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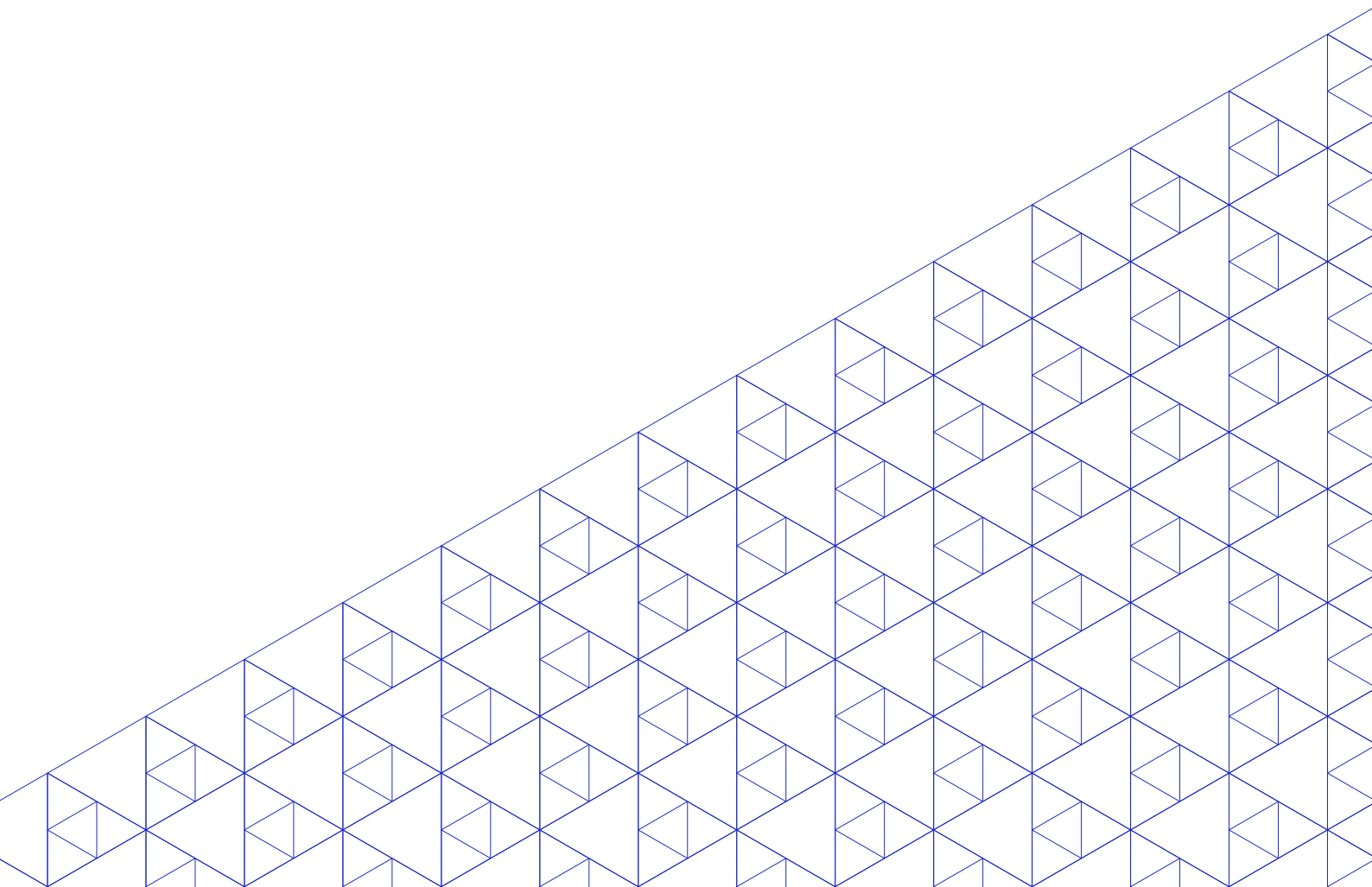
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► Trade and Decent Work:

Adequate Earnings in the Mexican Manufacturing Industries

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Abstract

This paper analyses the impact of non-preferential trade liberalization and exposure to globalization on “adequate earnings” in the Mexican manufacturing industries between 2003 and 2020, using data from the National Survey of Occupation and Employment and from the annual surveys of manufacturing industries. By means of panel data and three-stage least squares estimation strategies, it is found that, although exposure to globalization is not robustly associated with gross daily wages per employee, non-discriminatory trade liberalization and exposure to globalization contributed to a reduction in both the working poverty rate among employed persons and the share of employees with low pay rates. The paper is a contribution to the project “Trade, enterprises and labour markets: Diagnostic and firm level assessment (ASSESS)”, jointly funded by the European Commission and the ILO.

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Introduction

Over the past 15 years, the working poverty rate among employed persons – that is, the share of workers living in households whose per capita labour income is lower than the national poverty line – has increased considerably in Mexico (figure 1). Back in 2005, 31 per cent of the country's labour force suffered working poverty. By 2020 this rate had increased by 9 percentage points (pp). Workers in the manufacturing sector have typically done better, exhibiting an average working poverty rate 6 pp lower than that in non-manufacturing sectors. This advantage, however, decreased by almost 13 per cent between 2005 and 2020 (figure 2). A very similar pattern is observed in the share of employees with low pay rates, that is, the fraction of workers who are paid less than two-thirds of median earnings in the labour market (figures 3 and 4). The International Labour Organization (ILO) has proposed that the working poverty rate among employed persons and the share of employees with low pay rates are the main statistical indicators by which countries can monitor their progress in delivering “adequate earnings”, understood as “a just share of the fruits of progress to all, and a minimum living wage to all employed” (ILO 2013, 65). Adequate earnings are one of the ten substantive elements of the Decent Work Agenda.¹

During the same period, Mexico deepened the trade liberalization and globalization processes that began in 1986 when the country joined the General Agreement on Tariffs and Trade (GATT). It subscribed to seven new trade agreements,² making a total of 13 with 50 countries; to 17 new agreements on the promotion and reciprocal protection of investment, making a total of 32 with 33 countries; and to three new economic complementation and partial scope agreements within the framework of the Latin American Integration Association (ALADI), making a total of nine (Secretaría de Economía 2016). Although the most significant trade events for the Mexican economy – such as the GATT accession and the North American Free Trade Agreement (NAFTA) (replaced in July 2020 with the United States–Mexico–Canada Agreement – USMCA) – occurred in the last two decades of the twentieth century,³ this continued integration effort in the early years of the new millennium translated into a further 11 pp reduction in the country's trade-weighted average non-preferential import tariff (figure 5) and a 27 pp increase in its level of trade openness as measured by the ratio of the sum of imports and exports to the GDP (figure 6).

