Across-Country Wage Compression in Multinationals*

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Abstract

In this paper we show that many multinationals anchor their wages to headquarter levels. Our analysis makes use of an unusual 2005-2015 establishment×year level dataset of average wages by narrowly-defined occupation. The dataset covers 1,070 large employers that span many sectors and each operate in a subset of 170 observed capital city locations. We show that, across the occupational skill range—but especially for low-skill staff—the average wage multinationals pay *local* workers at foreign establishments is robustly and remarkably highly correlated with the average wage they pay workers in the same position at the headquarter. We then instrument for headquarter wage levels with changes in the headquarter country's (a) minimum wage laws and (b) exchange rate, and show that externally imposed wage increases (decreases) at home causally raise (lower) wages abroad. In the final part of the paper we show that employers' wage-setting procedures influence their occupational structure at home and abroad. The relationships we establish between headquarters' and their foreign establishments' wage levels and changes are both driven by employers headquartered in culturally inequality-averse countries. Correspondingly, such employers are more likely to remove occupations from, and less likely to add occupations to, their foreign establishments after a permanent (minimum wage-induced) wage increase originating at the headquarter, but not after a temporary (exchange rate-induced) one. Other employers if anything shift occupations to their foreign establishments when wages rise at the headquarter. Overall, this paper points towards the existence of employer "wage cultures" that affect how production is organized.

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1 Introduction

Classical economics assumes that labor markets are competitive, and that firms therefore passively adjust workers' pay to equal their marginal product across labor markets. However, growing empirical evidence underscores that firms actually play an important role in the process through which wages are set. In particular, some firms pay workers of similar skill levels more than others (Card *et al.* , 2013, 2015; Barth *et al.* , 2016; Bloom *et al.* , forthcoming; Card *et al.* , 2018).[1]

In this paper we explore a source of firm pay premiums that may have been overlooked. We hypothesize that the use of firm-wide wage-setting procedures in multi-establishment firms can limit wage differences relative to the headquarter. To investigate, we focus on a canonical example of high-wage firms—multinationals abroad.[2] Conventional explanations for their pay premium posit technological or production style differences in multinationals that raise worker productivity.[3] Building on recent work on attitudes towards pay inequality and firms' inability or unwillingness to adjust to local contexts, we establish an additional channel of a different nature.[4] We show that some multinationals—those headquartered in countries with an inequality-averse culture—tend to in effect "anchor" the wages they pay abroad to headquarter wage levels. Such firms also extend *externally imposed* headquarter wage increases to their foreign establishments, while multinationals from less inequality-averse societies do not. Finally, we show that multinationals that anchor their wages abroad to headquarter levels reorganize production relative to those that do not, shifting occupations away from their foreign establishments, when wages rise at the headquarter for exogenous reasons.

Our analysis makes use of an unusual 2005-2015 establishment×year level dataset of average wages by occupation. The dataset was constructed by a consulting company and covers 1,070 employers—the majority of which are large firms—that span 16 broad sectors and as a whole operate in 170 different capital cities around the world.[5]

We begin by showing that the average wage a given employer pays *domestic* (non-expat) workers within a given narrowly-defined occupation at foreign establishments is highly correlated with the average wage the employer pays workers in the same occupation at the headquarter. The same is true for the employer's wage *slope*—the difference between the wages it pays workers in similar jobs of slightly higher versus lower skill levels. Anchoring-to-the-headquarter is observed across the occupational skill range, but the correlation is highest for low-skill staff, which tend not to be directly engaged in production. The multinationals

[1] Recognition of and interest in "firm effects" in wages have a long history in labor economics. For early work, see e.g. Slichter (1950); Rees & Schultz (1970); Dickens & Katz (1987); Krueger & Summers (1988); Van Reenen (1966); Abowd *et al.* (1999, 2002).

[2] That multinationals pay workers in low- and middle-income countries more than local firms is extensively documented in existing work (see Brown *et al.* (2004); Lipsey (2004); Lipsey & Sjoholm (2006); Martins & Esteves (2008); Hijzen *et al.* (2013); Orefice *et al.* (2016); Earle *et al.* (2017).

[3] See e.g. Aitken *et al.* (1996); Conyon *et al.* (2002); Egger & Kreickemeier (2013); Sun (2018).

[4] Recent research has shown that many societies are averse to pay inequality (Card *et al.* , 2012; Mas, 2017; Breza *et al.* , 2018; Cullen & Perez-Truglia, 2018; Dube *et al.* , 2018; Falk *et al.* , 2018), and that such attitudes can influence firms' wage-setting practices (Harrison & Scorse, 2010). Additionally, some firms appear unwilling or unable to adjust their product prices to local contexts (DellaVigna & Gentzkow, forthcoming; Adams & Williams, 2019; Daruich & Kozlowski, 2019).

[5] Most of the employers in our sample are relatively well-known private sector-firms—the economic activity of the publicly listed private sector-firms in our sample make up a substantial fraction of *all* listed OECD firms' activity as measured by their revenue (see Section 2)—but the dataset also contains multinational NGOs and public sector employers. The size distribution of the U.S. publicly listed private sector-firms in our sample is comparable to that of all U.S. publicly listed firms with more than USD 25 billion in annual revenue.

in our sample ultimately pay most occupations in lower-income foreign countries a wage that, relative to GDP per capita, is an order of magnitude higher than the wage they pay workers in the same occupation at the headquarter.[6]

The within-firm, across-country wage co-movement we document controls for fixed effects that rule out conventional explanations that operate through productivity differences across firm×occupations or city×years. However, the anchoring we observe in the full sample is driven by multinationals headquartered in inequality-averse countries as measured by sociologists (Hofstede, 1991, 2001; Tabellini, 2010; Gorodnichenko & Roland, 2011; Bandiera *et al.* , 2019), suggesting that the source of the multinational pay premium may go beyond differences in technology and production style.[7]

To establish causality, we instrument for headquarter wage levels, first with headquarter country minimum wage shocks, and thereafter with headquarter country exchange rate shocks. There are five steps to the minimum wage shocks approach, in which we focus on low-skill jobs since the minimum wage is relevant for these. In an initial step, we document that wages in "treated" and "control" sample establishments that are located in a given foreign city evolve very similarly before the minimum wage is increased in the country where the headquarter of treated establishments is located. We therefore begin by simply comparing the change in wages in such treated and control establiments in a year in which a headquarter country's minimum wage law changes and other years. In the second approach we compare changes in wages in foreign establishments in jobs for which a headquarter country's new minimum wage is more binding for the same job at the headquarter and other jobs *within the same foreign establishment* for which it is less binding. In the third approach we compare changes in wages in the foreign establishments of firms whose headquarter is highly exposed to minimum wage changes because of its employment structure and those of other firms that are *headquartered in the same country*, but whose headquarter is less exposed. Finally, we combine the second and third approach, comparing changes in wages in more versus less binding jobs within a given foreign establishment across firms headquartered in the same country that are more versus less exposed to minimum wage changes.

In combination, these four approaches provide clear evidence that minimum wage-induced wage increases at the headquarter *directly* raise wages in firms' foreign establishments. We show that the two most plausible alternative interpretations—a within-firm-and-occupation outsourcing of tasks to foreign countries phenomenon akin to Feenstra & Hanson (1996) (or more general shifting of offshorable jobs or tasks to foreign establishments), and endogenous timing of minimum wage changes (see e.g. Baskaya & Rubinstein, 2015; Neumark, 2018)—can at most explain a fraction of the estimated impact on wages paid abroad.

The second source of externally imposed changes in headquarter wages we exploit complements the first because exchange rate shocks are temporary and both positive and negative, while minimum wage shocks tend to be permanent and positive. When the measured-in-USD headquarter wages of a multinational fall

[6] See Hjort *et al.* (2019), who study the broader patterns of the wages the private sector-firms that make up a subset of the sample used in this paper pay in lower-income countries, for more on this. In the Appendix to this paper, we show that our results are very similar for private firms and other types of employers. For simplicity, we use "firm" and "employer" interchangeably in the remainder of the text.

[7] Hofstede (1991, 2001)'s measures of culture are widely used across the social sciences and have been validated by several other studies. We show that the estimated extent of anchoring is considerably and significantly greater in firms headquartered in inequality-averse countries also when we additionally interact the headquarter wage with measures of three country characteristics that are especially highly correlated with inequality-aversion: GDP per capita, the country's regulatory environment, and income inequality.

after a headquarter country currency depreciation, anchoring implies that the firm will also lower its foreign establishment wages in response.[8] This is in fact what we find when we instrument for headquarter wages with detrended exchange rate shocks. We show that transmission of such shocks to foreign establishments' wages occurs also in firms producing non-tradable goods and services, and for non-offshorable jobs. We conclude that the impact on multinationals' foreign establishment wages of externally imposed changes in headquarter wages arising from two different sources is difficult to explain in the absence of firm "wage cultures".[9]

The multinationals that directly extend externally imposed wage changes to their foreign establishments are the same ones that more generally anchor wages to headquarter levels: those headquartered in inequality-averse countries. The implied wage compression is in line with how many firms themselves report to set wages across locations, at least within the headquarter country (Culpepper and Associates Inc, 2011).[10]

The existence of across-country wage compression in large multinationals raises the possibility—consistent with work by Goldschmidt & Schmieder (2017)—that some managers would rather adjust other dimensions of production to a firm-wide wage-setting system than attempt to set fully location-specific wages.[11] In the final part of the paper, we show that, when a permanent (minimum wage-induced) wage increase for low-wage jobs at the headquarter is externally imposed on multinationals, the firms that increase the wages they pay workers in the same jobs abroad also change the occupational structure of their foreign establishments. In particular, such firms—multinationals from inequality-averse societies—are more likely to remove and less likely to add an occupation to the composition of their workforce in foreign establishments when headquarter country minimum wages rise. In contrast, we find no such organizational response to a temporary (exchange rate-induced) headquarter wage increase, as expected. We also find that multinationals that do not transmit headquarter country wage increases to their foreign establishments—those from less inequality-averse societies—also do not to change the occupational structure of their foreign establishments in the same way that "inequality-averse firms" do in response to externally imposed headquarter wage hikes. Such firms—multinationals from inequality-tolerant societies—in fact appear to somewhat shift low-skill occupations to their foreign establishments when headquarter country minimum wages rise, perhaps because of the associated rise in their relative labor costs at the headquarter. We view this evidence as a first step towards understanding the *consequences* of across-country wage compression in multinationals, which may be far-reaching and multi-faceted.

This paper contributes to several strands of the literature on how firms set wages and organize produc-

[8] This argument assumes that the firm does not fully index its headquarter wages to the USD.

[9] By *wage culture*, we mean systematic components of firms' wage-setting practices that vary across firm "types" and that are not designed to equate pay and productivity across the firm's workers, worksites, or countries of production.

[10] In a recent survey of primarily North American employers operating in multiple locations, 29 percent report paying *the same nominal wages* across locations. Similarly, a growing list of firms—including Amazon, IKEA, Walmart, and at least 58 other large employers—have self-imposed, country-wide wage floors in the U.S. (National Employment Law Project, 2016).

[11] The cost or benefit of a given wage culture is not something we can speak to with the data and variation used in this paper. Paying high wages in foreign establishments may over time lead multinationals to attract better workers, or motivate higher effort among existing workers, or complementary investments from the firm. Any such *ex post* benefits of wage hikes that arise because firms' wage-setting procedures are not adjusted to local labor market conditions would need to occur also for low-skill workers such as drivers, cleaners, and guards, and to be large, to compensate for the magnitude of the wage anchoring-to-the-headquarter we document in multinationals from inequality-averse countries. On the other hand, simple job-based wage-setting systems are cheaper in use than productivity-based systems (Lemieux *et al.* , 2009).

tion across space. First, we use a new type of data on large multi-establishment firms' operations across countries to document a novel regularity, namely that many such firms anchor their wages to headquarter levels. Our analysis builds on recent findings on invariability in firms' decisions across starkly different contexts, especially DellaVigna & Gentzkow (forthcoming).[12] We connect this body of evidence with the literature on spatial wage differences, by many seen as the key to understanding the process of economic development itself (see e.g. Moretti, 2011; Clemens *et al.* , forthcoming).

Second, by establishing a particular *reason* why some firms pay higher wages than others, this paper helps uncover the nature of the well-known but poorly understood phenomenon of *firm wage effects* (see among others Card *et al.* , 2013, 2015; Barth *et al.* , 2016; Bloom *et al.* , forthcoming; Card *et al.* , 2018). The anchoring-to-the-headquarter wage-setting we document is consistent with existing evidence of rent-sharing, but to our knowledge represents the first direct evidence of firm "wage cultures".[13] Our research design builds on the seminal work of Bloom & Van Reenen (2007); Bloom *et al.* (2012a) showing that multinationals "transport" their practices across borders, and Harrison & Scorse (2010)'s evidence that home country attitudes towards pay levels abroad can influence firms' wage-setting there.[14]

This paper also presents what to our knowledge is the first evidence of *across-country* margins of adjustment to—and components of the incidence of—minimum wages.[15] In this sense our analysis relates to emerging evidence of shocks spreading across space inside firms (Boehm *et al.* , 2017; Giroud & Mueller, forthcoming; Giroud & Rauh, forthcoming; Guo, 2018).

Finally, we take a first step towards understanding how wage cultures affect firms' organization of production across countries. This part of our analysis builds on Goldschmidt & Schmieder (2017)'s evidence that a particular type of German firm—those that generally pay high wages—outsource the lowest-skill occupations. The broader impact of the way that multinationals that anchor their wages to the headquarter change their occupational structure at home and abroad is an important topic for future research (see also Lemieux *et al.* , 2009; Harrison & Scorse, 2010; Boeri *et al.* , 2018).[16] Equilibrium models of multi-region firms in which the wage discount associated with producing in a low-wage location can depend on *the firm's origin*

[12] DellaVigna & Gentzkow (forthcoming) show that many U.S. retailers charge nearly identical prices across large zones of the U.S. The literature on invariability in firms' decisions across contexts originates in the seminal work of Kahneman *et al.* (1986). Recent empirical studies have documented constraints imposed on the wages firms pay different workers in a given worksite or country by workers' fairness preferences (Card *et al.* , 2012; Mas, 2017; Breza *et al.* , 2018; Cullen & Perez-Truglia, 2018; Dube *et al.* , 2018). On relative pay comparisons, see also Hamermesh (1975); Akerlof & Yellen (1990); Fehr & Schmidt (1999), and the lab-based experimental studies surveyed in—and following on from—Rabin (1998).

[13] Budd *et al.* (2005); Martins & Yang (2015) document a high elasticity of average wages in *foreign affiliates* with respect to general variation in parent firm profits, consistent with our results. Card *et al.* (2018) review the broader literature documenting that some firms share rent with workers via higher wages. Hermalin (2001); Akerlof & Kranton (2005); Schein (2010); Hermalin (2013) survey the literature on corporate culture. This literature is primarily theoretical—with some important exceptions (see e.g. Guiso *et al.* , 2015)—and to our knowledge has not made use of empirical strategies intended to separate firm culture from conventional economic phenomena that predict similar regularities in a firm's decisions.

[14] Fisman & Miguel (2007); Almond *et al.* (2013); Atkin (2016); Campa & Serafinelli (forthcoming) show evidence that *individuals* transport their cultural practices across regions.

[15] The minimum wage literature is vast: see e.g. Neumark & Wascher (1992); Card & Krueger (1995); Lee (1999); Aaronson & French (2007); Thompson (2009); Draca *et al.* (2011); Clemens & Wither (2015); MaCurdy (2015); Autor *et al.* (2016); Engbom & Moser (2017); Ganapati & Weaver (2017); Harasztosi & Lindner (Forthcoming); Horton (2018); Neumark (2018); Haanwinckel (2019); Cengiz *et al.* (forthcoming).

