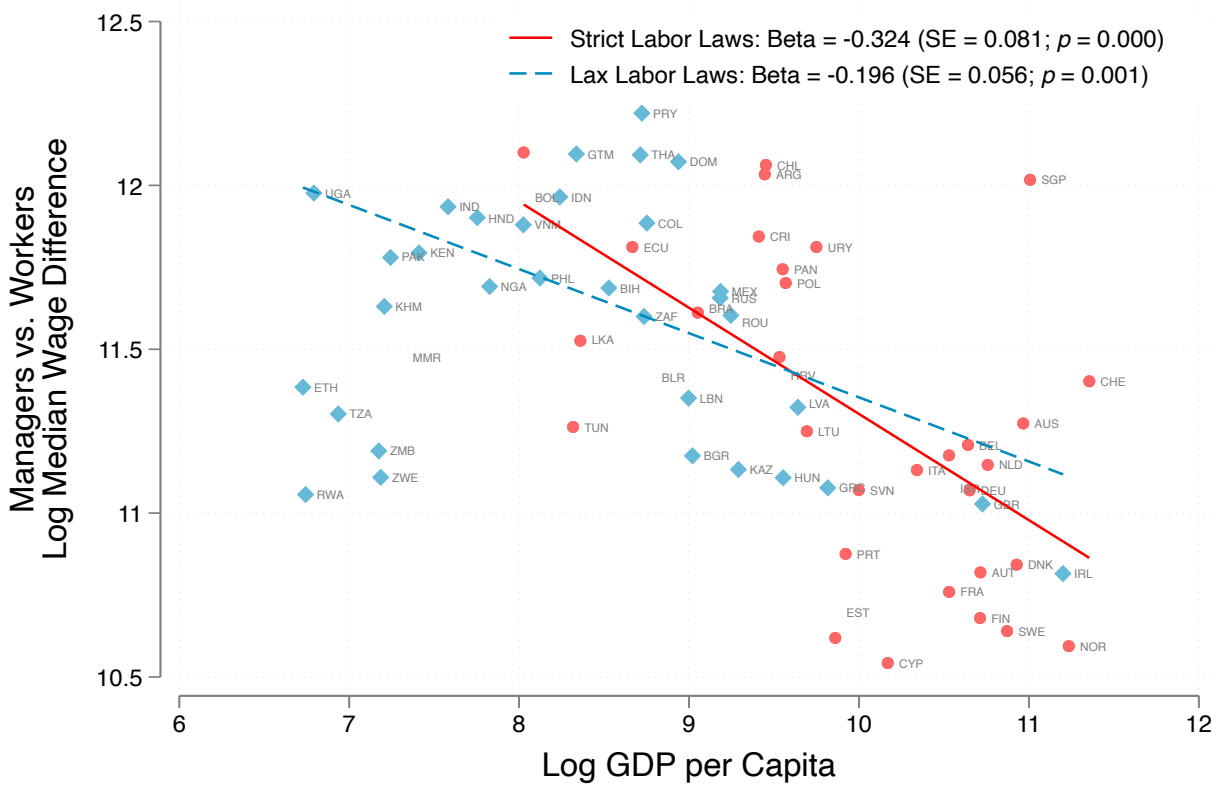

Figure III: Wage inequality within the firm across countries, by countries' labor laws

Notes. This figure shows scatterplots and linear best fits of wage inequality between managers and workers plotted against the log of GDP per capita in the country averaged over 2015-2021 (World Bank, 1990-2023). The scatterplots are split by the rigidity of labor laws in the country (Strict or Lax), measured by the WEF Restrictive Labor Regulations Index (Sala-i Martín, 2016); a country with strict (lax) labor laws has an index value above (below) the median. The unit of observation is a country and robust standard errors are used. Analytical weights by number of occupations in each country are included. Wage inequality is calculated as the difference between the median salary of managers in the MNE and the median salary of workers (both BC and WC) in the MNE. The difference in the median wages is collapsed at the country-level and then plotted against the country's log GDP per capita separately by labor law rigidity.

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