In the light of all this, it may be tempting to jump to the conclusion that perhaps trade liberalization and globalization have had a prejudicial role in the rise of working poverty and relatively low wages in Mexico, since these two measures of adequate earnings are negatively correlated with the level of import tariffs and positively correlated with trade openness (figure 7). But the data also indicate that the tradable and highly globalized sector of manufacturing has not strongly diverged from other economic sectors and that the manufacturing industries' greater exposure to globalization (measured by the shares of imported inputs in total inputs and of exports in total sales) is not clearly associated with lower wages (figure 8). On top of this, it is worth keeping in mind that some of the trade agreements recently signed by Mexico include labour provisions that set framework conditions for decent work (Sánchez Gómez et al. 2021).

¹ For the ILO (2013, 2008, 1999 and 2021), decent work is central to poverty reduction and to achieving equitable, inclusive and sustainable development. The Framework on the Measurement of Decent Work covers ten elements: employment opportunities; adequate earnings and productive work; decent working time; combining work, family and personal life; work that should be abolished; stability and security at work; equal opportunity and treatment in employment; safe work environment; social security; and social dialogue and employers', and workers' representation.

² These were signed with Uruguay (2004); Japan (2005); Peru (2012); Central America (2013); Panama (2015); Colombia, Peru and Chile for the Pacific Alliance (2016); and Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Peru, New Zealand, Singapore and Viet Nam for the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) (2018), which has not entered fully into force, since it is still awaiting approval by some Members. On 30 December 2018, it entered into force for Australia, Canada, Japan, Mexico, New Zealand and Singapore; and on 14 January 2019 for Viet Nam. See, for example, Government of Canada (2020).

³ See, for example, table 1 in Aleman-Castilla (2006, 16) for a summary of the evolution of the average tariffs between Mexico and the United States for the 1989–2002 period.

So, how do trade liberalization and exposure to globalization relate to adequate earnings? The theory and empirical evidence on trade and its implications for labour markets and decent work are quite extensive (Aleman-Castilla 2020), but much of the attention has focused on a small group of outcomes, such as wages (e.g., Helpman et al. 2017; Lee and Lee 2015; Krishna, Poole and Senses 2014; Kovak 2013), employment (e.g., Dix-Carneiro and Kovak 2017; Coşar, Guner and Tybout 2016; Autor, Dorn and Hanson 2013) or informality (e.g., Dix-Carneiro et al. 2021; Ben Salem and Zaki 2019; Ulyssea and Ponczek 2018; Cruces, Porto and Violaz 2018). Although the study of other aspects has expanded recently (e.g., Ben Yahmed 2017, Hakobyan and McLaren 2017 and Juhn, Gergely and Villegas-Sanchez 2014 on gender disparities; or Kis-Katos and Sparrow 2011, Edmonds, Pavcnik and Topalova 2010 and Olarreaga, Saiovici and Ugarte 2020 on child labour), the evidence regarding working poverty – which relates not only to wages and employment opportunities but also to household size and national poverty lines – is still relatively scarce and ambiguous (ILO 2021). In theory, trade openness should help to reduce poverty (Bhagwati and Srinivasan 2002; Ohlin 1933), but cross-country empirical studies have found that this effect depends on country-specific factors such as trade policies, labour market institutions or even transport infrastructure (Mitra 2016), and that it varies significantly across economic sectors and between rural and urban areas (World Bank Group and WTO 2018 and 2015).

To date, most of the single-country studies have used data from one side of the labour market only, typically from labour force surveys, national censuses or administrative sources. Only recently have researchers begun to make more frequent use of linked employer–employee datasets (LEEDs) (e.g., Dix-Carneiro and Kovak 2019; Alfaro-Urena, Manelici and Vásquez 2019; Schröder 2018). This type of data allows researchers to control for firms’ and workers’ heterogeneity and for characteristics specific to the employment relationship (Mittag 2019; Woodcock 2015; Bryson, Forth and Barber 2006). LEEDs are particularly useful in studying the wage structures of firms, employment mobility, and race and gender discrimination (Abowd, Kramarz and Woodcock 2008). But, despite these advantages, the collection of LEEDs is often expensive and complicated, which partly explains why they have not been more widely used (Jensen 2010).

An alternative could be the complementary use of labour force and establishment surveys.⁴ Whereas the former tend to have little information about workplaces, the latter typically provide scarce data about workers (ILO 2020). However, it is usually possible to link the two at a certain level of aggregation, after separately controlling for worker and establishment characteristics. This paper does precisely that in order to study the effects of non-preferential trade liberalization (i.e., the reduction of the industry-average Most Favoured Nation (MFN) import and export tariffs) and exposure to globalization (i.e., the extent to which domestic firms rely on foreign inputs and markets for the production and sales of finished goods) on adequate earnings in the Mexican manufacturing sector between 2003 and 2020. It provides new evidence on the impact of trade on working poverty, using alternative measures that go beyond those traditionally analysed in studies in this field. Two complementary econometric estimation strategies are used for this purpose. First, a panel data procedure applied to firm-level data from the 2003–09 Annual Industrial Survey (EIA-03) and the 2009–18 Annual Manufacturing Industry Surveys (EAIM-09 and EAIM-13) is used to look at the relationship between gross daily wages per employee and exposure to globalization. Second, a three-stage least squares estimation approach is used to link these surveys with the 2005–20 National Survey of Occupation and Employment (ENOE) at the four-digit industry level of the North American Industry Classification System (NAICS), and with the 2003–17 trade data available from the World Trade Organization’s (WTO’s) DATA and Tariff Download Facility, to estimate the effect of non-preferential trade liberalization and exposure to globalization on the working poverty rate among employed persons and the share of employees with low pay rates.