[16] The evidence in Lemieux *et al.* (2009); Harrison & Scorse (2010); Boeri *et al.* (2018) provide important hints. Lemieux *et al.* (2009) and Boeri *et al.* (2018) both show evidence suggesting that forms of wage-setting that equalize pay across workers significantly reduce wage inequality within countries. Boeri *et al.* (2018) also find that Italy's system imposing near-equality of nominal wages across regions in some jobs hampers job creation in the South, while Harrison & Scorse (2010) find mixed evidence on the impact in Indonesia of multinationals raising their wages there in response to activism.

may be needed.[17]

2 Data and Summary Statistics

2.1 Data

The primary dataset we use comes from a company that gathers information on compensation at establishments around the world (the "Company").[18] Human Resources personnel at each establishment are instructed by the parent multinational's managers to report the full list of positions present in the establishment at the relevant point in time, and their average gross and net monthly pay.

298 position titles appear in the dataset; we refer to these as occupations or jobs (used interchangeably). In addition, the Company maps the 298 occupations into 16 skill levels that are defined globally. Examples of low-skill occupations include Cleaner, Guard, and Data entry clerk. Middle-skill occupations include Administrative assistant, Systems analyst, and Finance officer, while high-skill occupations include Senior legal counsel, Regional office manager, and Human Resources director.

The dataset includes establishments located in 170 cities around the world, all but four of which are capital cities. On average, we observe each multinational operating establishments in 2.6 different countries, in addition to the headquarter.

The Company collects data every year, and the dataset we use covers 2005-2015. Most of the multinationals in the data are interviewed every year, but not all of their establishments are included every year.[19] At establishment$\times$year level the dataset is thus an unbalanced panel.

Our primary outcome variable is the average nominal net wage of *domestic* workers employed in a given occupation at a given establishment and year, measured in U.S. dollars.[20] In Section 7 we study the relationship between a firm's wage-setting and the occupations that are present in its foreign establishments.

We match our data on establishments and wages to three additional datasets. First, we gather information on minimum wage changes in firms' headquarter countries. These data come from the International Labour Organisation (ILO). We additionally link firms to yearly data on the headquarter country's exchange rate (in local currency units per USD) from the World Bank. The yearly exchange rate is an annual average based on monthly averages. More detailed information on the minimum wage and exchange rate data is in the Appendix.

Finally, we link our data to information on attitudes towards inequality in headquarter countries. The measure we use comes from Hofstede (2001)'s "cultural dimensions", originally constructed from a survey

[17] For existing work and models of how production is organized across space, see among others Feenstra & Hanson (1996); Dube & Kaplan (2010); Bloom *et al.* (2012b); Blinder & Krueger (2013); Irarrazabal *et al.* (2013); Rodríguez-Clare & Ramondo (2013); Tintelnot (2016); Antràs & Yeaple (2014); Antràs (2016), and—most closely related to this paper—Grossman & Helpman (2007)'s pioneering model of wage dispersion concerns and employment structures.

[18] We define the term "establishment" to include both firms' establishments located outside of the headquarter country and the headquarter itself.

[19] If some multinationals in our sample chose not to report data for some of their establishments, such establishments are not included in the dataset we use.

[20] Our dataset contains no information on expat workers. The Company informed us that the use of expat workers is very rare in most of the occupations observed in the dataset used in this paper. Most of the multinationals in the sample report their compensation data to the Company in USD. The Company converts the data of employers that report in local currency to USD.

of IBM employees in over 80 countries. These have been validated by other studies (e.g. Yoo *et al.* , 2011), and are widely used in social science research (see e.g. Tabellini, 2010; Gorodnichenko & Roland, 2011; Bandiera *et al.* , 2019).[21] Specifically, we use Hofstede (2001)'s Power Distance measure of inequality-aversion, which captures a group's willingness to accept inequality among its members. We classify headquarter countries as having either high or low inequality-aversion based on whether they score above or below the median of this measure. Inequality-aversion correlates with several measures of a country's economic context, especially GDP per capita, the country's regulatory environment, and its Gini index.[22] We later test whether such correlates of inequality-aversion drive the relationship between a firm's wage-setting practices and the headquarter country context we establish.

2.2 Summary statistics

The majority of the employers in our sample are private firms. They come from a variety of sectors, including banking, consulting, health care, mining and other natural resources, technology, telecommunications, and transport. Public sector employers and NGOs are also represented.[23] Most employers in the dataset are based in North America (predominantly the United States), followed by Africa and Europe.[24]

Employers themselves choose to report data to the Company. Most are well-known to the public, and most of the private sector firms are publicly listed. Hjort *et al.* (2019) show that the publicly listed private sector-firms in our sample are comparable in size distribution to large, publicly listed U.S. firms, and collectively important for the global economy, for example making up around 20 percent of the total revenue of OECD firms that appear in the Compustat database (a comprehensive database that covers 99 percent of the world's total market capitalization).

Table 1 displays summary statistics on the firms and establishments in the sample. In Panel A we see that the mean wage they pay firm-wide is around USD 20,600, with a standard deviation of around USD 15,000. The average employer employs workers in 32 different occupations (s.d. = $\sim$ 21) that belong to 11 different skill levels (s.d. = $\sim$ 1.4), and has 2.6 foreign establishments (s.d. = $\sim$ 3.5). Panel B shows that 571 of the 1,070 employers in the full sample are private sector firms; these pay somewhat higher mean wages than other employers.

In Panel C of Table 1 we display employers' mean wage at each of the four quartiles of their wage distribution. The mean wage is roughly USD 14,400 in the lowest quartile and USD 60,700 in the highest quartile. Panel C also shows, by headquarter wage-quartile, employers' wage levels at their foreign establishments as a percentage of their wage level for the same jobs at the headquarter. These are generally high, rising from 65 percent in the lowest quartile to 79 in the highest quartile on average.

Our full analysis sample consists of the 1,070 employers for which we have wage data from at least

[21] For more information, see https://geerthofstede.com/culture-geert-hofstede-gert-jan-hofstede/6d-model-of-national-culture/.

[22] The Appendix provides a description of the variables that correlate with the Hofstede Power Distance measure.

[23] Sectors are defined according to the Standard Industrial Classification, with public sector employers and NGOs classified separately. In the public sector, interviewed organizations are mainly national banks and various branches of government that tend to have establishments abroad.

[24] The reason why African employers are well-represented, especially among public sector employers, is that the Company's primary focus is to collect data on establishments located in low- and middle-income countries. Most NGOs, on the other hand, are based in North America or Europe and have establishments in other continents.

one foreign establishment in addition to the headquarter.[25] However, in some of our analysis we compare the wages of workers in the same or similar jobs in the same year in a firm's headquarter and its foreign establishments. When we restrict the sample to employers for which we observe wages for workers in occupations of the same skill level at one or more foreign establishments and the headquarter in the same year, we end up with 93 unique employers. When we instead restrict to employers for which we observe wages for workers in identical, narrowly-defined occupations at one or more foreign establishments and the headquarter in the same year, we end up with 68 unique employers. Appendix Table A1 shows summary statistics for this subsample. These employers are slightly smaller, and include few public sector organizations. However, the mean and standard deviation of wages in this "narrowest" sample are very similar to those in the full sample; private sector firms make up the majority also of this sample; and these employers' wage levels at their foreign establishments as a percentage of their wage level for the same jobs at the headquarter are very similar to those seen in the full sample.

More detailed information on the data we use can be found in the Appendix.

3 Anchoring to Headquarter Wages

In this section we show that many multinationals pay the workers they employ at establishments in foreign countries wages that are remarkably highly correlated with the wages they pay workers in the headquarter country. To do so we take advantage of the fact that we observe multinationals from many different countries employing workers in a given type of job in a given foreign city at the same point in time.

3.1 Estimating wage anchoring

We run the following regression:

$$\mathrm{w}_{jfct} = \beta_1 \mathrm{HQw}_{jft} + \beta_2 \bar{\mathrm{w}}_{j(-f)ct} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct} \tag{1}$$

where w_{jfct} is the average wage of workers in job j at firm f's establishment in foreign city c in year t. A *job* here means a specific position such as Driver, Administrative assistant, or Human Resources director. (In alternative specifications, the results from which we also show in our analysis below, j refers instead to the average wage of workers in jobs of a given skill level). HQw_{jft} is the average wage of workers in the same job at firm f's headquarter in year t. $\bar{\mathrm{w}}_{j(-f)ct}$ is our measure of how much *other* employers in the same sector are paying workers in the same job in the same city and point in time, specifically the average wage of workers in job j employed by all firms in our sample that belong to the same sector as firm f in foreign city c in year t, other than firm f itself. $\bar{\mathrm{w}}_{j(-f)ct}$ thus proxies for the "market" wage of job j among (foreign and, where relevant, domestic) multinationals in a given sector. The correlation between a given multinational's wage level and other employers' wages in the same city and year is a natural benchmark to

[25] There are around 1,800 employers in the raw data, but not all of these are multinationals.

which we can compare the correlation between the firm's wage level abroad and at home.[26]

Throughout our analysis we include firm×job fixed effects θ_{fj} to account for differences across firms in the productivity of workers in job j, and city×year fixed effects θ_{ct} so that we only compare establishments located in a given city and at a given point in time. We measure all wage levels as the log of the relevant nominal, post-tax wage in USD, and cluster the standard errors at the firm×job level.

We find a strong correlation between headquarter and foreign establishment wage levels. As seen in columns 1 and 3 of Table 2 and panels A and C of Figure 1, 10 percent higher headquarter wages are associated with 1.2-1.4 percent higher foreign establishment wages for workers in jobs of the same skill level or the exact same position.[27] This within-firm-across-country correlation in wage levels is at least twice as large as the correlation between a given establishment's wage level and our benchmark for the average wage level of workers in the same job, sector, city, and point in time.[28] Insofar as the multinationals in our sample choose to operate establishments abroad in part because they can and do pay comparatively *low* wages to foreign workers, the counterfactual degree of wage anchoring-to-the-headquarter may be even greater in similar firms that choose not to operate establishments abroad.

The estimates in Table 2 reflect a "headquarter effect": wage changes at the headquarter manifest themselves in wage changes at a firm's foreign establishments, but the opposite does not hold.[29] We return to this in Section 4.

We also find a strong correlation between headquarter and foreign establishment wage *differences* across jobs of consecutive skill levels. To show this, we replace the outcome variable w_{jfct} in equation (1) with a corresponding measure of the establishment's wage "slope", $\nabla \mathrm{w}_{o(l,l+1)fct}$. To construct this variable, we consider occupational *categories* rather than narrowly-defined occupations (or jobs) themselves. A given occupational category—for example, administrative jobs—tends to have jobs of multiple skill levels represented.[30] $\nabla \mathrm{w}_{o(l,l+1)fct}$ is the difference between the average wage of all jobs within occupational category o that are of skill level $l+1$ and those of skill level l in the foreign establishment of firm f that is located in city c at time t. We also replace the independent variable of interest HQw_{jft} with an analogously defined measure of the corresponding wage slope at the headquarter, $\nabla \mathrm{HQw}_{o(l,l+1)ft}$.[31] The results, reported

[26] We could alternatively benchmark β_1 exclusively against the correlation between multinationals' wage level and that of domestic employers. For many cities, our sample contains no or only a moderate number of employers from the country itself so that such an approach would necessitate comparison to wage data from another dataset, the sampling and data collection procedures for which would likely differ. In addition, for many of the jobs observed in our dataset, the number of domestic employers employing workers in the exact same position as the multinationals we study in the same city×year is likely limited (even if domestic employers often employ workers in related but distinct positions). Note also that our "within-sample-benchmark" approach will if anything lead us to underestimate the true extent of wage anchoring because other multinationals likely pay workers in job j wages that are closer to those of firm f than domestic employers do.

[27] The fact that the estimates are very similar when we compare jobs of a given skill level versus the exact same position may in itself point towards firm-wide wage-setting policies that are influenced by attitudes towards inequality (a possibility we come back to below). Note also that the estimates in Table 2 are similar—if anything of greater magnitude—if we restrict the sample to private firms, as shown in Appendix Table **??**.

[28] In an alternative approach, shown in Appendix Table A2, we replace city×year fixed effects θ_{ct} and our benchmark measure of how much other employers are paying workers in the same occupation $\bar{\mathrm{w}}_{j(-f)ct}$ with job×city×year fixed effects θ_{jct}. This gives very similar results to those in Table 2.

[29] We also find no evidence that firms learn over time such that anchoring-to-the-headquarter falls with time spent operating in a given foreign city (results available from the authors upon request).

[30] The 298 jobs (or occupations) of 16 skill levels in the dataset we analyze belong to 26 occupational categories.

[31] We also replace the our benchmark measure of other employers' wages, $\bar{\mathrm{w}}_{j(-f)ct}$, with the analogously defined slope measure $\nabla \bar{\mathrm{w}}_{o(l,l+1)(-f)ct}$, and firm×job fixed effects θ_{fj} with firm×occupational category×skill level-pair fixed effects $\theta_{fo(l,l+1)}$. Alternatively, we pool all jobs within a given skill level and construct the outcome variable $\nabla \mathrm{w}_{(l,l+1)fct}$, independent variable of interest $\nabla \mathrm{HQw}_{(l,l+1)ft}$, benchmark wage slope $\nabla \bar{\mathrm{w}}_{(l,l+1)(-f)ct}$, and firm×skill level-pair fixed effects $\theta_{f(l,l+1)}$. This latter approach is anal-

in Appendix Table A4, are very similar to those in Table 2. 10 percent higher differences in occupational category-specific headquarter wages between jobs of consecutive skill levels are associated with 1.1-1.7 percent higher establishment wage differences between workers of the same occupational category and skill levels. This suggests that multinationals also anchor the wage profiles at their foreign establishments to that at the headquarter

3.2 Understanding wage anchoring

To begin to unpack the anchoring-to-headquarter-wages established in Sub-section 3.1, we first demonstrate that anchoring is significantly greater in low-skill than higher-skill jobs. To do so we interact HQw_{jft} with indicators for the relevant job being respectively middle- and high-skill, as opposed to low-skill. In Column 4 of Table 2 we see that 10 percent higher occupation-specific headquarter wages is associated with 2.6 percent higher establishment wages in low-skill occupations; 1.1 percent higher establishment wages in middle-skill occupations; and 1.5 percent higher establishment wages in high-skill occupations.

We next explore the degree to which the firm-wide wage correlation we observe in the full sample is driven by cultural attitudes in the headquarter country; specifically attitudes toward inequality and fairness. We estimate

$$\text{w}_{jfct} = \left(\beta_1 + \beta_1^{\text{L}}\text{Low Ineq. Aversion}_{h(f)}\right)\text{HQw}_{jft} + \beta_2\bar{\text{w}}_{j(-f)ct} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct} \tag{2}$$

where Low Ineq. $\text{Aversion}_{h(f)} = 1$ if multinational f is headquartered in an inequality-tolerant country, as defined in Section 2. Such countries have a higher degree of tolerance for power and income inequality than average.

We find that the correlation between headquarter and foreign establishment wages observed in the full sample is driven only by multinationals headquartered in inequality-averse countries.[32] This is shown in columns 2 and 5 of Table 2 and panels B and D of Figure 1. This suggests that wage anchoring may occur because some firms have "wage cultures" that compress the wages they pay across locations for reasons that go beyond variation in productivity. In Column 6 we also include an interaction term between headquarter wages and inequality-aversion in the country where the foreign establishment is located. We do not find local attitudes towards inequality to be a strong driver of the headquarter-establishment wage correlation.

To investigate if the relationship between inequality-aversion and wage anchoring is driven by other country characteristics that are correlated with inequality-aversion, we re-estimate equation (1), now including interactions between the occupation-specific log wage at the headquarter and three additional country characteristics: GDP per capita, the country's regulatory environment, and income inequality.[33] These characteristics are, relative to other measures of the headquarter country context, especially highly correlated with the Hofstede (2001) measure of inequality aversion.

The results are presented in Table 3. Headquarter countries with a higher GDP per capita exhibit a greater degree of anchoring, while those with more regulation exhibit less anchoring. Neither of these

ogous to the skill level analysis in columns 1 and 2 of Table 2.

[32] The same holds for the establishment-headquarter correlation in wage "slopes"; see columns 2 and 4 of Appendix Table A4.