⁴ See, for example, table 1 in Aleman-Castilla (2006, 16) for a summary of the evolution of the average tariffs between Mexico and the United States for the 1989–2002 period.

The main results can be deemed consistent with the theories of trade where there is firm heterogeneity (e.g., Sampson 2014; Yeaple 2005; Melitz 2003) and with previous findings from related empirical studies (e.g., Matthee, Rankin and Bezuidenhout 2017; Verhoogen 2008; Schank, Schnabel and Wagner 2007). In the manufacturing sector, although gross daily wages per employee were higher in more productive firms and in those with larger shares of income from maquila, sub-maquila and re-manufacture services,⁵ they were not affected by exposure to globalization. On the other hand, non-preferential trade liberalization and higher exposure to globalization contributed to a reduction in both the working poverty rate among employed persons and the share of employees with low pay rates and to a widening of the differences in these two indicators between formal and informal workers. The rest of the paper is organized as follows. Section 1 describes the data and decent work indicators used and presents a preliminary statistical analysis of their distributions and their relationships with the globalization and trade liberalization variables. Section 2 explains the econometric approaches and presents the corresponding results. The last section concludes.

⁵ A maquiladora is a factory at which inputs owned by another firm are assembled into finished products. Sub-maquiladoras provide complementary manufacturing, transformation or repairing services to maquiladoras. Maquila is a term commonly used to refer to the offshoring activities of US companies in Mexico. The EIA-03 survey did not include export-oriented maquiladoras. They were included in the EAIM-09 and EAIM-13 surveys.

► 1 Data and preliminary analysis

This study focuses on the impact of non-preferential *trade liberalization* (i.e., a decrease in the trade-weighted average MFN import and/or export tariffs) and *exposure to globalization* (i.e., the extent to which domestic firms rely on foreign inputs and markets for the production and sales of finished goods) on adequate earnings in the Mexican manufacturing industries over the 2003–18 period. The analysis uses three indicators closely related to those proposed by the ILO for the assessment of the impact of trade on this dimension of decent work (ILO 2021 and 2013):

- a) Gross daily wages per employee (GDWE or *wages*) – an establishment-level variable equal to the average gross wage and benefits⁶ paid per working day to each worker directly employed by the firm in core production activities.
- b) Working poverty rate of employed persons (WPRE or *working poverty*) – an individual-level indicator for workers aged 15 or over, which is equal to 1 if the person lives in a household whose total monthly income is below the national poverty line⁷ and is equal to 0 otherwise.
- c) Employees with low pay rates (ELPR or *low-wage workers*) – an individual-level indicator for occupied workers aged 15 or over, which is equal to 1 if the person is paid less than two-thirds of the median earnings in the labour market and is equal to 0 otherwise.

1.1 Firm, worker and trade data

Given that the objective is to assess the impact of trade on adequate earnings after controlling for worker and firm characteristics, data from the following surveys by the Mexican National Institute for Statistics and Geography (INEGI) are used: the 2003–08 Annual Industrial Survey (EIA-03); the 2009–18 Annual Survey of the Manufacturing Industry (EAIM-09 and EAIM-13); and the 2005–18 first quarters of the National Survey of Occupation and Employment (ENOE). The EIA and EAIM are annual panel-structured surveys that follow manufacturing establishments over time, classifying them into industries according to the six-digit level of the NAICS, and collecting annual information about their labour force; remuneration; hours and days worked; costs, revenues and value of production; inventories; and fixed assets. The EIA-03 covered 231 industries under the 2002 NAICS, followed 7,294 establishments and excluded export-oriented maquiladoras. The EAIM-09 replaced the EIA-03, adding nine more industries under the 2007 NAICS, increasing the number of establishments to 11,455 and including export-oriented maquiladoras. In 2017 INEGI generated the new series EAIM-13, adjusting the number of establishments in the sample to 10,447 and the industries covered to 239 under the 2013 NAICS.⁸ The design of these surveys was based on the International Recommendations for Industrial Statistics of the United Nations (UN 2008), which contain basic guidelines regarding the field of application, statistical units, coverage, data to be collected and published, definitions, methods and organization.⁹ Table 1 shows the annual mean values of the variables constructed for this study, which relate to the cost structure, revenues, profitability, productivity, and asset accumulation characteristics of manufacturing firms.

⁶ That is, wages before taxes, social security and other legally mandated discounts; converted to US dollars using the annual average official exchange rate to pay for obligations denominated in foreign currency, published by Banco de México. See <https://www.banxico.org.mx/SieInternet/>.

⁷ The “poverty line” here refers to the average value, in the first quarter of each year, of the income poverty line for urban areas, estimated by the National Council for Evaluation of Social Development Policy (CONEVAL). See, for instance, CONEVAL (2020b).

⁸ Even though each survey uses a different version of the NAICS, most of the changes between them are reclassifications of specific products at the six-digit level. See <https://www.census.gov/eos/www/naics/>.

⁹ For methodological details of the EIA and EAIM surveys, see INEGI (2007, 2012 and 2019). Owing to data confidentiality and the social distancing measures implemented by INEGI amid the COVID-19 pandemic, access to these surveys was possible only through a remote processing facility. This meant that the code files containing the estimation routines had to be sent to INEGI’s microdata lab to be run using the establishment-level data.

The ENOE, on the other hand, is the quarterly rotating-panel national labour market survey available since 2005. Following households and individuals for five consecutive trimesters, this survey collects data on sociodemographic characteristics such as kinship, sex, age, education, marital status, number of children and geographic location; as well as labour market characteristics for the working-age population (15 years and older), such as economic activity status, occupation, economic sector, size and location of employer, wages, working time, social security coverage and unemployment spells, among others. Since their origin more than 45 years ago, the Mexican labour market surveys have used the ILO criteria as their basic conceptual reference. However, to ensure comparability with new recommendations and to raise information quality standards, they have also considered the conceptual frameworks of other international bodies such as the Organization of Economic Cooperation and Development (OECD) and the United Nations Statistics Division (INEGI 2020). The anonymized microdata of this survey is publicly available in INEGI's website.¹⁰ Table 2 reports mean values of the main characteristics of the working-age interviewees for each year in the sample.

Finally, data from the WTO are used to obtain measures of trade liberalization. Among other topics, the WTO's DATA and Tariff Download Facility¹¹ provide information on MFN applied and bound tariffs, bilateral imports, market access conditions facing exports in top-five export markets, and non-tariff measures indicators for all WTO Members registered under the standard Harmonized System (HS). The MFN tariffs are the normal non-discriminatory duties that a WTO Member charges on imports that are excluded from any free trade or preferential agreement. In this sense, they represent an upper limit for actual trade taxes, since they apply between countries that do not have an agreement, or to products that do not comply with the rules of origin agreed in an agreement. Given that in the period of interest Mexico signed seven new trade deals, which all entered into force at different times, and that this study is interested in the country's aggregate non-preferential trade liberalization experience, the MFN applied tariffs are a suitable indicator to employ. Besides being an adequate measure of applicable trade duties for the period before each free trade agreement entered into force, and an upper limit thereafter, MFN tariffs are still binding for some important trade relationships, such as the one with China, which is Mexico's fourth-largest trade partner.¹² Figure 5 shows the trade-weighted averages of the ad valorem equivalent (AVE) MFN tariffs applied on Mexican imports (TWAIT or *import tariffs*) and exports to the top five trade partners (TWAET or *export tariffs*) for the years available in the period of interest.

1.2 Preliminary analysis

This subsection presents a first glance at the distribution characteristics of *wages* and two measures of exposure to globalization – the share of imported inputs in total inputs (*inputs*) and the share of exports in total net sales (*exports*) – obtained from the establishment surveys; and at the relationship of *import tariffs* and *export tariffs* with the shares of *working poverty* and *low-wage workers*, constructed from the labour force survey. Figures 9 to 11 show boxplots for the four-digit NAICS annual means of *wages*, *inputs* and *exports*. The data points are weighted by the corresponding number of establishments in the sample and are grouped by three-digit NAICS subsectors for ease of presentation. The triangles mark the mean for each subsector; the dashed line indicates the mean for the full sample. Boxplots are useful for analysing the data's variability when the distribution is non-normal. Consider for example the case of subsector 324 "Petroleum and Coal Products". The minimum four-digit NAICS annual mean for *wages* is US\$80 and the maximum is US\$132. The first quartile is US\$89, and the third quartile is US\$113, meaning that 50 per cent of the observations are between these values and that the interquartile range is US\$24, the fourth greatest across subsectors. Given that the median value of *wages* in subsector 324 (the horizontal line inside the box) is US\$99, *wages* are below this value in 50 per cent of cases and the distribution is skewed to the right – the mean is greater than the median – possibly because of variability across time. Figures 9 to 11 suggest an important level of

¹⁰ See <https://www.inegi.org.mx/programas/enoe/15ymas/#Microdatos>.

¹¹ See <https://data.wto.org/> and <http://tariffdata.wto.org/>, respectively.

¹² According to data from *The Atlas of Economic Complexity*, produced by the Growth Lab at Harvard University (see <https://atlas.cid.harvard.edu/>), the top five trade partners of Mexico in 2018 were the United States (75.8 per cent of total gross exports), the European Union (5.8 per cent), Canada (5.1 per cent), China (2.4 per cent) and Japan (1.1 per cent).

heterogeneity in *wages*, *inputs* and *exports* across industries in Mexican manufacturing. Industries in subsector 324 “Petroleum and Coal Products” pay the highest wages and are the least exposed to globalization. In contrast, industries in subsector 315 “Apparel” pay the lowest wages, and those in subsector 334 “Computers and Electronics” exhibit the largest exposure to globalization.

Figures 12 to 14 show the boxplots for these means now grouped by year. There is no clear time trend for *wages* (figure 12), since its mean value barely increases – from US\$37 in 2003 to US\$38 in 2018. Although variability seems to increase during the first years, the interquartile range shrank 16 per cent between 2003 and 2018. The distribution of *inputs* (figure 13) shows more stability through time, with an average value of 29 per cent. Lastly, the distribution of *exports* (figure 14) exhibits an important shift upwards in 2009 – mainly caused by the replacement of the EIA-03 survey by the EAIM-09 survey¹³ – and a weighted mean for the full sample of 25 per cent. Figures 12 to 14 suggest that, although less evident than the group effects, time effects may also be important. Regarding the relationship between wages and exposure to globalization, figures 15 and 16 show scatter plots for *wages* against *inputs* and *exports*, respectively. The points refer to the 2003–18 pp change in the industry means. The simple regression lines in these figures indicate a positive correlation with *inputs* and a negative correlation with *exports*.

Moving now to the ENOE data, figures 17 and 18 present the boxplots for the four-digit NAICS annual means of *working poverty* and *low-wage workers*, grouping the data by two-digit NAICS sectors for ease of presentation. There is some variability across economic sectors. Manufacturing ranks ninth in mean value for *working poverty* and 11th for *low-wage workers*. In terms of data dispersion, it has the fifth-lowest interquartile range for *working poverty* and the third lowest for *low-wage workers*. Figures 19 and 20 show the boxplots of these means grouped by year. Although both *working poverty* and *low-wage workers* increased through time, dispersion increased by 16 per cent for *working poverty* and decreased by 9 per cent for *low-wage workers*. In general the evolution of these distributions is consistent with the national, gender and sectoral trends previously documented (Aleman-Castilla and Cuilty-Esquivel 2020), and with the National Poverty Labour Trend Index (CONEVAL 2020a). Lastly, figures 21 to 24 present the scatter plots for the 2005–17 pp changes in *working poverty* and *low-wage workers* against the corresponding changes in the *import tariffs* (TWAET) and *export tariffs* (TWAET). The regression lines suggest a positive correlation in all cases.