[33] These three measures all come from the World Bank (see the Appendix for details).

relationships explain the relationship between inequality-aversion and anchoring, which remains large in magnitude and statistically significant in columns 1 and 2, however. In column 3, we interact headquarter wages with the Gini coefficient of the headquarter country, a measure of income inequality that varies over time. Firms headquartered in more income-unequal countries exhibit less wage anchoring. However, the coefficient on the headquarter wage×low inequality aversion interaction remains negative and significant, and twice as large in magnitude as the coefficient on the interaction with income inequality. The evidence in Table 3 provides suggestive evidence that time-invariant cultural traits—like attitudes towards inequality—may themselves affect the extent to which firms anchor wages to headquarter levels.[34]

Alternatively, the explanation for the headquarter-foreign establishment wage correlation we documented in Sub-section 3.1 may operate through worker productivity. If so, the productivity of a firm's workers at foreign establishments would need to *change* at the same point in time as that of its headquarter country workers. Additionally, such concurrent changes in productivity would need to occur also, and to a greater extent, for workers in low-skill jobs—primarily support staff such as cleaners, drivers, and guards, for which the labor market is local, and for which the complementarity between labor and firm investments in technology and capital is presumably small.[35] Furthermore, across-country concurrent changes in productivity would need to occur only in firms headquartered in inequality-averse countries. To test if such a story can explain wage anchoring in the absence of coexisting wage cultures, *externally imposed* headquarter wage changes are needed.

4 Changes in Foreign Establishment Wages in Response to Externally Imposed Changes in Headquarter Wages: Minimum Wage Shocks

In this section we show that, in many multinationals, headquarter wages *directly* affect the wages of domestic workers in foreign establishments. We demonstrate this using two sources of exogenous variation in headquarter wages. Our primary source of variation comes from minimum wage shocks in a firm's headquarter country. We additionally exploit exchange rate shocks that affect a firm's headquarter country. In both cases, we find clear evidence of changes in headquarter country wages causally affecting establishment wages. The patterns we document suggest that multinationals from inequality-averse societies have firm-wide wage-setting procedures that help explain the anchoring effects established in Section 3.

[34] A firm's "culture" can manifest itself in wage-setting in many different ways. One example is that, since some societies view a given wage being attached to a given job (akin to the so-called Hay system) as natural (see e.g. Dohmen & Falk, 2011), some multinationals may choose to index the wages of foreign workers in a given position to that of headquarter workers in the same position. Another possibility is that firms from different cultures tend to use Human Resource (H.R.) management systems that differ in how easily a worker's wage can be tied to her productivity (Lemieux *et al.* , 2009).

[35] Workers in low-skill jobs being significantly more productive in high-wage firms is arguably inconsistent with the evidence in Goldschmidt & Schmieder (2017).

4.1 Average effect of headquarter country minimum wage changes on foreign establishment wages

To show that minimum wage changes—which are recorded in the ILO's and related databases as described in Section 2—provide a useful source of variation in headquarter wages, we begin with an event study analysis of the reduced-form relationship between minimum wage shocks in the headquarter country and foreign establishment wages. We estimate

$$\mathrm{w}_{jfct} = \sum_{k=-3}^{3} \alpha_k^1 \mathbf{I}(\mathrm{MINw}_{h(f),t-k} > 0) + \theta_{fj} + \theta_{ct} + \sum_{k=-3}^{3} \alpha_k^2 \%\Delta\mathrm{MINw}_{h(f)t-k} + \varepsilon_{jfct} \tag{3}$$

on the sample of low-skill jobs (whose wages may causally respond to minimum wage changes)

In equation (3), w_{jfct} is the the average wage of workers in occupation j at firm f's establishment in foreign city c in year t.[36] The independent variable of interest, $\mathbf{I}(\mathrm{MINw}_{h(f)t-k} > 0)$, is an indicator for treatment—that is, the minimum wage in multinational f's headquarter country increasing in year t. Other multinationals in the same city and year are therefore our control group. Specifically, a control establishment is one that is owned by another multinational in our sample and operates in the same foreign city as a treated establishment at the same point in time, but which is not exposed to an increase in minimum wages in its own headquarter country in the same year as the relevant treated establishments. The coefficient $\hat{\alpha}_k^1$ represents the difference in wages paid to workers in a specific job in treated foreign establishments and that paid to workers in the same job in control establishment in the same city in year k. We control for the magnitude of the corresponding change in the headquarter minimum wage in percent terms, $\%\Delta\mathrm{MINw}_{h(f)t}$, and firm×job and city×year fixed effects as in Section 3.

We see clear evidence that the average wage of workers in treated establishments increases relative to that in control establishments after a minimum wage increase in the headquarter country. This is shown in Figure 2, where we plot the coefficients $\hat{\alpha}_k^1$ relative to the average occupation-level wage paid at an establishment in the year before the minimum wage shock ($k = -1$). Workers' wages in treated establishments appear to break from the trend, increasing by over USD 500/year one year after the minimum wage shock in the headquarter country relative to wages at $k = -1$. In control establishments, workers' wages in the same year increase by USD 175. Importantly, the evolution of the average wage of workers in treated and control establishments is virtually indistinguishable before such minimum wage change events.[37]

The patterns in Figure 2 suggest that changes in headquarter country minimum wage laws can be used to estimate the impact of headquarter wage changes (induced by minimum wage shocks) on establishment wages. We now do so, using the full sample of multinationals and low-skill occupations. We first show results from estimating a reduced-form regression relating the wages paid in foreign establishments in year t to changes in minimum wages in the headquarter country in year t from year $t-1$ (controlling for firm×job

[36] We estimate equation (3) using the sample of multinationals that experience only one minimum wage shock during a given five-year period so that we can cleanly identify the effect of a single wage change on establishment wages. Later, when we focus on the impact of a minimum wage change in year $t-1$ on wages in year t, we use the full sample.

[37] In Figure 2 we do not require treated and control multinationals to operate in the same sector, as many low-skill jobs are not specific to a given sector. For example, cleaners and guards are present in most establishments. Allowing multinationals in any sector, but with the same type of jobs, to be included in the control group therefore gives us a larger control sample. The results are robust, however, to restricting to same-sector control groups.

and city×year fixed effects as above):

$$\%\Delta \text{w}_{jfct} = \alpha_1 \%\Delta \text{MINw}_{h(f)t} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct} \tag{4}$$

We find that a 10 percent increase in the headquarter country's minimum wage ($\%\Delta\text{MINw}_{h(f)t}$) is associated with a 0.28 percent increase in foreign establishment wages ($\%\Delta\text{w}_{jfct}$) in low-skill occupations, as seen in Column 1 of Table 4.[38] In the Appendix we show that this estimate is larger in magnitude and remains significant if we restrict the sample to private sector firms, and that there is no evidence of minimum wage increases in the headquarter country affecting the wages of middle- and high-skill occupations in foreign establishments (respectively Appendix tables A5 and A6).

Wage anchoring appears to be a headquarter effect. In particular, we find no effect of minimum wage changes in the country where a given foreign establishment is located on wages at the headquarter of the parent firm, nor on wages at foreign establishments that are part of the same firm but located in different countries, as seen in Appendix Table A11.

We now turn to the primary relationship of interest; that between a firm's wage level at home and abroad. In the first stage we regress the change in the average wage firm f pays workers in a given job j at the headquarter in year t, $\%\Delta\text{HQw}_{jft}$, on the change in the minimum wage in the country where the headquarter is located, $\%\Delta\text{MINw}_{h(f)t}$.[39] Column 2 of Table 4 shows that a 10 percent increase in the headquarter country's minimum wage is associated with a roughly one percent increase in headquarter wages of low-skill jobs.

We next instrument for the change in occupation-specific headquarter wages using the first-stage estimates. Specifically, we estimate

$$\%\Delta \text{w}_{jfct} = \beta_1 \%\Delta \widehat{\text{HQw}}_{jft} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct} \tag{5}$$

using two-sample two-stage least squares (TS2SLS).[40] $\%\Delta\widehat{\text{HQw}}_{jft}$ is the estimate from Column 2. $\hat{\beta}_1$ thus

[38] Because the minimum wage changes we study are used as events, we follow Cengiz *et al.* (forthcoming) and specify our independent variable of interest as the percent change in the minimum wage. Additionally, our minimum wage data are in local currencies. Using the percent change in a country's minimum wage lets us avoid the additional complication of converting local currencies to USD, which could confound minimum wage shocks with exchange rate fluctuations. Note also that the difference in sample size between this analysis and the anchoring exercise in Section 3 is due to the limited number of firms for which we have information on headquarter wages. We can here include foreign establishments that are exposed to minimum wage changes in the headquarter country, but that belong to firms for which we lack headquarter wage information for the relevant occupation.

[39] The first stage estimation equation is:

$$\%\Delta \text{HQw}_{jft} = \gamma_1 \%\Delta \text{MINw}_{h(f)t} + \theta_{fj} + \theta_t + \varepsilon_{jft}$$

where for headquarters ($c = h(f)$), city×year fixed effects ($\theta_{h(f)t}$) are replaced with year fixed effects (θ_t) and city fixed effects ($\theta_{h(f)}$, subsumed by firm×job fixed effects θ_{fj}), so that the independent variable of interest is not subsumed.

[40] As noted above, the difference in sample size between columns 1 and 2 is coming from the smaller number of firm×occupations for which we have data on headquarter wages in a given year. In order to include all headquarters and foreign establishments observed in our analysis sample in the estimation procedure, we run two-sample two-stage least squares (TS2SLS) (Angrist & Krueger, 1992; Inoue & Solon, 2010). The corresponding one-sample approach suffers from a weak instrument problem in the first stage due to power issues. The power issues arise because some multinationals in our sample do not provide data to the Company on all of their establishments every year they are surveyed. For this reason, for a substantial fraction of headquarter (foreign establishment) occupation wages we (a) do not observe a corresponding foreign establishment (headquarter) occupation wage in the exact same year, but (b) we do observe such a corresponding occupation wage in another close-in-time year within the same firm. The key assumption for consistency of TS2SLS estimation is that (the probability limit of) the correlation between the endogenous variable(s) and the instruments (conditional on controls) is the same in the first-stage sample and the second-stage sample. Readers who are concerned about this assumption in our setting can focus on the reduced form estimates in Column 1 of tables 4 and 5.

captures the extent to which an increase in headquarter workers' wages due to minimum wage hikes in the headquarter country lead to increases in establishment workers' wages, all within a particular job.

We find that a 10 percent minimum wage-induced increase in the wages of workers in a given low-skill job at a firm's headquarter leads to a 2.85 percent increase in the wages of workers in the same job at the firm's foreign establishments. These results are presented in Column 3 of Table 4.[41] This estimate is very similar to the OLS estimate of the correlation between headquarter and foreign wage levels in Column 4 of Table 2.

We interpret the results in Table 4 as indicating that externally imposed changes in multinationals' headquarter wages directly cause changes in their wages in foreign establishments. However, there are two plausible alternative interpretations. The first is that headquarter country minimum wage changes themselves—beyond firms' wage cultures—are endogenous to the wages of foreign workers. It could be, for example, that a given country's policymakers are more likely to raise minimum wages when the country's economy is doing well and aggregate demand for labor is high (see e.g. Baskaya & Rubinstein, 2015; Neumark, 2018). If headquarter country labor demand is highly positively correlated with multinationals' demand for labor abroad, such a channel could contribute to our estimates in Table 4.

The second alternative interpretation is within-firm outsourcing of jobs or tasks. Suppose for example that, initially, a range of higher-skill jobs are done at multinationals' headquarters, and a range of lower-skill jobs in their foreign establishments, akin to Feenstra & Hanson (1996)'s model of outsourcing. An externally imposed increase in headquarter wages, such as a minimum wage increase, could then lead firms to shift the lowest-skill jobs previously done at the headquarter to their foreign establishments. Feenstra & Hanson (1996) point out that jobs that are "exported" (in our case within firms) in this way will tend to be high-skill relative to those previously done for the firm abroad. This could lead wages to rise in the foreign establishments (and, simultaneously, wages in the headquarter would rise due to a combination of the minimum wage increase itself and outsourcing of middle-skill jobs). We investigate the first possibility in Sub-section 4.2 and the second in Sub-section 4.3.

4.2 Endogenous timing of minimum wage changes and foreign establishment wages

We address the endogenous minimum wage changes concern using two approaches based on the idea that fluctuations in foreign labor demand that covary with headquarter country minimum wage changes should not be concentrated in a particular part of the wage distribution or a particular type of firm. The first approach compares changes in the average wage of high and low-wage workers within a given establishment. The second approach compares changes in the average wage of workers in establishments whose headquarters have more or fewer low-wage workers.

Within-establishment, across-occupation analysis We begin by restricting our regressions to within-establishment×year job comparisons. Insofar as fluctuations in foreign labor demand that covary with headquarter country minimum wage changes are similar for low and high-wage workers, comparing wage changes across the two

[41] When we restrict attention to private sector firms, the results are qualitatively similar but larger in magnitude, as shown in Panel B, Column 3 of Appendix Table A5.

groups within a given establishment enables us to "difference out" the impact of labor demand itself on foreign wages.

Suppose the country a firm is headquartered in raises its minimum wage at some point during our data period. We define the new minimum wage as (loosely) binding for occupation j in city c ($\text{Binding}_{jc} = 1$) if one of the establishments in our sample that are located in city c paid its workers in occupation j a nominal gross wage lower than the new minimum wage in the year immediately preceding the minimum wage change.[42] If so, we define the new minimum wage as binding ($\text{Binding}_{jh(f)} = 1$) also for occupation j in the foreign establishments of firms whose headquarter is located in a city where $\text{Binding}_{jc} = 1$. Binding jobs are a smaller subset of low-skill jobs.

The reduced form relationship between headquarter country minimum wage changes and establishment wages for binding versus non-binding jobs is:

$$\%\Delta \text{w}_{jfct} = \alpha_2 \%\Delta \text{MINw}_{h(f)t} \times \text{Binding}_{jh(f)} + \theta_{fj} + \theta_{fct} + \varepsilon_{jfct} \tag{6}$$

In equation (6), the minimum wage change itself and any possibly correlated demand shocks that affect both binding and non-binding jobs are absorbed by firm×establishment×year fixed effects, θ_{fct}.[43]

We find significantly larger effects of headquarter country minimum wage changes on wages paid to foreign workers in jobs for which the minimum wage binds at the headquarter, as captured by the coefficient on the interaction term $\%\Delta \text{MINw}_{h(f)t} \times \text{Binding}_{jh(f)}$. The reduced form results shown in column 1 of Panel A of Table 5 indicate that a 10 percent increase in the headquarter country's minimum wage results in a 0.88 percentage point greater increase in wages for binding jobs relative to non-binding jobs in the same foreign establishment.[44] The second stage estimates in Column 3 imply that a 10 percent minimum wage-induced increase in headquarter wages in binding jobs results in an increase in foreign establishment wages that is 3.8 percentage points greater than any simultaneous change in the wages of other jobs in the same foreign establishments.

Headquarter country labor demand that directly affects multinationals' foreign wages and also encourages minimum wage increases in the headquarter country may disproportionately be demand *for low-wage workers*. If so, a strategy of focusing on the differential wage response in foreign jobs for which the minimum wage binds at the headquarter will only partially difference out any such direct effects of the underlying drivers of minimum wage changes. On the other hand, causal effects of minimum wage changes on the

[42] Given the unbalanced nature of our establishment×year panel, we a priori face a trade-off between constructing a measure of bindingness that is specific to a given firm/headquarter, and measuring bindingness as close in time as possible to the minimum wage change. We opt for a labor market-level measure of bindingness (akin to Card & Krueger (1995) and subsequent industry-level studies) for power reasons: the sample of firms for which we observe everything required to define a firm-specific, stricter measure of bindingness and still compare changes in foreign wages after a minimum wage change within narrowly-defined binding and non-binding occupations is too small to achieve meaningful estimates. As discussed above, many jobs—especially those that are likely subject to the minimum wage—are present in many different establishments. Our labor market-based measure of bindingness is thus a loose measure of the relevance of the minimum wage for a given firm×job combination. This may lead us to underestimate the differential effect on wages in binding and unbinding jobs within a given firm.

[43] In equation (6), firm×establishment×year fixed effects subsume city×year fixed effects. The corresponding first stage estimation equation is:

$$\%\Delta \text{HQw}_{jft} = \gamma_2 \%\Delta \text{MINw}_{h(f)t} \times \text{Binding}_{jh(f)} + \theta_{fj} + \theta_{ft} + \eta_{jft}$$

where for headquarters ($c = h(f)$), firm×year fixed effects (θ_{ft}) are equivalent to firm×establishment×year fixed effects ($\theta_{fh(f)t}$). Since we include firm×establishment×year fixed effects θ_{fct}, we thus restrict the sample to firm×establishment×years for which we observe both binding and unbinding jobs.

[44] The corresponding differential increase for binding jobs relative to non-binding jobs at the headquarter is 2.35 percentage points.

wages of workers that are higher up in the wage distribution within a given foreign establishment may arise through market-driven spillover effects in wage-formation (Teulings, 2003; Haanwinckel, 2019) (see also Engbom & Moser (2017)), or through firms' wage-setting procedures, in which case the approach in Panel A of Table 5 will underestimate the true effect on the wages of low-wage workers in multinationals' foreign establishments. (Such spillover effects may be more likely in firms' foreign establishments, where jobs that are low-wage at the headquarter make up a much larger proportion of all jobs than they do at the headquarter). To make progress, we next compare *firms* that are more versus less exposed to minimum wage changes.

Within-headquarter-country, across-firm analysis We now turn to comparing the wages of different multinationals headquartered in the same country in the same year.[45]

Following Lee (1999) and Autor *et al.* (2016) (see also Neumark (2018)), we compare the wage response of firms for which the prior minimum wage was more versus less binding, measuring *firm*-level bindingness as the ratio between the ex ante minimum wage and the firm's median wage at the headquarter (the so-called Kaitz index). Specifically, we interact the independent variables of interest in equations (4) and (6) respectively with Kaitz_{ft} and estimate:

$$\%\Delta \text{w}_{jfct} = \alpha_3 \%\Delta \text{MINw}_{h(f)t} \times \text{Kaitz}_{ft} + \theta_{fj} + \theta_{ct} + \theta_{h(f)t} + \varepsilon_{jfct} \tag{7}$$

and

$$\begin{aligned} \%\Delta \text{w}_{jfct} = \; & \left(\alpha_4^{\text{B}} \text{Binding}_{jh(f)} + \alpha_4^{\text{N}} \left(1 - \text{Binding}_{jh(f)}\right)\right) \%\Delta \text{MINw}_{h(f)t} \times \text{Kaitz}_{ft} \\ & + \theta_{fj} + \theta_{fct} + \varepsilon_{jfct} \end{aligned} \tag{8}$$

where the change in the minimum wage itself and any correlated macro level demand shocks affecting the headquarter country are now absorbed by headquarter country×year fixed effects $\theta_{h(f)t}$.[46] Coefficients $\hat{\alpha}_3$ and $\hat{\alpha}_4^{\text{B}}$ capture the extent to which the impact of headquarter country minimum wage changes on low-skill jobs and binding jobs varies with the extent to which the minimum wage binds for the firm these jobs belong to. $\hat{\alpha}_4^{\text{N}}$ captures heterogeneity in any spillover impact on non-binding jobs by firm-level bindingness.

We find that the wages of foreign workers in low-skill occupations and jobs for which the minimum wage is binding at the headquarter are more affected by a minimum wage increase in the headquarter country in firms for which the prior minimum wage was more binding at the headquarter. The results are reported in panels B and C of Table 5. The estimates imply for example that a 10 percent increase in the headquarter country's minimum wage results in an increase in foreign establishment (headquarter) wages of low-skill

[45] We thus restrict the sample of firms to those for which our dataset includes wage information both on the headquarter and at least one foreign establishment.

[46] In equation (8), firm×establishment×year fixed effects subsume headquarter country×year fixed effects and city×year fixed effects. The corresponding first stage estimation equations are:

$$\%\Delta \text{HQw}_{jft} = \gamma_3 \%\Delta \text{MINw}_{h(f)t} \times \text{Kaitz}_{ft} + \theta_{fj} + \theta_{h(f)t} + \varepsilon_{jft}$$

and:

$$\%\Delta \text{HQw}_{jft} = \left(\gamma_4^{\text{B}} \text{Binding}_{jh(f)} + \gamma_4^{\text{N}} \left(1 - \text{Binding}_{jh(f)}\right)\right) \%\Delta \text{MINw}_{h(f)t} \times \text{Kaitz}_{ft} + \theta_{fj} + \theta_{ft} + \varepsilon_{jft}$$

where for headquarters ($c = h(f)$), headquarter country×year fixed effects ($\theta_{h(f)t}$) are equivalent to city×year fixed effects (θ_{ct}), and firm×year fixed effects (θ_{ft}) are equivalent to firm×establishment×year fixed effects ($\theta_{fh(f)t}$).

(binding) jobs that at a firm at the 75th percentile of "bindingness" is around 0.75 (0.63) percentage points greater than at another firm headquartered in the same country that is at the 25th percentile of bindingness.[47]

The results in panels B and C of Table 5 indicate that, within a given set of low-skill or binding occupations, foreign workers in lower-paying firms are disproportionately affected by a minimum wage change in the headquarter country. The estimated magnitudes suggest that potential heterogeneity in labor demand that covaries with minimum wage changes is to a large extent *firm*-specific rather than *occupation*-specific. This in turn implies that the concern discussed above—that headquarter country labor demand that directly affects multinationals' foreign wages and also encourages minimum wage increases at home could disproportionately be demand *for low-wage workers*—is unlikely to drive our estimates.

We also find evidence of spillover effects of minimum wage changes higher up in the wage distribution within a given foreign establishment: the estimated impact on the wages of workers in non-binding jobs is greater in more binding firms, $\hat{\alpha}_4^{\text{N}} > 0$. This finding has a natural interpretation insofar as firms have "wage cultures". In particular, firms that are highly exposed to minimum wage changes because of their employment structure may then choose to raise the wages of all or most workers in a given establishment when they are induced to raise the wages of a high proportion of those workers by changes in minimum wage laws.

We can now provide an upper bound on how much of (what we interpret as) direct transmission of minimum wage-induced wage increases at the headquarter to foreign establishments can plausibly be explained by firm-specific labor demand that covaries with minimum wage changes.[48] To do so we leave out firm×establishment×year fixed effects so that the effect of headquarter country minimum wage increases on the wages of workers in binding and non-binding jobs can be indentified separately.[49] As seen in columns 1 and 3 in Panel A of Table 6, the estimated effect of minimum wage shocks on the wages of non-binding jobs is less than 20 percent of that on binding jobs at both the headquarter and the foreign establishments of a multinational.[50] We also find that the differential effect on the wages of workers in binding jobs is of similar (if anything smaller) magnitude to those found in Panel A of Table 5 where firm×establishment×year fixed effects are included, indicating that the differential effect is not driven by any possibly larger increase in the labor demand of firms that employ more workers in binding jobs. Taken jointly, this suggests that endogeneity in the timing of mininum wage changes of this form can plausibly explain at most around 20

[47] The average within-headquarter country-year difference in the 75-percentile Kaitz and the 25-percentile Kaitz is 0.06. Therefore the differential effect of the same 10 percent minimum increase on the establishment wages of low-skill (binding) occupations is 0.06×1.252×10=0.75 (0.06×1.051×10=0.63) percentage points higher for a 75-percentile binding firm compared to a 25-percentile binding firm from the same headquarter country in the same year. The corresponding number for the differential effect on the headquarter wage of low-skill occupations is 0.06×4.705×10=2.8 (0.06×4.045×10=2.4) percentage points.

[48] As discussed above, the results in Table 5 suggest that potential heterogeneity in labor demand that covaries with minimum wage changes is to a large extent *firm*-specific rather than *occupation*-specific. We cannot directly bound the impact of endogenous timing that is specific to low-wage *occupations* on our estimates.

[49] The reduced form estimation equation (for foreign establishments) is:

$$\%\Delta \text{w}_{jfct} = \left(\alpha_5^{\text{N}} + \alpha_5^{\text{B-N}}\text{Binding}_{jh(f)}\right)\%\Delta\text{MINw}_{h(f)t} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct}$$

The first stage estimation equation (for headquarters) is:

$$\%\Delta \text{HQw}_{jft} = \left(\gamma_5^{\text{N}} + \gamma_5^{\text{B-N}}\text{Binding}_{jh(f)}\right)\%\Delta\text{MINw}_{h(f)t} + \theta_{fj} + \theta_{t} + \varepsilon_{jft}$$

[50] For a headquarter: 0.045/(0.045+0.198)≈18 percent. For a foreign establishment: 0.016/(0.016+0.082)≈16 percent.

percent of the total, average effect of minimum wage-induced increases in headquarter wages on foreign establishment wages we estimated in Table 4.

In combination, the evidence presented in this sub-section makes clear that endogenous timing of minimum wage changes is not the primary explanation for the estimated transmission of externally imposed headquarter wage increases to multinationals' foreign establishments.

4.3 Outsourcing in response to minimum wage changes and foreign establishment wages

Another alternative interpretation of the results in Table 4 is within-firm-outsourcing. A minimum wage-induced increase in a multinational's headquarter wages could increase wages in its foreign establishments via some jobs or tasks being moved to foreign establishments, thereby increasing the firm's demand for workers abroad and bidding up wages. One possibility is that the firm moves offshorable jobs that are paid low wages at both the headquarter and foreign establishments, abroad. Another, along the lines of Feenstra & Hanson (1996), is that the firm "exports" the lowest-skill jobs at the headquarter to its foreign establishments, where these jobs are actually middle- or high-skill relative to the prior distribution of jobs at the relevant establishment.

In Section 7, we analyze how the occupational structure of multinationals' foreign establishments responds to minimum wage changes in the headquarter country. We find that, in the firms that transmit headquarter wage increases to foreign establishments, the set of narrowly-defined occupations that are present at the firms' foreign establishments *shrinks* while the set present at such firms' headquarters *expands* when a change in the minimum wage raises wages at the headquarter. This pattern of occupational compression at foreign establishments and expansion at the headquarter is the opposite of what a within-firm-outsourcing-explaining-wage-changes story would predict.[51] It could be that such a mechanism is at play *within* occupations; that is, tasks associated with a given occupation being reallocated from workers at the headquarter to workers in the same occupation at foreign establishments. For such a phenomenon to explain the estimates in Table 4, extensive within-firm-outsourcing of tasks within narrowly-defined occupations would need to occur in parallel with essentially the opposite happening across occupations.

Another way to investigate this concern is to compare the correlation between headquarter and foreign establishment wage levels and changes in complex, multi-task jobs, and simpler, "single-task" jobs. Recall that we saw in Panel A of Table 5 that wages rise significantly *more* in low-wage than high-wage jobs in foreign establishments when the minimum wage is increased in the headquarter country.[52] If outsourcing-of-tasks-within-occupations were at play, we would expect to see most of the wage increase coming from jobs that are middle or high-skill at the foreign establishment.

The increase in foreign establishment wages following a minimum wage hike in the headquarter country

[51] In Panel A of Appendix Table A5 we re-estimate the regression in Table 4, restricting the sample to the set of occupations that were already present in the relevant foreign establishment before the minimum wage change. The results are similar to those in Table 4, although of slightly smaller magnitudes.

[52] In addition, Column 4 of Table 2 shows estimates of equation (1) separately for low-, middle-, and high-skill positions. We observe a considerably greater extent of anchoring-to-the-headquarter in low-skill jobs.

is not being driven by offshorable jobs, as measured by Blinder & Krueger (2013)'s job offshorability index.[53] We show this in Panel B of Table 6. We see that, among low-skill and binding occupations at multinationals' foreign establishments, the estimated impact of a headquarter country minimum wage change on the wages of workers in non-offshorable jobs is similar to—if anything larger than—that on the wages of workers in offshorable jobs.[54]

We conclude that the evidence suggests that a within-firm-outsourcing phenomenon is not the primary explanation for the transmission of minimum-wage induced headquarter wage increases to multinationals' foreign establishments we estimated in Table 4.

In combination, the results in Sub-sections 4.1 – 4.3 suggest that the estimated impact of increases in multinationals' headquarter wages arising from minimum wage hikes in the headquarter country on foreign establishment wages is at least in part—and most likely primarily—a direct effect due to wage anchoring.

5 Changes in Foreign Establishment Wages in Response to Externally Imposed Changes in Headquarter Wages: Exchange Rate Shocks

In this section we investigate the impact on the wages multinationals pay their workers abroad of externally imposed changes in headquarter wages originating from another source: exchange rate shocks. If a multinational does not fully index its headquarter wages to prevalent international currencies such as the USD, a headquarter country currency depreciation will lead to a decrease in headquarter wages measured in terms of such currencies. If the firm anchors its foreign establishment wages to headquarter wages, the former will also be lowered (in international currency terms) in response to a headquarter country currency depreciation.[55]

Compared to minimum wage changes, which are almost always positive and permanent, exchange rate shocks have two advantages as an instrument for headquarter wages. First, exchange rates both increase and decrease, allowing us to test multinationals' wage responses exploiting variation in both directions. Second, as exchange rate fluctuations are temporary, firms are unlikely to make concurrent changes in their technologies or employment structures in response, which will help us isolate the direct effect of headquarter wage changes on foreign establishment wages.

We begin by estimating the relationship between headquarter country exchange rate shocks and wages at a firm's foreign establishments and at its headquarter:

$$\mathrm{w}_{jfct} = \alpha_6 \mathrm{e}_{h(f)t} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct} \tag{9}$$

Here, $\mathrm{e}_{h(f)t}$ is the detrended log average nominal exchange rate in headquarter country currency units per

[53] A description of the offshorability index is in the Appendix.

[54] We also find a null effect of a headquarter minimum wage change on the wages of offshorable and non-offshorable jobs in middle- and high-skill levels in the foreign establishments (see Appendix Table A6).

[55] This argument applies—whether the firm ultimately pays its foreign workers in local currency or in USD—to most forms of wage anchoring. One form to which this argument does not apply is the case in which the firm anchors to headquarter wages in headquarter country currency terms and converts to USD or local currency using some *fixed* exchange rate. Note that our estimates in this section are identified off of the sample of multinationals that are not headquartered in the U.S. or countries which peg their currency to USD, which still make up 53% of the multinationals in sample.

unit of USD in year t.[56]

We find that headquarter country currency depreciation lowers the dollar value of the wages paid to workers in multinationals' foreign establishments. As seen in Column 1 of Table 7, our estimates imply for example that a 100 percent increase in the exchange rate of headquarter country currency to USD leads to a 9 percent decrease in the dollar value of wages in foreign establishments. Column 2 shows that headquarter country currency depreciation also lowers the dollar value of the wages paid to workers at the headquarter, a 100 percent depreciation for example leading to a 55 percent decrease in headquarter wages.[57]

We next instrument for headquarter wages using the first stage estimates from Column 2 as follows:

$$\mathrm{w}_{jfct} = \beta_1 \widehat{\mathrm{HQw}}_{jft} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct} \tag{10}$$

We find that exchange rate-induced changes in headquarter wages lead to changes in the wages firms pay workers abroad. The estimate in Column 3 of Table 7 implies for example that a 100 percent increase in headquarter wages in response to an exchange rate shock leads to a 16 percent increase in foreign establishment wages, similar to our OLS estimates of wage anchoring in Column 3 of Table 2.[58]

As the general wage anchoring shown in Section 3 and the impact of minimum wage-induced changes in headquarter wages on multinationals' foreign wages shown in Section 4, the impact of exchange rate variation-induced changes in headquarter wages on foreign wages is seen also in the sub-sample of private sector firms (see Panel B of Appendix Table A7). We do not find any evidence of exchange rate shocks to a firm's *establishment country* currency affecting headquarter wages or the wages paid in the firm's establishments in other countries (see columns 3 and 4 of Appendix Table A11).