This preliminary analysis yields some interesting insights. First, from the establishment-level data, the gross daily wages per employee, the share of imported inputs in total inputs, and the share of exports in total sales all have high variability across industries, suggesting that group effects are important. Second, changes in gross daily wages seem to be positively correlated with changes in the share of imported inputs and negatively correlated with changes in the share of exports. Third, from the worker-level data, the working poverty rate among employed persons and the share of employees with low pay rates also have important variability across sectors, among which manufacturing registers close to the average. And, fourth, there seems to be a positive correlation between changes in these two decent work indicators and changes in the trade liberalization variables, implying that lower non-preferential import and export tariffs will be associated with more adequate earnings across tradable industries.

¹³ This is confirmed thanks to the fact that both surveys include the year 2009 in their respective original series, so the distributions obtained using the EIA-03 and EAIM-09 series can be compared with each other and with those of other years in the sample. Let us also remember from footnote 5 and the previous subsection that the EIA-03 survey did not include export-oriented maquiladoras in its sample and that these firms were added in the EAIM surveys. Finally, it is worth noting that the 2009 data from the EAIM-09 series is used here in compiling the full 2003–18 dataset.

► 2 Econometric analysis

As described above, the econometric analysis consists of two parts. First, a panel data estimation procedure is carried out on pooled data from the EIA-03, EAIM-09 and EAIM-13 establishment surveys, to look at the relationship between *wages* and exposure to globalization (i.e., *inputs* and *exports*) at the firm level.¹⁴ This part of the analysis enables the estimation of causal effects after controlling for observable and unobservable characteristics. Second, a three-stage least squares estimation strategy is used to link the data from the establishment surveys with that from the ENOE labour force survey, and with the WTO trade data at the four-digit NAICS level,¹⁵ after controlling separately for observable characteristics of establishments and workers for each year in the samples. We thereby estimate the effect of non-preferential trade liberalization (i.e., *import tariffs* and *export tariffs*) and exposure to globalization on *working poverty* and *low-wage workers* in tradable industries, and particularly ones in the manufacturing sector.

2.1 Panel data

The effect of exposure to globalization on *wages* (GDWE) in the Mexican manufacturing sector is estimated using the following equation:

$$y_{it} = \alpha_i + \beta G_{it} + \gamma X_{it} + \delta_t + \epsilon_{it} \quad (1)$$

where y_{it} is the natural logarithm of *wages* in firm i at time t ; α_i is a firm effect; G_{it} is the matrix of exposure to globalization variables *inputs* and *exports*; X_{it} is the matrix of additional characteristics listed in table 1 that relate to the productivity, profitability, revenues, and cost structures of firms; δ_t is a time effect; and ϵ_{it} is an idiosyncratic error term. Equation (1) was fitted using pooling (PM), random effects (RE) and fixed effects (FE) models, but the last of these are preferred over the other two alternatives.¹⁶ Arellano's (1987) clustered robust standard errors were calculated in all cases. The results are reported in table 3. Column (c) indicates that *wages* increase with hours worked, advertising costs, income from maquila services, and productivity. There is no significant effect from variables describing exposure to globalization. The remaining columns present estimates under alternative specifications. Column (d) uses 1-year-lagged *inputs* and *exports* to consider the possibility that the effect of these variables may not be immediate; column (e) includes 1 and 2 year lags of *wages* as regressors, to obtain lower limit estimates of the causal effects (Angrist and Pischke 2009, 243–257). Lastly, columns (f) and (g) present the estimates when the EIA and EAIM samples are used separately. In sum, in the Mexican manufacturing sector, wages are higher in more productive firms, with larger shares of income from maquila, sub-maquila and re-manufacture services; and they are not significantly related to the share of imported inputs in total inputs or to the share of exports in total net sales.

¹⁴ Given that one firm may have more than one establishment, aggregation at the firm level is obtained by averaging the relevant establishment-level data. This is possible and in fact necessary for the panel data analysis in this study, since the EIA and EAIM samples include only a firm-level identifier.

¹⁵ This is the most disaggregated level of industry affiliation available in the ENOE, which is actually slightly different from that of the NAICS: ENOE's four-digit industry classification code is less disaggregated, but that of NAICS can be easily matched to it. For example, NAICS industries 3121 "Beverage Manufacturing" and 3122 "Tobacco Manufacturing" are aggregated in ENOE's industry 3120 "Beverages and Tobacco Industry". For more detail, see INEGI (2015, 9–16).

¹⁶ Lagrange multiplier tests for the significance of firm and time effects (Gourieroux, Holly and Monfort 1982) and Hausman tests for selection between fixed and random effects models (Hausman 1978) were carried out. In all cases the null hypotheses of no significant firm and time effects and no systematic difference between fixed and random effects coefficients were rejected.