We interpret the results in Table 7 as indicating that externally imposed changes in multinationals' headquarter wages directly affect wages in their foreign establishments. However, there is at least one other a priori plausible interpretation. When the headquarter country currency depreciates, labor in the headquarter country becomes relatively cheaper. If firms shift jobs or tasks from foreign establishments to the the headquarter in response to transitory exchange rate shocks, this could lead to a decrease in wages in the firm's foreign establishments. We investigate this possibility in the next sub-section. (Note that an endogenously-timed-shocks interpretation of the estimated impact on foreign wages of the form we investigate for minimum wages is implausible for exchange rate shocks.[59])

[56] The first-stage estimation equation is:

$$\mathrm{HQw}_{jfct} = \gamma_6 \mathrm{e}_{h(f)t} + \theta_{fj} + \theta_t + \varepsilon_{jfct}$$

As we do not observe the point-in-time exchange rates when wages are paid out, we approximate these using annual exchange rates retrieved from the World Bank. This might attenuate both the first stage and reduced form estimates, while the direction of any consequent bias in the IV estimate is ambiguous. Readers who are concerned about this can focus on the reduced form relationship between foreign wages and headquarter country exchange rate shocks, which if anything is underestimated because of our use of annual exchange rates.

[57] The effect of headquarter country currency depreciation on headquarter wages is smaller than 100 percent ($\hat{\gamma}_6$>-1), which implies that headquarter country currency depreciation leads to an increase in headquarter wages in terms of domestic currency. There are several reasons why this might be the case. First, multinationals are likely to *partially* index headquarter wages to USD or to domestic-currency-depreciation-induced inflation. Second, currency depreciation lowers the cost of headquarter country labor relative to that of foreign labor, which can increase headquarter country labor demand (Campa & Goldberg, 2001; Goldberg & Tracy, 2001). Third, domestic currency depreciation makes the option of working abroad more attractive to headquarter country workers, which can lead to a fall in home country labor supply (Mishra & Spilimbergo, 2011). Finally, there may be attenuation bias in $\hat{\gamma}_6$ resulting from measurement error in the exchange rate, as discussed above.

[58] As in Sub-section 4.1, we use two-sample two-stage least squares (TS2SLS) (see footnote 40).

[59] Although a currency depreciation may take place when a country's economy is not doing well, a depreciation generally increases

5.1 In-sourcing in response to headquarter country currency depreciation and foreign establishment wages

We first investigate whether the impact of exchange rate shocks on a firm's wages in foreign establishments differs for firms that produce tradable goods and services, and for jobs that are offshorable. For task reallocation within occupations to explain the results in Table 7, the effect of headquarter country exchange rate shocks on wages in foreign establishments would need to be concentrated in firms that engage in international trade (see e.g. Campa & Goldberg, 2001; Goldberg & Tracy, 2001). Intuitively, if a firm's headquarter and foreign establishments only sell to the domestic market of the country in which the relevant establishment is located, headquarter country currency depreciation will lead to a similar decrease in the dollar value of the firm's revenue and cost of labor, resulting in little or no change in the relevant price of labor at the headquarter relative to that at the firm's foreign establishments.[60]

We find that, although headquarter country currency depreciation leads to a smaller decrease in the foreign establishment wages of firms producing less tradable goods and services, the effect is sizeable and statistically significant also in such firms.[61] These results are shown in Column 1 of Appendix Table A8. We also find a larger impact on headquarter wages of headquarter country exchange rate shocks in firms producing more tradable goods and services as shown in Column 4 of Appendix Table A8, which is hard to reconcile with an across-country task-shifting story. Moreover, even for firms operating in tradable sectors for which task reallocation from foreign establishments to the headquarter in response to a headquarter country currency depreciation could be profitable, such reallocation is only feasible in offshorable jobs. However, we find a headquarter country exchange rate shock effect on the wages of non-offshorable jobs that is if anything larger than for offshorable jobs—in the foreign establishments both of all firms (Column 2 of Appendix Table A8) and of firms in tradable sectors (Column 3)—which is also inconsistent with the task outsourcing explanation.[62]

The evidence thus suggests that a within-firm-outsourcing phenomenon is not the primary explanation for the transmission of exchange rate variation-induced headquarter wage changes to multinationals' foreign establishments we estimated in Table 7. Such transmission appears to be due, at least in part, to wage anchoring.

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a country's aggregate demand and can stimulate economic growth, especially for sectors producing tradable goods and services. Therefore, any macro-level demand shocks associated with a headquarter country currency depreciation are if anything more likely to lead to the opposite effect on the wages of workers in foreign establishments to what we find in Table 7.

[60] Note that we do not show heterogeneity in the estimated effect by tradability in the minimum wage analysis in Section 4, because a headquarter country minimum wage increase presumably leads to a similar increase in the relative price of headquarter labor compared to foreign labor in firms that sell in the international versus domestic markets. Nonetheless, we find no evidence of such heterogeneity in the minimum wage impact (results available from the authors upon request).

[61] A description of the tradability index we use in this analysis, which comes from Stöllinger *et al.* (2017), is in the Appendix.

[62] In addition, in Panel A of Appendix Table A7 we re-estimate the regression in Table 7, restricting the sample to the set of occupations that were already present in the relevant foreign establishment before the exchange rate shock. The results are similar to those in Table 7.

6 Understanding the Effect of Externally Imposed Changes in Headquarter Wages on Foreign Establishment Wages

In sections 4 and 5 we documented that externally imposed increases in the wages multinationals pay workers in a given job at the headquarter lead to increases in the wages they pay workers in the same job abroad. We showed that such transmission occurs both in response to minimum wage and exchange rate variation induced changes in headquarter wages. The IV estimates of the extent to which foreign establishment wages change in response to a given headquarter wage change from the two approaches are of very similar magnitude.[63]

Such a global response to externally imposed increases in headquarter wages points towards the existence of firm-wide wage-setting procedures. We saw in Section 3 that the headquarter-foreign establishment wage correlation we observe in the full sample is driven by multinationals headquartered in inequality-averse countries as measured by sociologists. A natural question is therefore whether such multinationals also drive the impact of externally imposed headquarter wage *changes* on foreign wages.

This is indeed what we find in Tables 8 and 9, where we repeat the regressions from Tables 4 and 7, now interacting respectively $\%\Delta\text{MINw}_{h(f)t}$ and $\text{e}_{h(f)t}$ with the same measure of societal inequality-aversion we used in Section 3.[64] The estimated effects of headquarter country minimum wage and exchange rate shocks on wages at the *headquarter* are very similar in inequality-averse and inequality-tolerant countries, as seen in Column 2. However, the estimates in columns 1 and 3 indicate that these externally imposed headquarter wage changes affect the wages of workers at foreign establishments only in multinationals headquartered in inequality-averse countries. Both the wage correlation in levels (general anchoring to headquarter) and changes (partial transmission of externally imposed wage increases to foreign establishments) we uncover in this paper are thus driven by employers from inequality-averse societies. This is in itself difficult to reconcile with the alternative hypotheses discussed in sub-sections 4.2, 4.3 and 5.1, instead pointing towards the existence of wage cultures.

7 Changes in Firm-wide Wages and Firms' Organizational Structure

The consequences of across-country wage compression in multinationals may be far-reaching and multi-dimensional. We leave a deeper investigation for future research, but now take a first step towards investigating the consequences for firms' job location decisions.

Existing evidence suggests that wage compression can lead high-wage firms to outsource low-wage jobs

[63] To compare the IV estimates from the two approaches, we re-estimate equation (10), restricting the sample to the low-skill occupations we focus on in the minimum wage analysis in Table 4. The resulting estimate, presented in Panel C of Appendix Table A7, is very similar to that in Table 4.

[64] The reduced form estimation equations for foreign establishments, for example, become:

$$\%\Delta\text{w}_{jfct} = \left(\alpha_1^{\text{H}}\text{High Ineq. Aversion}_{h(f)} + \alpha_1^{\text{L}}\text{Low Ineq. Aversion}_{h(f)}\right)\%\Delta\text{MINw}_{h(f)t} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct}$$

and

$$\text{w}_{jfct} = \left(\alpha_6^{\text{H}}\text{High Ineq. Aversion}_{h(f)} + \alpha_6^{\text{L}}\text{Low Ineq. Aversion}_{h(f)}\right)\text{e}_{h(f)t} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct}$$

to avoid paying a premium for low-skill workers (Goldschmidt & Schmieder, 2017). If so, firms that anchor their wages to headquarter levels may face an incentive to limit the number of occupations in their establishments outside of the typically higher-wage headquarter region, especially when faced with externally imposed headquarter wage increases that are transmitted to foreign establishments. We test this conjecture by estimating the impact that minimum wage and exchange rate shocks in the headquarter country that affect wages has on the presence of occupations in a firm's foreign establishments and headquarter.

We find little evidence to suggest that headquarter country exchange rate shocks affect the probability that an occupation is present in a firm's foreign establishments and/or its headquarter, as seen in Appendix Table A10[65] —despite such shocks' impact on wages at home and abroad. This is unsurprising, as exchange rate shocks are *transitory*. We thus restrict attention to the impact of *long-lasting* shocks to a firm's headquarter wages that arise from minimum wage changes on the occupational structure of the firm's foreign establishments (and headquarter) in the remainder of this section.

In each year, we observe whether an establishment employs workers in a given occupation. From this we define two outcomes, "Occupation Removed" and "Occupation Added", and estimate

$$\text{Removed}_{jfc,t+1} = \left(\alpha_7 + \alpha_7^{\text{L}}\text{Low Ineq. Aversion}_{h(f)}\right) \%\Delta\text{MINw}_{h(f)t} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct} \tag{11}$$

and

$$\text{Added}_{jfc,t+1} = \left(\alpha_8 + \alpha_8^{\text{L}}\text{Low Ineq. Aversion}_{h(f)}\right) \%\Delta\text{MINw}_{h(f)t} + \theta_{fj} + \theta_{ct} + \varepsilon_{jfct} \tag{12}$$

$\text{Removed}_{jfc,t+1}$ takes the value one if firm f employed workers in occupation j in establishment c in year t (i.e. we see the occupation code in a firm's establishment in year t), but that same occupation does not exist in establishment c year $t+1$, and vice versa for $\text{Added}_{jfc,t+1}$.

The coefficients $\hat{\alpha}_7$ and $\hat{\alpha}_8$ thus tell us whether occupations are more likely to be added or removed from an establishment following a minimum wage change. We test whether the relative wages of a firm's headquarter and establishment play a role in job location decisions by interacting $\%\Delta\text{MINw}_{h(f)t}$ with the "Low Inequality Aversion" dummy. We again include firm×job and city×year fixed effects.

The results from estimating equations (11) and (12) are presented in Panel A of Table 10. Columns 1-2 show the reduced-form relationship between a minimum wage change in a firm's headquarter country and whether an occupation is removed from one of the firm's establishments. Column 1 indicates that increases in a firm's headquarter country's minimum wage makes it more likely that an occupation leaves that firm's establishment. However, this is entirely driven by firms headquartered in inequality-averse countries where not only headquarter but also establishment wages rise in response. We take this as suggestive evidence that firms that anchor wages to the headquarter may be less likely to shift production abroad given that such firms pay higher wages abroad.

Columns 3-6 show the impact that a minimum wage increase in a firm's headquarter country has on occupations being added to establishments. While Column 3 suggests that increases in the headquarter

[65] In Appendix Table A10 we show insignificant and small estimates from regressing an indicator that is equal to one if an occupation exists in a firm's headquarter or foreign establishment in year $t+1$ on the detrended exchange rate of the headquarter country in year t and its interaction with the "Low Inequality Aversion" dummy, including firm×establishment×job fixed effects and city×year fixed effects.

country minimum wage make it less likely that occupations will be added to the establishment, we again see that this is entirely driven by firms headquartered in inequality-averse countries, as shown in Column 4. Firms headquartered in less inequality-averse countries are actually more likely to add jobs to their foreign establishments when headquarter wages rise in response to a minimum wage hike, possibly because the relative change in wages between the headquarter and establishments is much larger for these firms.

In columns 5-6, we test whether low-skill, offshorable jobs are more likely to be moved to establishments following a minimum wage hike in the headquarter country. This is what we would expect to see if the cause of wage increases in establishments are due to firms moving low-skill jobs abroad. Column 5 shows that a 10 percent increase in the headquarter country minimum wage leads to a 1.14 percentage point decline in the probability that low-skill occupations are added to the establishments *of "inequality-averse firms"*. This provides further evidence that the wage anchoring we see among firms headquarterd in inequality-averse countries is not solely due to firms moving jobs to across countries.

In Panel B of Table 10, we again estimate equations (11) and (12) but for headquarters rather than establishments.[66] A similar pattern emerges. In response to a minimum wage shock, inequality-averse firms that see an increase in both headquarter and foreign establishment wages are less likely to remove occupations from the headquarter, whereas firms headquartered in inequality-tolerant countries (which also see a larger increase in headquarter wages relative to establishment wages) are more likely to remove occupations from the headquarter, as shown in Column 2. Column 4 shows that a 10 percent increase in a firm's headquarter country's minimum wage leads to a 0.94 percent point increase in the probability that an occupation is added to the headquarter of "inequality-averse firms" but does not change the occupation structure of "inequality-tolerant firms"' headquarter. We again break this result down by low- and high-skill occupations in column 5 and 6. Low-skill occupations are actually more likely to be added to an inequality-averse firm's headquarter following a minimum wage hike, again going against the notion that wage anchoring is a result of jobs being moved abroad.

The results in this section suggest that, in parallel with the contrasting forms of wage-setting in firms headquartered in more versus less inequality-averse countries, wage increases at the headquarter affect the occupational structure of the two types of firms differently. When wages are increased at the headquarter, and the increase partially transmitted to foreign establishments, "inequality-averse firms" also compress the occupational structure of their foreign establishments. They do so by adding fewer and removing more occupations than they otherwise would have. Simultaneously, such firms expand the occupational structure of their headquarter. In contrast, "inequality-tolerant firms" do not change the occupational structure of their foreign establishments, but compress the occupation structure of their headquarters, when wages rise (only) at the headquarter.[67]

[66] The only difference is that the city×year fixed effects are replaced with year fixed effects and headquarter city fixed effects (subsumed by firm×job fixed effects), so that the independent variable of interest is not subsumed.

[67] The latter may occur through outsourcing, as in Goldschmidt & Schmieder (2017), or job destruction, when wages rise.

8 Conclusion

The evidence in this paper makes clear that many large multinationals have firm-wide wage-setting procedures that are not adjusted to the local labor market conditions in each location they operate in. We show that, in particular, multinationals headquartered in inequality-averse countries anchor the wage they pay *domestic* workers in a given occupation at foreign establishments to the wage they pay workers in the same occupation in the headquarter country. They do so across the occupational skill range—including for low-skill support staff—and transmit wage increases *externally imposed* on the headquarter (via changes in the headquarter country's minimum wage or exchange rate) to their foreign establishments. Multinationals headquartered in less inequality-averse countries do not anchor their wages abroad to headquarter levels. Our results point towards the existence of "wage cultures" that lead some firms to pay workers of similar skill levels more than others.

We take a first step towards understanding the consequences by showing that the multinationals that anchor wages abroad to the headquarter re-organize the occupational structure of their foreign establishments in relation to that at the headquarter when permanent wage increases are externally imposed on the headquarter. In particular, such firms compress the occupational structure of their foreign establishments and expand the occupational structure of their headquarter. Multinationals that that do not anchor wages abroad to the headquarter also do not change the occupational structure of their foreign establishments when wage increases are externally imposed on the headquarter.

An important topic for future research is understanding the broader consequences of across-country wage compression, which may be far-reaching and multi-faceted. The use of cheap and simple job-based wage-setting systems may in sum be profitable or costly for firms themselves, although *ex post* productivity-increasing adjustments to wage increases abroad that originate at the headquarter would need to be large and broad-based to fully compensate for such wage-setting practices. To understand the full welfare impact of across-country wage compression—including any resulting misallocation of occupations and jobs across regions—equilibrium models of multi-region firms in which the wage discount associated with producing in a low-wage location for some firms depend on *the firm's origin* may be needed. Firm cultures help also explain other phenomena such as the surprising acyclicality of wages (Lemieux *et al.* , 2012) and lack of delegation to establishments outside of firms' home region (see e.g. Aghion *et al.* , 2017).

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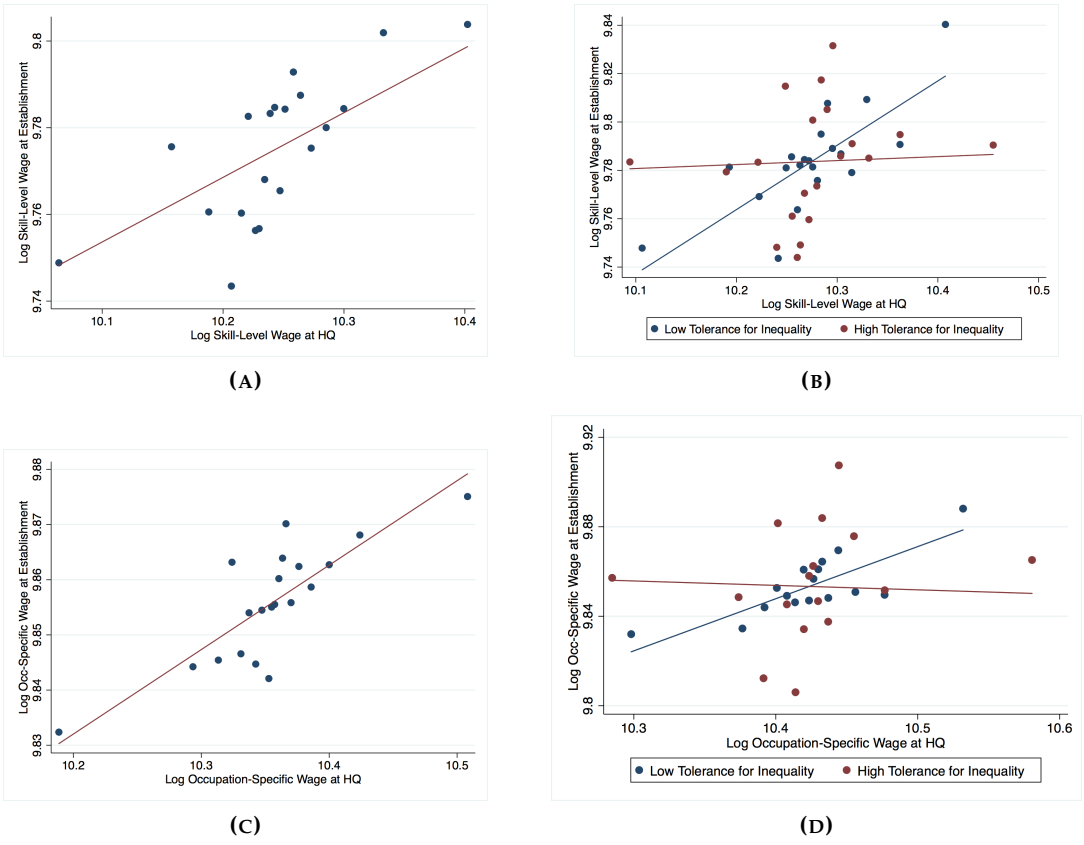
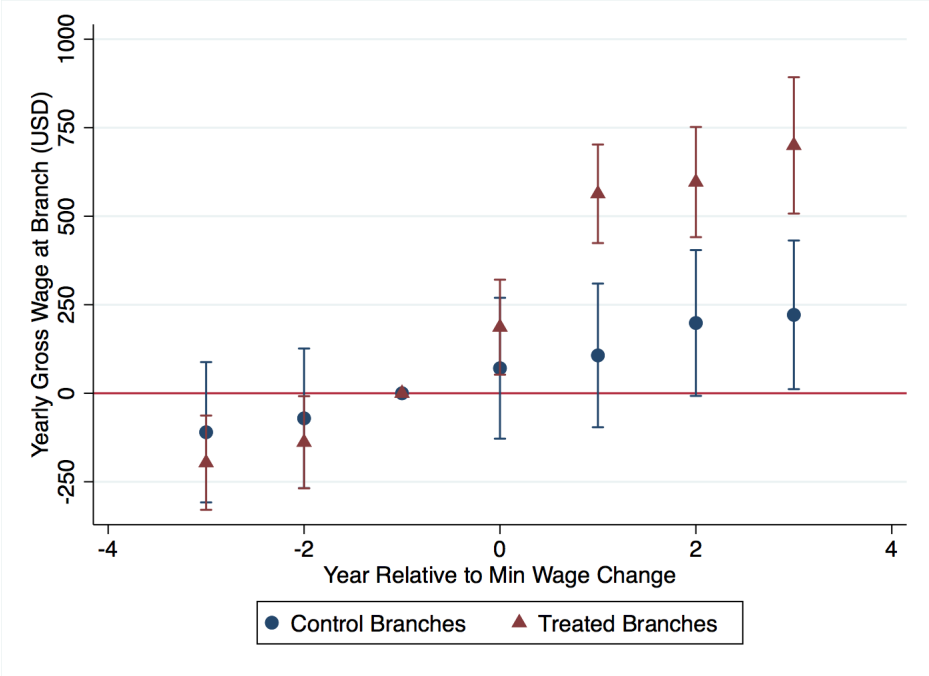
Figures

FIGURE 1: CORRELATION BETWEEN HQ AND FOREIGN ESTAB. WAGES



Note: These binned scatterplots show the relationship between headquarter and establishment wages by skill level (Panels A and B) and occupation level (Panels C and D). The y-variable in Panels A and B is the skill-level log wage at an establishment. The y-variable in Panels C and D is the occupation-specific log wage at an establishment. In Panels B and D, we split the sample into countries that have a high or low tolerance to inequality, as defined in Section 3. To construct each plot, establishment wages are first residualized with respect to the following controls: the average skill level-level or job-level wage for other employers' establishments operating in the same city, city×year fixed effects, and firm×skill level (or firm×job) fixed effects. The x-variable, log wage at the headquarter, is then divided into twenty equal-sized groups. Wages at headquarter are also measured at either the skill level (A and B) or the occupation level (C and D). Within each of these groups, we plot the mean of the y-variable residuals against the mean of the x-variable. We then add back the unconditional mean of the y-variable (establishment wages), to help with the interpretation of the line of best fit. The lines of best fit for each scatter plot are as follows. Panel A: $\hat{\beta} = 0.130$ (s.e.=0.030). Panel B: $\hat{\beta}_L = 0.239$ (s.e.=0.044) and $\hat{\beta}_H = 0.010$ (s.e.=0.047). Panel C: $\hat{\beta} = 0.126$ (s.e.=0.027). Panel D: $\hat{\beta}_L = 0.205$ (s.e.=0.036) and $\hat{\beta}_H = 0.017$ (s.e.=0.056).

FIGURE 2: IMPACT OF MIN WAGE ON OCCUPATION-SPECIFIC FOREIGN ESTAB. WAGES



Note: This event study plots the coefficients from a regression in which occupation-specific establishment wages are regressed on year dummies. A minimum wage shock in the HQ occurs in $t = 0$. All coefficients are plotted relative to the average wage in the establishment in $t = -1$ (the year before the shock). A treated establishment is an establishment in country c whose HQ experienced a minimum wage shock. Control establishments are other firms' establishments in city c in the same sector s for which the HQ did not experience a minimum wage shock. The average wage in $k = -1$ is 9,982.68 in the treated establishments and 11,164.20 in the control establishments.

Tables

TABLE 1: SUMMARY STATISTICS OF MULTINATIONALS

Panel A: Full Sample	Mean	SD	Min	Max
	(1)	(2)	(3)	(4)
Net Wage (USD)	20,599.41	14,791.90	1,138.13	183,820.60
Number of Occupations	32.0	21.0	5.0	126.0
Number of Skill Levels	10.7	1.4	1.0	16.0
Number of Establishments	2.56	3.47	1.0	40.0
Observations	3,951	3,951	3,951	3,951

Panel B: By Sector	Public Sector Orgs.	Private Sec	NGOs
	(1)	(2)	(3)
Net Wage (USD)	19,605.84	28,186.38	20,740.94
# Employers	61	571	438

Panel C: Distribution of Wages	HQ-Quart1	HQ-Quart2	HQ-Quart3	HQ-Quart4
	(1)	(2)	(3)	(4)
Headquarter				
Wage	14,423.88	23,940.54	36,228.04	60,698.62
Establishments				
Wage as % of HQ Wage	65.4	71.2	74.9	79.1

Note: This table presents summary statistics for the sample of multinationals for which we observe wage information for at least one of its establishment. All variables are measured at the employer-year level. There are 3,951 employer-year observations and 1,070 total employers. "Net Wage" is the average wage of all employees in a firm in a given year, and is measured in 2005 USD. "Number of Occupations" is the number occupations a firm has (across all foreign establishments) in a given year. "Skill levels" is average number of skill levels that exist in a firm. "Number of Establishments" is the number of establishments that a firm has operating in countries outside of the headquarter country. In Panel B, we separate employers into public sector organizations, private sector employers, and NGOs. All numbers in Panel B are means. In Panel C, we show the average wages at a firm's headquarter within a quartile. We then show the average wage in the firm's establishments as a percentage of headquarter wages for each quartile.

TABLE 2: RELATIONSHIP BETWEEN HQ AND FOREIGN ESTABLISHMENT WAGES

	(1)	(2)
	(mean) lBaseNet	(mean) lBaseNet
	none	none
(mean) lBaseNet	0.132	0.300***
	(0.085)	(0.044)
lBaseNet_hq_highpdi		-0.312***
		(0.104)
lbenchmark_joblev	0.071***	0.072***
	(0.010)	(0.011)
Observations	9152	9152
r-squared	0.949	0.949

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

Note: This table shows the correlation between a firm's wage levels at its headquarter and its establishments. The outcome variable in columns 1 and 2 is the skill-level-specific log wage at an establishment. The outcome in columns 3-5 is the occupation-specific log wage at an establishment. In columns 2, 5 and 6, we interact the main independent variable, the average wage at headquarter, with a binary variable indicating whether the headquarter country is classified as having low inequality aversion according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" equals one, it indicates that the headquarter country is more accepting of inequality than the average country in the sample. In column 6 we additionally interact the main independent variable with the "Low Ineq. Aversion" dummy variable for the establishment country. In column 4, we interact the main independent variable with skill level categories. An occupation is middle- (high-) skill if its skill level (defined globally by the Company, 16 skill levels in total) is between 6 and 10 (higher than 10). Standard errors are reported in parentheses and clustered at the firm×skill level level in columns 1 & 2 and at the firm×job level in columns 3, 4 & 5. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE 3: WAGE ANCHORING AND CORRELATES OF INEQUALITY AVERSION

	Occupation-Specific Log Wage at Establishment		
	(1)	(2)	(3)
Log Wage at HQ	0.351***	0.283***	0.254***
	(0.099)	(0.047)	(0.041)
Log Wage at HQ × Low Ineq. Aversion	-0.325**	-0.275***	-0.225**
	(0.131)	(0.099)	(0.092)
Log Wage at HQ × High GDP	-0.016		
	(0.013)		
Log Wage at HQ × High Regulation		0.266**	
		(0.117)	
Log Wage at HQ × High Gini Index			-0.085**
			(0.029)
Firm×Job FE	Y	Y	Y
City×Year FE	Y	Y	Y
Observations	18,817	18,817	18,817
R-squared	0.960	0.960	0.960

Note: This table tests whether correlates of the Hofstede measure of inequality aversion account for the relationship between headquarter and establishment wages. In column 1, we interact occupation-specific headquarter wages with a dummy indicating that the headquarter country has above-median GDP per capita. In column 2, we interact headquarter wages with a dummy for the headquarter country having high degree of regulation (above the median for the sample). In column 3, we interact headquarter wages with a dummy indicating that the headquarter country's gini index is above the median. In each regression, we have the relevant uninteracted dummy variable (not shown above). In all columns, we also interact the headquarter wage with a binary variable indicating whether a country is classified as having low inequality aversion according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" equals one, it indicates that the headquarter country is more accepting of inequality than the average country in the sample. The outcome variable is always the occupation-specific wage at an establishment. All wages are in logs. Standard errors are reported in parentheses and clustered at the firm×job level. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE 4: IMPACT OF HQ COUNTRY MIN. WAGE CHANGE ON FIRM WAGES

Low-Skill Occupations	%Δ Estab. Wage (1)	%Δ HQ Wage (2)	%Δ Estab. Wage (3)
%Δ Min Wage	0.028**	0.099***	
	(0.019)	(0.008)	
%Δ HQ Wage (IVed)			0.285**
			(0.139)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	98,069	5,085	98,069
R-squared	0.358	0.275	0.358

Note: This table shows the impact that a 100% minimum wage increase in a firm's headquarter country has on gross wages paid to low-skill jobs in its foreign establishments (column 1) and its headquarter (column 2). An occupation is low-skill if its skill level (defined globally by the Company, 16 skill levels in total) is between 1 and 5. We perform two-sample 2SLS estimation in column 3, where the full headquarter sample (first stage, column 2) and the full foreign establishment sample (reduced form, column 1) are used. Outliers with wage changes larger than 75% are excluded. Standard errors are reported in parentheses and clustered at the firm×job level. TS2SLS standard errors are computed following **?**. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE 5: IMPACT OF HQ COUNTRY MIN. WAGE ON BINDING OCCUPATIONS/FIRMS

Panel A: Binding occupations (v. others) w/in establishment-year	%Δ Estab. Wage (1)	%Δ HQ Wage (2)	%Δ Estab. Wage (3)
%Δ Min Wage × Occ'n. Binding (Binary: below New Min Wage)	0.088*** (0.028)	0.235** (0.112)	
%Δ HQ Wage (IVed)			0.376* (0.217)
Firm×Job FE	Y	Y	Y
Firm×Estab.×Year FE	Y	Y	Y
Observations	7,803	13,134	7,803
R-squared	0.721	0.797	0.721
Panel B: W/in HQ country-year across firm heterogeneity in Low-Skill Occ'n.s	%Δ Estab. Wage (1)	%Δ HQ Wage (2)	%Δ Estab. Wage (3)
%Δ Min Wage ×Firm Bindingness (Kaitz: Min Wage-Median Wage Ratio)	1.252*** (0.353)	4.705*** (0.575)	
%Δ HQ Wage (IVed)			0.266*** (0.082)
Firm×Job FE	Y	Y	Y
City×Year FE	Y	Y	Y
HQ country×Year FE	Y	Y	Y
Observations	32,774	994	32,774
R-squared	0.479	0.825	0.479
Panel C: W/in HQ country-year across firm heterogeneity in binding occ'n.s (v. others) w/in estab.-year	%Δ Estab. Wage (1)	%Δ HQ Wage (2)	%Δ Estab. Wage (3)
%Δ Min Wage×Firm Bindingness ×Occ'n. Binding	1.051** (0.397)	4.045** (1.929)	
%Δ Min Wage×Firm Bindingness ×Occ'n. Non-binding	0.885** (0.375)	3.864** (1.924)	
%Δ HQ Wage (IVed)			0.241 (0.152)
Firm×Job FE	Y	Y	Y
Firm×Estab.×Year FE	Y	Y	Y
Observations	6,505	3,884	6,505
R-squared	0.711	0.801	0.711

Note: Panel A shows the differential impact that a 100% minimum wage increase in a firm's headquarter country has on gross wages for "binding" and "non-binding" occupations. The outcome in column 1 is the percent change in minimum wages at the establishment and the outcome in column 2 is the percent change at the headquarter. An occupation is binding in a country if there exists an establishment (headquarter or foreign establishment) that, in the preceding year, paid a wage to that occupation that was below the new minimum wage. In Panel A, only establishment-years in which at least one headquarter-minimum-wage-binding occupation existed are included, as they are relevant in within-establishment-year analysis. Panel B shows the differential impact that a 100% minimum wage increase in a country has on gross wages paid to low-skill jobs in the foreign establishments (column 1) and the headquarter (column 2) of firms headquartered in this country depending on how binding the minimum wage is for the headquarters of these firms. An occupation is low-skill if its skill level (defined globally by the Company, 16 skill levels in total) is between 1 and 5. Firm-level minimum-wage-bindingness is measured by the ratio between the prevailing minimum wage and the median wage of the headquarter (Kaitz index). For years in which the headquarter was not surveyed, we impute the firm-level average Kaitz index. In Panel B, only the firms of which the headquarter and at least one foreign establishment are observed are included, as the Kaitz index is only available for these firms. Panel C shows the heterogeity by firm-level bindingness in the differential impact that a 100% minimum wage increase in a firm's headquarter country has on gross wages in its foreign establishments (column 1) and its headquarter (column 2) paid to minimum-wage-binding occupations compared to unbinding ones within the same establishment. We perform two-sample 2SLS estimation in column 3, where the full headquarter sample (first stage, column 2) and the full foreign establishment sample (reduced form, column 1) are used. Outliers with wage changes larger than 100% are excluded. Standard errors are reported in parentheses and clustered at the firm×job level. TS2SLS standard errors are computed following **?**. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE 6: ROBUSTNESS OF IMPACT OF HQ COUNTRY MIN. WAGE CHANGE ON WAGES