2.2 Three-stage least squares

The effect of trade liberalization and exposure to globalization on *working poverty* (WPRE) and *low-wage workers* (ELPR) is estimated using a three-stage least squares approach, where the first stage consists of estimating the following linear probability model using the ENOE data, for each year in the sample separately:

$$w_{ijt} = H_{ijt}\beta_{Ht} + I_{ijt} * \delta_{jt} + \epsilon_{ijt} \quad (2)$$

where w_{ijt} refers to each of the *working poverty* and *low-wage workers* indicators for worker i in industry j at time t , H_{ijt} is the vector of additional worker characteristics listed in table 2 and a group of indicators for the city of residence, I_{ijt} is a set of dummy variables for worker i 's industry affiliation, and ϵ_{ijt} is the error term. The coefficients δ_{jt} capture the part of the variation in w_{ijt} that is attributable to industry affiliation. The model in equation (2) is also expanded to assess the effect on the working poverty and low wage gaps between formal and informal workers:

$$w_{ijt} = H_{ijt}\beta_{Ht} + (H_{ijt} \times f_{ijt})\varphi_{(H \times f)t} + I_{ijt} * \delta_{jt} + (I_{ijt} \times f_{ijt})\mu_{(I \times f)jt} + \epsilon_{ijt} \quad (3)$$

where f_{ijt} is a dummy variable for informal workers, and $(H_{ijt} \times f_{ijt})$ and $(I_{ijt} \times f_{ijt})$ are matrices of interactions of the vector H_{ijt} and the industry dummies, respectively, with this informality indicator. The coefficients $\varphi_{(H \times f)t}$ capture the variation that is attributable to differences in individual characteristics between formal and informal workers, and the coefficients $\mu_{(H \times f)jt}$ capture the variation that is attributable to differences in industry affiliation. In the second stage, a linear model is estimated using the EIA and EAIM establishment surveys' data, for each year in the samples:

$$z_{ijt} = K_{ijt}\beta_{Kt} + I_{ijt} * \gamma_{jt} + u_{ijt} \quad (4)$$

where z_{ijt} refers to each of the two variables of exposure to globalization *inputs* and *exports* for establishment i in industry j at time t , K_{ijt} is the vector of establishment characteristics listed in table 1, I_{ijt} is a set of industry dummies, and u_{ijt} is the error term. The coefficients γ_{jt} capture the part of the variation that is attributable to industry affiliation. Finally, the estimated coefficients δ_{jt} , $\mu_{(H \times f)jt}$ and γ_{jt} are used together to estimate the parameters of the following equation:

$$DW_{jt} = T_{jt}\alpha_T + \gamma_{jt}\beta_Y + Y_t\theta_Y + I_j\eta_j + (I_j \times tr_t)\phi_{(I \times tr)} + \omega_{jt} \quad (5)$$

where DW_{jt} refers to each of the industry differentials δ_{jt} and $\mu_{(H \times f)jt}$, T_{jt} is the vector of *import tariffs* (TWAET) and *export tariffs* (TWAET), Y_t is a set of year dummies, I_j is a group of industry indicators, $(I_j \times tr_t)$ are industry time trends, and ω_{jt} is the error term. Identification of α_T and β_Y comes from within-industry fluctuations of T and Y around a time trend. A value of 0 is imputed to these two groups of variables in non-tradable and non-manufacturing observations, respectively,¹⁷ so that they do not contribute to the estimation of α_T and β_Y but can still be used to obtain better estimates of the year effects. The parameters in equation (5) are estimated using weighted least squares, with weights equal to the inverse of the variance of the coefficients δ_{jt} and $\mu_{(H \times f)jt}$, and Newey–West standard errors with one lag are computed to account for possible autocorrelation stemming from the rotating-panel structure of the ENOE survey. For the first and second stages, sandwich standard errors (Liang and Zeger 1986) adjusted by the number of clusters (four-digit NAICS industries) are estimated.

¹⁷ In the context of the present study, non-tradable industries consist mainly of those in the following economic sectors: Utilities; Construction; Wholesale Trade; Retail Trade; Transportation and Warehousing; Real Estate and Rental and Leasing; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation; Educational Services; Health Care and Social Assistance; Arts, Entertainment and Recreation; Accommodation and Food Services; Other Services (except Public Administration); and Public Administration. They also include insufficiently described activities in Agriculture, Forestry, Fishing and Hunting; Mining, Quarrying and Oil and Gas Extraction; Information; and Finance and Insurance.

A. First stage results

Estimation of the parameters in equations (2) and (3) is useful to study the determinants of *working poverty* and *low-wage workers* and to identify the differences in these between formal and informal workers. The results are reported in tables 4 to 7. For most of the years in the sample, the probability of *working poverty* (table 4) increases with age and is greater for men and informal workers; it decreases at an increasing rate with years of schooling and is lower for married workers, household leaders, and workers living in net exporter states. Results are similar for *low-wage workers* (table 5). When equation (3) is fitted for *working poverty* (i-WPRE, table 6), age and being an employer are found to have less effect on informal workers, and women in informal jobs are found to be more likely to experience household working poverty. Likewise, the estimates of equation (3) for *low-wage workers* (i-ELPR, table 7) suggest that informal workers are less effected by age, years of schooling, being head of the household or being an employer, but the effect is larger if they are women. As described above, all these regressions included dummy variables for cities and industries. In most cases the corresponding coefficients were individually and jointly statistically significant and were also somewhat correlated through time.¹⁸ A high (low) year-to-year correlation could indicate a low (high) sensitivity to changes in the economic environment such as non-preferential trade liberalization or exposure to globalization (Goldberg and Pavcnik 2003). Figures 25 to 28 plot the weighted averages of these industry differentials for the manufacturing and non-manufacturing industries in each year of the sample, with weights equal to the inverse of the corresponding estimated variances of these estimated industry differentials.

B. Second stage results

As with the worker-level data, the estimation of the parameters in equation (4) can be used to analyse the relationship between the establishment characteristics and the level of exposure to globalization. The corresponding results are reported in tables 8 and 9. For most years in the sample, the share of *inputs* (table 8) increases with female participation in the workforce, with *wages* and *exports* and, for some years, with machinery & equipment and asset accumulation; and it decreases against fuel, energy and labour subcontracting costs. The share of *exports* (table 9), on the other hand, is positively related to freight costs, *inputs* and machinery & equipment and negatively related to advertising costs. These regressions also included industry dummies, which in most cases were statistically significant, and are strongly correlated through time.¹⁹ Figures 29 and 30 plot the weighted averages of these industry differentials for each year in the sample. On average, 11 pp of *inputs* and 6 pp of *exports* are explained by industry affiliation within the manufacturing sector. These graphs also show the possible effects of major trade shocks, such as the 2008–09 financial crisis, the trade wars waged by the United States of America in 2016 and the beginning of USMCA negotiations in 2017.