Panel A: Endogenous Timing of Min Wage Changes	%Δ Estab. Wage		%Δ HQ Wage	
	(1)	(2)	(3)	(4)
%Δ Min Wage	0.016		0.045***	
	(0.074)		(0.008)	
%Δ Min Wage × Occ'n. Binding	0.082***	0.088***	0.198***	0.235***
	(0.031)	(0.028)	(0.063)	(0.112)
Firm×Job FE	Y	Y	Y	Y
Year FE	-	-	Y	-
City×Year FE	Y	-	-	-
Firm×Estab.×Year FE	N	Y	N	Y
Observations	7,803	7,803	12,874	13,134
R-squared	0.707	0.721	0.342	0.797
Panel B: w/in Firm Outsourcing	%Δ Estab. Wage		%Δ HQ Wage	
	Low-Skill	Binding	Low-Skill	Binding
	(1)	(2)	(3)	(4)
%Δ Min Wage	0.033**		0.078***	
	(0.015)		(0.019)	
%Δ Min Wage	-0.014		0.049	
× High Occ'n. Offshorability	(0.023)		(0.041)	
%Δ Min Wage × Occ'n. Binding		0.091*		0.253
		(0.051)		(0.164)
%Δ Min Wage × Occ'n. Binding		-0.005		-0.047
× High Occ'n. Offshorability		(0.080)		(0.171)
Firm×Job FE	Y	Y	Y	Y
Year FE	-	-	Y	-
City×Year FE	Y	-	-	-
Firm×Estab.×Year FE	N	Y	N	Y
Observations	98,069	7,803	5,085	7,568
R-squared	0.358	0.721	0.275	0.807

Note: Panel A compares the differential impact of minimum wage increase in a headquarter country on the gross wages paid to headquarter-minimum-wage-binding and unbinding occupations, both in foreign establishments (columns 1 & 2) as well as headquarters (columns 3 & 4), either within year (columns 1 & 3) or within establishment-year (columns 2 & 4). An occupation is binding in a country if there exists an establishment (headquarter or foreign establishment) that, in the preceding year, paid a wage to that occupation that was below the new minimum wage. Panel B compares the differential impact of minimum wage increase in a headquarter country on the gross wages paid to occupations of high and low offshorability, both in foreign establishments (columns 1 & 2) as well as headquarters (columns 3 & 4), either for low-skilled jobs (columns 1 & 3) or for headquarter-minimum-wage-binding jobs (columns 2 & 4). An occupation is defined as highly offshorable if its offshorablilty index is above the sample mean. The offshorability index is constructed according to Blinder & Krueger (2013). Outliers with percentage wage changes larger than 100% are excluded. Standard errors are reported in parentheses and clustered at the firm×job level. TS2SLS standard errors are computed following **?**. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE 7: IMPACT OF HQ COUNTRY EXCHANGE RATE SHOCKS ON FIRM WAGES

	Log Estab. Wage (1)	Log HQ Wage (2)	Log Estab. Wage (3)
Log Home Ex. Rate	-0.090***	-0.555***	
	(0.030)	(0.231)	
Log HQ Wage (IVed)			0.163**
			(0.066)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	379,052	12,322	379,052
R-squared	0.894	0.973	0.893

Note: This table shows the impact that a 100% local currency depreciation (relative to USD) in a firm's headquarter country has on gross wages (USD) in its foreign establishments (column 1) and its headquarter (column 2). Exchange rates are detrended from headquarter-country-specific time trends. We perform two-sample 2SLS estimation in column 3, where the full headquarter sample (first stage, column 2) and the full foreign establishment sample (reduced form, column 1) are used. Standard errors are reported in parentheses and clustered at the currency region level. TS2SLS standard errors are computed following **?**. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE 8: MINIMUM WAGE CHANGE AND HQ COUNTRY INEQUALITY AVERSION

Low-Skill Occupations	%Δ Estab. Wage (1)	%Δ HQ Wage (2)	%Δ Estab. Wage (3)
%Δ Min Wage	0.084***	0.106***	
× High Ineq. Aversion	(0.026)	(0.014)	
%Δ Min Wage	-0.011	0.093***	
× Low Ineq. Aversion	(0.012)	(0.034)	
%Δ HQ wage (IVed)			0.790***
× High Ineq. Aversion			(0.266)
%Δ HQ wage (IVed)			-0.120
× Low Ineq. Aversion			(0.121)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	97,879	5,085	97,879
R-squared	0.363	0.275	0.363

Note: This table looks at heterogeneity in the impact that a 100% minimum wage increase in a firm's HQ country has on gross wages in its foreign establishments (column 1) and headquarter (column 2), based on whether the headquarter country has high or low inequality aversion. Inequality aversion is defined according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" ("High Ineq. Aversion") equals one, it indicates that the headquarter country is more (less) accepting of inequality than the average country in the sample. We perform two-sample 2SLS estimation in column 3, where the full headquarter sample (first stage, column 2) and the full foreign establishment sample (reduced form, column 1) are used. For establishment-jobs which experienced more than one headquarter country minimum wage increase since last surveyed, we use the most recent minimum wage increase as %Δ Min Wage, and re-scale the corresponding gross wages by the ratio of the most recent minimum wage increase and the accumulative minimum wage increase. Outliers with wage changes larger than 75% are excluded. Standard errors are reported in parentheses and clustered at the firm×job level. TS2SLS standard errors are computed following **?**. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE 9: EXCHANGE RATE SHOCKS AND HQ COUNTRY INEQUALITY AVERSION

	Log Estab. Wage (1)	Log HQ Wage (2)	Log Estab. Wage (3)
Log Home Ex. Rate	-0.124***	-0.581***	
× High Ineq. Aversion	(0.050)	(0.085)	
Log Home Ex. Rate	-0.025	-0.549***	
× Low Ineq. Aversion	(0.043)	(0.065)	
Log HQ wage (IVed)			0.213*
× High Ineq. Aversion			(0.126)
Log HQ wage (IVed)			0.045
× Low Ineq. Aversion			(0.080)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	379,052	12,322	379,052
R-squared	0.894	0.973	0.894

Note: This table looks at heterogeneity in the impact that a 100% local currency depreciation (to USD) in a firm's headquarter country has on gross wages (in USD) in its foreign establishments (column 1) and headquarter (column 2), based on whether the headquarter country has high or low inequality aversion. Exchange rates are detrended from headquarter-country-specific time trends. Inequality aversion is defined according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" ("High Ineq. Aversion") equals one, it indicates that the headquarter country is more (less) accepting of inequality than the average country in the sample. We perform two-sample 2SLS estimation in column 3, where the full headquarter sample (first stage, column 2) and the full foreign establishment sample (reduced form, column 1) are used. Standard errors are reported in parentheses and clustered at the currency region level. TS2SLS standard errors are computed following **?**. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE 10: IMPACT OF HQ MINIMUM WAGE CHANGE ON OCCUPATIONS

Panel A: Establishments	Occupation Removed (1)	(2)	(3)	Occupation Added (4)	(5) Low-Skill	(6) High-Skill
%Δ Min Wage	0.103*	0.285***	-0.021*	-0.086**	-0.114*	-0.049
	(0.048)	(0.071)	(0.010)	(0.038)	(0.058)	(0.055)
%Δ Min Wage		-0.266**		0.109**	0.108	0.010
× Low Ineq. Aversion		(0.091)		(0.040)	(0.061)	(0.059)
Firm×Job FE	Y	Y	Y	Y	Y	Y
City×Year FE	Y	Y	Y	Y	Y	Y
Observations	294,158	294,158	1,093,571	1,093,571	591,925	172,082
R-squared	0.442	0.442	0.110	0.110	0.124	0.118
Panel B: Headquarters	Occupation Removed (1)	(2)	(3)	Occupation Added (4)	(5) Low-Skill	(6) High-Skill
%Δ Min Wage	-0.151	-0.681***	0.016	0.094***	0.095**	0.031
	(0.098)	(0.231)	(0.011)	(0.033)	(0.048)	(0.029)
%Δ Min Wage		0.909***		-0.099***	-0.106**	-0.032
× Low Ineq. Aversion		(0.225)		(0.031)	(0.046)	(0.028)
Firm×Job FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Observations	102,641	102,641	842,261	825,434	451,627	127,151
R-squared	0.596	0.596	0.024	0.027	0.041	0.043

Note: This table shows the impact of a 100% minimum wage increase in a firm's HQ country on the existence of occupations in the firm's foreign establishments (Panel A) and headquarter (Panel B). The outcome variables in columns 1-2 in both panels is a dummy variable indicating that an occupation that previously existed in a firm's establishment or HQ no longer exists in the year after the minimum wage increase. The outcome variable in columns 3-6 in both panels is a dummy variable indicating that an occupation that did not exist in a firm's establishment or HQ before the minimum wage increase, appeared in the establishment or HQ in the year following the minimum wage increase. Inequality aversion is defined according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" equals one, it indicates that the headquarter country is more accepting of inequality than the average country in the sample. An occupation is low-skill (high-skill) if its skill level (defined globally by the Company, 16 skill levels in total) is between 1 and 5 (higher than 10). Standard errors are reported in parentheses and clustered at the firm×job level. (*=p<0.10, **=p<0.05 ,***=p<0.01)

Appendix

Company Data

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- representativeness
- where establishments are, maps

Additional Data Sources

ILO Minimum Wage Data The International Labour Organisation (ILO) includes a database on nominal gross monthly minimum wage (local currency) for 118 of the 170 countries observed in our primary dataset. The minimum wage is recorded as of December 31st of each year.[68] Monthly numbers are multiplied by 12 to calculate the annual nominal minimum wage.

Exchange Rate Data The yearly exchange rate dataset is downloaded from the World Bank, which records the official exchange rate (in currency units per current USD).[69] The yearly exchange rate is calculated as an annual average based on monthly averages.

Occupation Offshorability Index The offshorability index comes from Blinder & Krueger (2013)'s externally coded survey measure of job offshorability (the ability to perform the job's work duties from abroad).[70] In our analysis, we use an indicator variable for a job being highly offshorable if these jobs have an offshorability index value greater than the sample mean.

Sector Tradability Index The tradability index of the output produced in a sector is measured as Stöllinger *et al.* (2017), which is defined as the sector-specific ratio between value-added exports and total value-added in production worldwide.[71] In our analysis, we categorize a sector as producing highly tradable goods and services if its tradability index is above the sample median.

Correlates of the Hofstede Measure We correlate several country-level variables with our measure of inequality aversion to test whether our results are being driven by inequality-aversion or by factors that correlate with inequality-aversion. Specifically, we tested for correlation with a country's GDP per capita, Gini index, regulatory index, government stability index, and average adult educational attainment. All of these variables are drawn from the World Bank and measured yearly. The definitions of the regulatory and stability indices and for adult educational attainment are as follows:

[68] Minimum wages are not reported for countries for which collective bargaining is in place for minimum wages. In cases where a national minimum wage is not mandated, the minimum wage in place in the capital or major city is used. In some cases, an average of multiple regional minimum wages is used. In countries where the minimum wage is set at the sectoral level or occupational level, the minimum wage for manufacturing or unskilled workers is generally applied.

[69] Official exchange rate refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market.

[70] Our offshorable index is constructed in 3 steps:

i. The offshorability measure for occupations defined by 3-digit Standard Occupational Classification (SOC) codes is constructed using the micro-level survey data available on Princeton Data Improvement Initiative (PDII).

ii. Occupation crosswalk between the 3-digit SOC codes and the detailed job titles in our primary dataset is constructed using O-NET's code connector. We record the SOC code(s) of the first two entries.

iii. The offshorability index for each job title in our primary dataset is constructed using the 3-digit SOC level offshorability measure and the crosswalk. When more than one SOC code is recorded for a given job title, the average is taken.

[71] Our tradability index is constructed in 3 steps:

i. (a)Tradability index at the wiiw sector level and (b) the crosswalks between wiiw sector categories and the Statistical Classification of Economic Activities in the European Community (NACE) categories are retrieved from Stöllinger *et al.* (2017).

ii. Crosswalk between NACE categories and sector categories in our primary dataset is constructed based on NACE references.

iii. The tradability index for each sector in our primary dataset is constructed using the wiiw sector level offshorability and the two set of crosswalks.

- **Regulatory Index:** A country's regulatory index is meant to capture the country's regulatory environment that affects growth of the private sector. The index is based on surveys and legal analysis conducted by the World Bank. A higher regulatory index means that a country's government is better able to create and implement regulations that promote private sector development.
- **Political Stability Index:** This index is based on survey measures of individuals' perceptions of the likelihood of political instability or politically-motivated violence. These data are then combined with actual measures of conflict, terrorism, and social unrest.
- **Adult Education:** This is the average number of years of education that individuals over the age of 25 have completed.

Data Processing

The dataset from the Company is an unbalanced panel at establishment×year level, and contains a few large wage changes within the same establishment in neighboring years that are very likely due to data entry errors. We process the wage data in the following two ways to address the potential estimation issues associated with these two features.

Trimming Outliers We drop observations with a wage change between two consecutive surveyed years larger than 100%. This trimming procedure drops less than 2% of the total observations.[72]

Adjusting for Panel Unbalancedness There are instances in which a firm experiences more than one headquarter country minimum wage change between two consecutive survey years. For example, we see some cases in which if a firm is surveyed in 2005 and 2007 but its headquarter country's minimum wage increases both in 2005 and 2006. In such instances, we use the most recent minimum wage increase as the independent variable and re-scale the associated gross wages by the ratio of the most recent minimum wage increase and the cumulative minimum wage increase. Because the cumulative minimum wage increase and the growth in job-specific wages are both likely to be larger when there is a longer time gap between two consecutive survey years, failing to re-scale the correlation between the two might spuriously capture the unbalanced panel feature of the dataset. The procedure also applies to any other regression in which the un-interacted headquarter country minimum wage changes is the main independent variable of interest.

[72] If data entry errors were more likely to occur when there was a longer time gap between two consecutive surveys on the same establishment, and headquarter country minimum wage changes were also larger when the time gap was longer, including possibly erroneous outliers with very large wage growth could lead to a spurious positive correlation between the firm wage change and headquarter country minimum wage change.

Appendix
XX maps

TABLE A1: SUMMARY STATISTICS OF FIRMS WITH OCCUPATIONS MATCHES

Panel A: Full Sample of Occ Matches	Mean	SD	Min	Max
	(1)	(2)	(3)	(4)
Net Wage (USD)	20,343.45	14,335.27	2,613.27	76,800.00
Number of Occupations	26.4	16.1	2	62
Number of Skill Levels	10.6	1.4	1.0	15.0
Number of Establishments	1.8	2.46	1.0	27.1
Observations	544	544	544	544

Panel B: By Sector	Public Sector Orgs.	Private Sec	NGOs
	(1)	(2)	(3)
Net Wage (USD)	24,888.93	20,497.13	19,911.49
# Employers	3	38	27

Panel C: Distribution of Wages	HQ-Quart1	HQ-Quart2	HQ-Quart3	HQ-Quart4
	(1)	(2)	(3)	(4)
Headquarter				
Wage	12,471.48	18,309.39	28,948.10	51,003.22
Establishments				
Wage as % of HQ Wage	69.8	73.1	75.0	77.0

Note: This table presents summary statistics for the sample of firms for which we see both headquarter and establishment wages for a given job. All variables are measured at the employer-year level. "Net Wage" is the average wage of all employees in a firm in a given year, and is measured in 2005 USD. "Number of Occupations" is the number occupations a firm has (across all foreign establishments) in a given year. "Skill levels" is average number of skill levels that exist in a firm. "Number of Establishments" is the number of establishments that a firm has operating in countries outside of the headquarter country. In Panel B, we separate employers into public sector organizations, private sector employers, and NGOs. All numbers in Panel B are means. In Panel C, we show the average wages at a firm's headquarter within a quartile. We then show the average wage in the firm's establishments as a percentage of headquarter wages for each quartile.

FIGURE A1: ESTABLISHMENT LOCATIONS

Note: XX

TABLE A2: HQ AND ESTAB. WAGES - SPECIFICATION ROBUSTNESS

Log Wage at Establishment by:	Skill Level		Occupation			
	(1)	(2)	(3)	(4)	(5)	(6)
Log Wage at HQ (Skill)	0.264***	0.322***				
	(0.045)					
Log Wage at HQ (Skill)		-0.346				
× Low Ineq. Aversion		(0.212)				
Log Wage at HQ (Occ'n)			0.141***	0.221***	0.166***	0.159***
			(0.035)	(0.045)	(0.032)	(0.032)
Log Wage at HQ (Occ'n)					-0.170	-0.164
× Low Ineq. Aversion					(0.137)	(0.137)
Log Wage at HQ (Occ'n)						0.010***
× Estab. Low Ineq. Aversion						(0.001)
Log Wage at HQ (Occ'n)				-0.128*		
× Middle Skill Occ.				(0.068)		
Log Wage at HQ (Occ'n)				-0.082		
× High Skill Occ.				(0.146)		
Firm×Skill Level FE	Y	Y	-	-	-	-
Firm×Job FE	-	-	Y	Y	Y	Y
Skill Level×City×Year FE	Y	Y	-	-	-	-
Job×City×Year FE	-	-	Y	Y	Y	Y
Observations	8,352	8,352	17,592	17,590	17,590	17,590
R-squared	0.527	0.528	0.543	0.543	0.543	0.548

Note: This table replicates Table 2, replacing the "benchmark" wage control and city×year fixed effects with job×city×year fixed effects. Job×city×year fixed effects are estimated off of a sample consisting of jobs at all the establishments in the city in a given year (including domestic firms, headquarters of local headquartered multinationals, and foreign establishments of other multinationals of which the headquarter information is not available in the same year). This sample is larger than the relevant sample of foreign establishment jobs for which we observe the corresponding headquarter job in the same year, and this approach allows us to keep as much variation as possible that would have otherwise been absorbed by estimating job×city×year fixed effects from the smaller relevant sample. Inequality aversion is defined according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" equals one, it indicates that the headquarter country is more accepting of inequality than the average country in the sample.
An occupation is middle- (high-) skill if its skill level (defined globally by the Company, 16 skill levels in total) is between 6 and 10 (higher than 10). Standard errors are reported in parentheses and clustered at the firm×skill level level in columns 1 & 2 and at the firm×job level in columns 3, 4 & 5. (*=p<0.10, **=p<0.05 ,***=p<0.01)

Note: This table shows the correlation between private sector firms' wage levels at their headquarter and establishments. The outcome variable in columns 1 and 2 is the skill-level-specific log wage at an establishment. The outcome in columns 3 and 4 is the occupation-specific log wage at an establishment. In columns 2 and 4, we interact the main independent variable, headquarter wage, with a binary variable indicating whether the headquarter country is classified as having low inequality aversion according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" equals one, it indicates that the headquarter country is more accepting of inequality than the average country in the sample. Standard errors are reported in parentheses and clustered at the firm×skill level level in columns 1 & 2 and at the firm×job level in columns 3, 4 & 5. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE A4: RELATIONSHIP BETWEEN HQ AND ESTABLISHMENT WAGE SLOPES

Bet.-Skill-Level Wage Slope	Pooled		Occ'n. Category-Specific	
at Establishment:	(1)	(2)	(3)	(4)
Bet.-Skill-Level Wage Slope at HQ	0.174***	0.272***	0.110***	0.292***
	(0.033)	(0.057)	(0.020)	(0.029)
Bet.-Skill-Level Wage Slope at HQ		-0.146**		-0.344***
× Low Ineq. Aversion		(0.070)		(0.040)
Benchmark Wage Slope	0.075***	0.033***	0.032***	0.033***
	(0.019)	(0.010)	(0.010)	(0.010)
Firm×Occ'n. Cat.×Skill Level-Pair FE	-	-	Y	Y
Firm×Skill Level-Pair FE	Y	Y	-	-
City×Year FE	Y	Y	Y	Y
Observations	7,317	7,317	11,898	11,898
R-squared	0.678	0.678	0.602	0.605

Note: This table shows the correlation in a firm's between-skill-level wage slopes between its headquarter and its foreign establishments. The outcome variable in columns 1 and 2 is the difference between the average log wage of all jobs in consecutive skill levels at an establishment. The outcome in columns 3 and 4 is the difference between the average log wage of jobs within each occupational category in consecutive skill levels at an establishment. Skill levels are defined globally by the Company. In columns 2 and 4, we interact the main independent variable, headquarter wage, with a binary variable indicating whether a country is classified as having low inequality aversion according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" equals one, it indicates that the headquarter country is more accepting of inequality than the average country in the sample. Standard errors are reported in parentheses. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE A5: IMPACT OF MIN. WAGE CHANGE ON FIRM WAGES - SAMPLE ROBUSTNESS

Panel A: Pre-Existing Low-Skill Occupations	%Δ Estab. Wage (1)	%Δ HQ Wage (2)	%Δ Estab. Wage (3)
%Δ Min Wage	0.023*	0.096***	
	(0.012)	(0.019)	
%Δ HQ Wage (IVed)			0.242*
			(0.137)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	97,216	5,059	97,216
R-squared	0.365	0.276	0.365
Panel B: Low-Skill Occupations in Private-Sector Firms	%Δ Estab. Wage (1)	%Δ HQ Wage (2)	%Δ Estab. Wage (3)
%Δ Min Wage	0.064**	0.114***	
	(0.014)	(0.029)	
%Δ HQ Wage (IVed)			0.561***
			(0.188)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	12,642	3,241	12,642
R-squared	0.572	0.301	0.572

Note: This table replicates Table 4 restricting to sub-samples. Panel A shows the results for pre-existing jobs, and Panel B for private-sector firms. Pre-existing jobs refer to occupations that already existed in the relevant foreign establishment in the immediately preceding year surveyed. An occupation is low-skill if its skill level (defined globally by the Company, 16 skill levels in total) is between 1 and 5. Outliers with wage changes larger than 75% are excluded. Standard errors are reported in parentheses and clustered at the firm×job level. TS2SLS standard errors are computed following **?**. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE A6: IMPACT OF MIN. WAGE CHANGE ON NON-LOW-SKILL OCC'N. WAGES

Middle- & High-Skill Occupations	%Δ Estab. Wage		%Δ HQ Wage	
	(1)	(2)	(3)	(4)
%Δ Min Wage	-0.007	-0.007	0.028***	0.005
	(0.010)	(0.014)	(0.010)	(0.018)
%Δ Min Wage		-0.000		0.033
×High Occ'n. Offshorability		(0.018)		(0.022)
Firm×Job FE	Y	Y	Y	Y
Year FE	-	-	Y	Y
City×Year FE	Y	Y	-	-
Observations	122,174	122,174	7,805	7,805
R-squared	0.320	0.320	0.343	0.343

Note: Columns 1 & 3 replicate columns 1 & 2 of Table 4, switching the sample to non-low-skill (i.e. middle- and high-skill) occupations. Columns 2 & 4 replicate Panel B, columns 1 & 3 of Table 6, switching the sample to non-low-skill jobs. An occupation is non-low-skill if its skill level (defined globally by the Company, 16 skill levels in total) is higher than 5. An occupation is defined as highly offshorable if its offshorablilty index is above the sample mean. The offshorability index is constructed according to Blinder & Krueger (2013). Standard errors are reported in parentheses and clustered at the firm×job level. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE A7: IMPACT OF EX. RATE SHOCKS ON FIRM WAGES - SAMPLE ROBUSTNESS

Panel A: Pre-Existing Jobs	Log Estab. Wage (1)	Log HQ Wage (2)	Log Estab. Wage (3)
Log Home Ex. Rate	-0.092***	-0.519**	
	(0.025)	(0.253)	
Log HQ Wage (IVed)			0.178*
			(0.099)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	337,223	11,102	337,223
R-squared	0.896	0.973	0.896
Panel B: Private-Sector Firms	Log Estab. Wage (1)	Log HQ Wage (2)	Log Estab. Wage (3)
Log Home Ex. Rate	-0.390***	-0.911***	
	(0.110)	(0.143)	
Log HQ Wage (IVed)			0.428***
			(0.139)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	100,515	24,252	100,515
R-squared	0.907	0.978	0.907
Panel C: Low-Skill Occupations	Log Estab. Wage (1)	Log HQ Wage (2)	Log Estab. Wage (3)
Log Home Ex. Rate	-0.153***	-0.531**	
	(0.048)	(0.207)	
Log HQ Wage (IVed)			0.287**
			(0.144)
Firm×Job FE	Y	Y	Y
Year FE	-	Y	-
City×Year FE	Y	-	Y
Observations	163,006	4,516	163,006
R-squared	0.854	0.966	0.854

Note: This table replicates Table 7 restricting to sub-samples. Panel A shows the results for pre-existing jobs, Panel B for private-sector firms, and Panel C for low-skill occupations. Pre-existing jobs refer to occupations that already existed in the relevant foreign establishment in the immediately preceding year surveyed. An occupation is low-skill if its skill level (defined globally by the Company, 16 skill levels in total) is between 1 and 5. Standard errors are reported in parentheses and clustered at the currency region level. TS2SLS standard errors are computed following **?**. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE A8: ROBUSTNESS OF IMPACT OF HQ COUNTRY EX. RATE SHOCKS ON WAGES

	Log Estab. Wage			Log HQ Wage		
	(1)	(2)	(3)	(4)	(5)	(6)
Log Home Ex. Rate		-0.140***			-0.558***	
		(0.047)			(0.223)	
Log Home Ex. Rate		-0.001			0.006	
× High Occ'n. Offshorability		(0.018)			(0.050)	
Log Home Ex. Rate× High Sec. Tradability	-0.254**		-0.307*	-0.786***		-0.765***
	(0.125)		(0.167)	(0.235)		(0.226)
Log Home Ex. Rate × High Sec. Tradability			0.093			-0.039
× High Occ'n. Offshorability			(0.107)			(0.066)
Log Home Ex. Rate× Low Sec.Tradability	-0.118**		-0.111*	-0.440		-0.462
	(0.057)		(0.057)	(0.317)		(0.310)
Log Home Ex. Rate × Low Sec.Tradability			-0.015			0.038
× High Occ'n. Offshorability			(0.019)			(0.069)
Firm×Job FE	Y	Y	Y	Y	Y	Y
Year FE	-	-	-	Y	Y	Y
City×Year FE	Y	Y	Y	-	-	-
Observations	387,263	387,263	379,052	12,322	12,322	12,322
R-squared	0.888	0.888	0.894	0.973	0.973	0.973

Note: This table compares the differential impact of exchange rate shock in a home country on the firms' gross wages (in USD) in sectors of high and low tradability paid to occupations of high and low offshorability, both in foreign establishments (columns 1, 2 & 3) as well as headquarters (columns 3, 4 & 5). Exchange rates are detrended from home-country-specific time trends. A sector is defined as highly tradable if its output tradability index is above the sample median. The tradability index is constructed according to Stöllinger *et al.* (2017). An occupation is defined as highly offshorable if its offshorablilty index is above the sample mean. The offshorability index is constructed according to Blinder & Krueger (2013). Standard errors are reported in parentheses and clustered at the currency region level. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE A9: IMPACT OF MIN. WAGE CHANGE ON OCCUPATIONS - EXCLUDING NGOS

	Establishment				Headquarter	
	Occ. Leaves		Occ. Added		Occ. Leaves	Occ. Added
	(1)	(2)	(3)	(4)	(5)	(6)
%Δ Min Wage	0.093	0.318**	0.026	-0.058	-2.941***	0.033***
	(0.072)	(0.130)	(0.024)	(0.059)	(0.851)	(0.011)
%Δ Min Wage		-0.353***		0.120**	2.560***	-0.041***
× Low Ineq. Aversion		(0.134)		(0.058)	(0.816)	(0.010)
Firm×Job FE	Y	Y	Y	Y	Y	Y
Year FE	-	-	-	-	Y	Y
City×Year FE	Y	Y	Y	Y	-	-
Observations	75,819	75,819	417,996	417,996	10,655	285,077
R-squared	0.544	0.544	0.156	0.156	0.473	0.053

Note: This table shows the impact of a 100% minimum wage increase in a firm's HQ country on the existence of occupations in the firm's establishments (columns 1-4) and headquarter (columns 5-6). The sample excludes NGOs. The outcome variables in columns 1, 2 and 5 is a dummy variable indicating that an occupation that previously existed in a firm's establishment or HQ no longer existed in the year after the minimum wage increase. The outcome variable in columns 3, 4, and 6 is a dummy variable indicating that an occupation that did not exist in a firm's establishment or HQ before the minimum wage increase, appeared in the establishment or HQ in the year following the minimum wage increase. Inequality aversion is defined according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" equals one, it indicates that the headquarter country is more accepting of inequality than the average country in the sample. Standard errors are reported in parentheses and clustered at the firm×job level. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE A10: IMPACT OF HQ COUNTRY EXCHANGE RATE SHOCKS ON OCCUPATIONS

Occupation present at:	Foreign Establishment		Headquarter	
	(1)	(2)	(3)	(4)
Log Home Ex. Rate	-0.036	-0.049	0.003	0.002
	(0.049)	(0.061)	(0.005)	(0.004)
Log Home Ex. Rate		0.051		0.024
× Low Ineq. Aversion		(0.081)		(0.048)
Firm×Estab.×Job FE	Y	Y	Y	Y
Year FE	-	-	Y	Y
City×Year FE	Y	Y	-	-
Observations	400,963	400,963	44,757	44,757
R-squared	0.507	0.507	0.530	0.530

Note: This table shows impact that a 100% local currency depreciation (to USD) in a firm's home country has on the presence of occupations in the firm's foreign establishments (columns 1-2) and headquarter (columns 3-4) in the following year. The outcome variable is a dummy variable indicating that an occupation is present in an establishment in a given year. Exchange rates are detrended from home-country-specific time trends. Inequality aversion is defined according to the Hofstede measures of culture. If the variable "Low Ineq. Aversion" equals one, it indicates that the headquarter country is more accepting of inequality than the average country in the sample. Standard errors are reported in parentheses and clustered at the firm×job level. (*=p<0.10, **=p<0.05 ,***=p<0.01)

TABLE A11: IMPACT OF ESTAB. COUNTRY MIN. WAGE/EX. RATE SHOCKS ON WAGES

	Min Wage Change		Ex. Rate Shock	
	%Δ HQ Wage	%Δ Estab. j Wage	Log HQ Wage	Log Estab. j Wage
	(1)	(2)	(3)	(4)
%Δ Min Wage at any Estab.	-0.004			
	(0.049)			
%Δ Min Wage at Estab. ($\neq j$)		0.001		
		(0.001)		
Log Ex. Rate at any Estab.			0.035	
			(0.057)	
Log Ex. Rate at Estab. ($\neq j$)				-0.001
				(0.001)
Firm×Job FE	Y	Y	Y	Y
City×Year FE	Y	Y	Y	Y
Observations	866	130,327	3,992	286,454
R-squared	0.847	0.102	0.999	0.999

Note: This table shows the impact of a 100% minimum wage increase (columns 1 & 2) and a 100% home currency depreciation (columns 3 & 4) in a firm's establishment country on the wages at the firm's headquarter (columns 1 & 3) and other establishments (columns 2 & 4). Exchange rates are detrended from home-country-specific time trends. Only low-skill jobs are included in columns 1 & 2. An occupation is low-skill if its skill level (defined globally by the Company, 16 skill levels in total) is between 1 and 5. Standard errors are reported in parentheses and clustered at the firm×job level. (*=p<0.10, **=p<0.05 ,***=p<0.01)