C. Third stage results

After controlling for worker and establishment characteristics, the third and last step consists of estimating the parameters of equation (5). Table 10 reports the corresponding results. For each dependent variable, column (a) presents the estimates obtained when only the *import tariffs* and *export tariffs* are used as regressors and the industry trends are not included. In this case the *import tariffs* have a positive and significant effect on *working poverty* (WPRE) and *low-wage workers* (ELPR) and there is no relationship with either of the within-industry informality differentials, i-WPRE and i-ELPR. Column (b) shows that this result holds when industry trends are included in the regression. The last two columns explore the possibility of a different effect for manufacturing industries than in other tradable industries; they also include the exposure to globalization variables *inputs* and *exports* as regressors, with and without the industry-trend variables. Column (d) reveals differences in the effect of *import tariffs* and *export tariffs* across sectors and that *inputs*

¹⁸ The average year-to-year correlation coefficients were 0.422 for WPRE, 0.483 for ELPR, 0.140 for i-WPRE and 0.167 for i-ELPR.

¹⁹ The average year-to-year correlation coefficients in this case were 0.977 for *inputs* and 0.962 for *exports*.

and *exports* are also important. These estimates imply that, given an 11.1 pp reduction in *import tariffs* and a 0.1 pp reduction in *export tariffs*, together with a 2.6 pp increase in *inputs* and an 11.5 pp increase in *exports* – changes equivalent to the Mexican experience in the period of study – the average manufacturing industry would undergo a reduction of 2.5 pp and 1.8 pp in *working poverty* and *low-wage workers*, respectively. Such changes would also translate into a 2.1 pp and 4.4 pp enlargement of the gap between informal and formal workers in the incidence of working poverty and low pay rates (i-WPRE and i-ELPR), respectively.

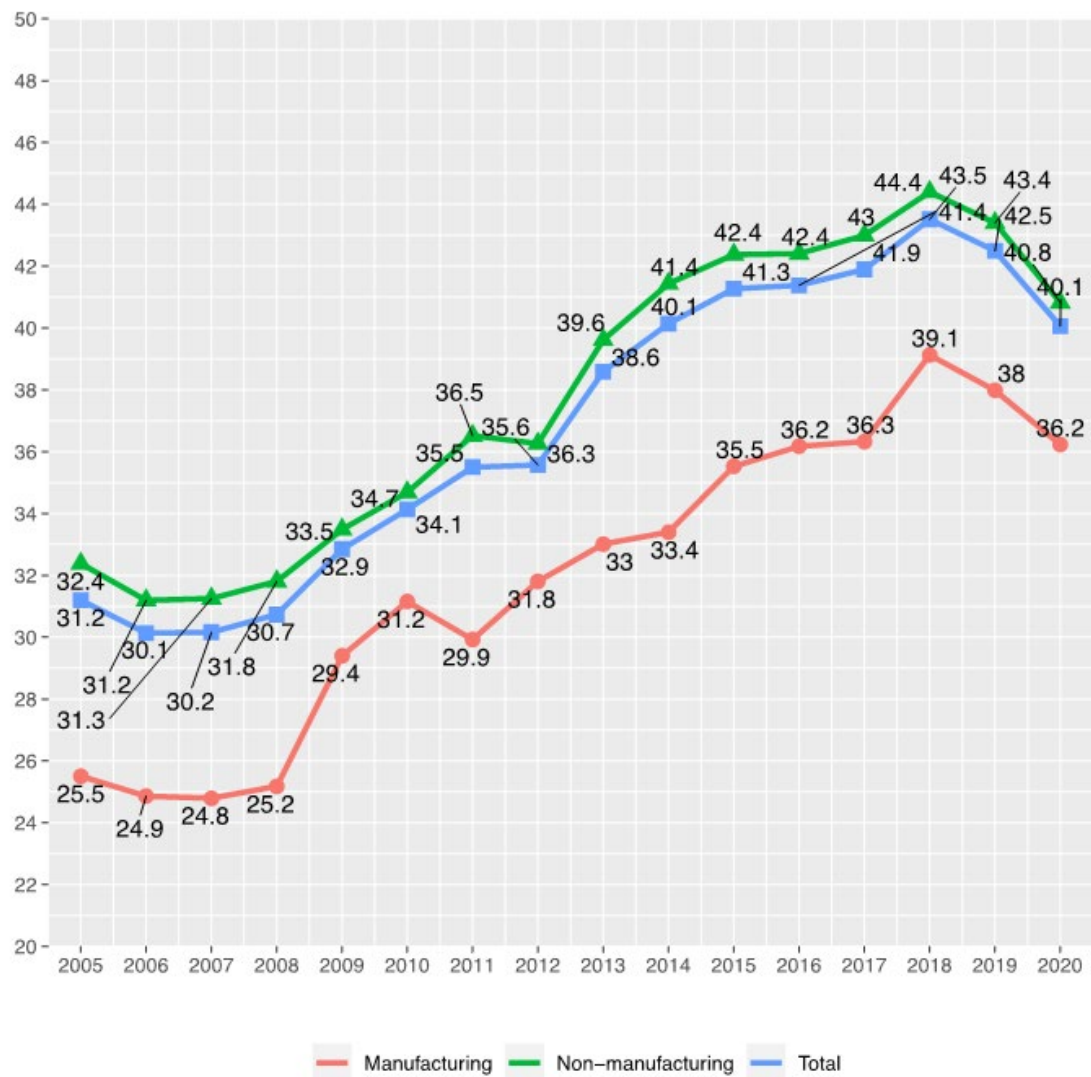
In sum, the first stage of the analysis demonstrates that *working poverty* increases with age; decreases with schooling; and is lower for married workers, household leaders and workers living in net exporter states and higher for men and informal workers. The results are similar for *low-wage workers*. Women in informal jobs are more likely to experience household working poverty and to get lower wages. According to the second stage, the share of *inputs* is larger in establishments with larger shares of *exports* and of women in the workforce; it also increases with *wages* and machinery & equipment. On the other hand, the share of *exports* increases with freight costs, *inputs* and machinery & equipment. Lastly, from the third stage, *import tariffs*, *export tariffs*, *inputs* and *exports* all have significant effects on *working poverty* and *low-wage workers*; the first two of these variables also affect the differences in adequate earnings between formal and informal workers. These results imply that non-preferential trade liberalization and higher exposure to globalization have helped to reduce working poverty and improve wages in Mexican manufacturing industries over the last 15 years.

Conclusions

This paper has investigated the effect of non-preferential trade liberalization and exposure to globalization on adequate earnings in Mexican manufacturing industries between 2003 and 2020. During this period, when the country subscribed to seven new trade agreements, 17 new bilateral investment agreements and three new economic complementation agreements, the proportion of its people experiencing working poverty and low wages increase by 9 and 4 pp, respectively. Although it may be tempting to infer that non-discriminatory trade liberalization and a higher exposure to globalization have had a prejudicial role, the analysis suggests that they have not. Panel data estimations using the 2003–18 surveys of manufacturing establishments indicate that, although gross daily wages per employee are higher in more productive firms, and in those with larger shares of income from maquila, sub-maquila and re-manufacture services, they are not significantly related to the share of imported inputs in total inputs or to the share of exports in total net sales. Using a three-stage least squares procedure, these establishment surveys were linked to the 2005–20 national labour force survey and to MFN tariff and trade data from the WTO. After controlling separately for observable characteristics of establishments and workers, it was found that recent non-preferential trade liberalization and higher exposure to globalization contributed in Mexican manufacturing industries to a reduction in working poverty and the share of employees with low pay rates. However, MFN trade liberalization also contributed to an expanding gap in adequate earnings between formal and informal workers.

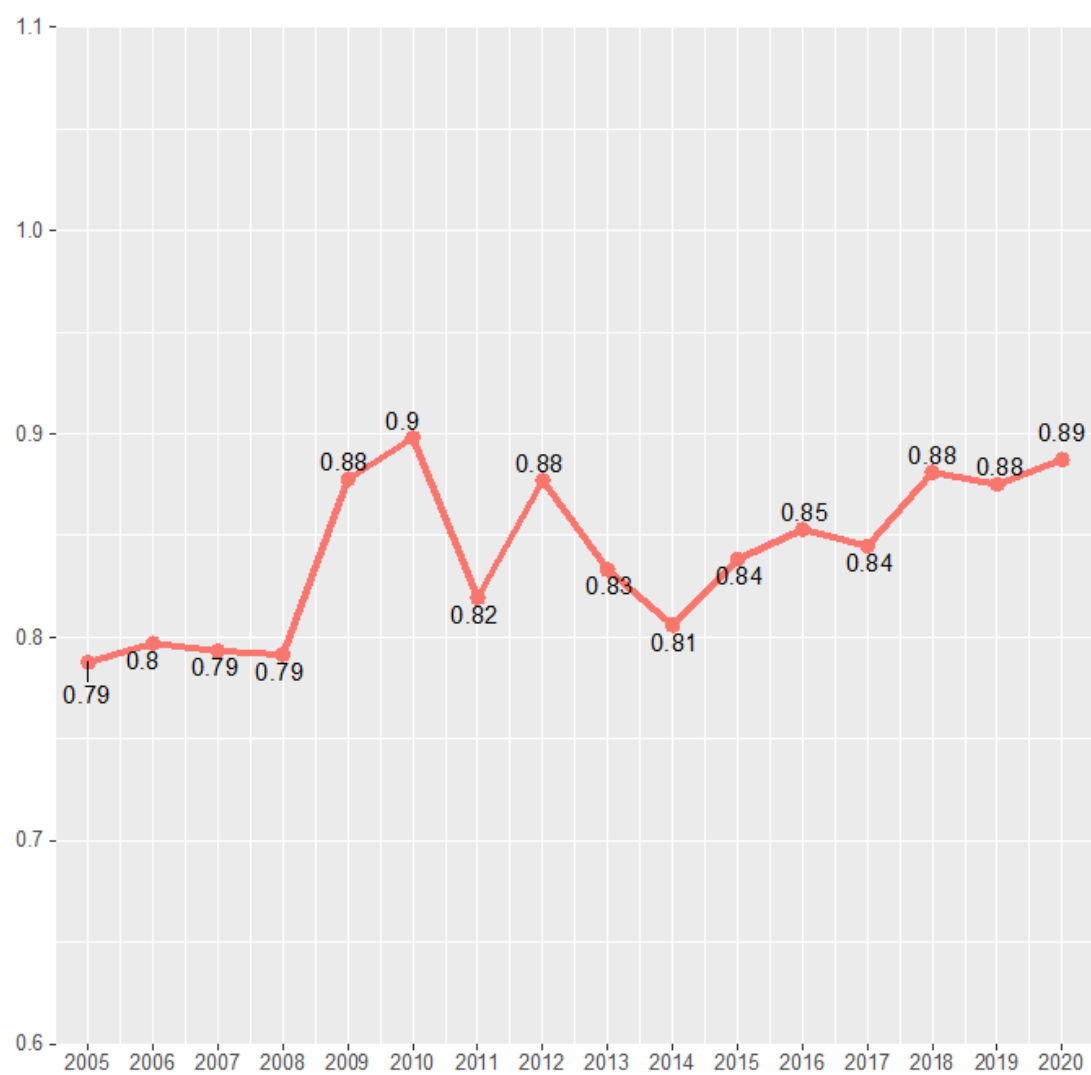
Annex

► **Figure 1. Working poverty rate of employed persons (WPRE) (percentage of employed persons living in households with incomes below the national poverty line)**



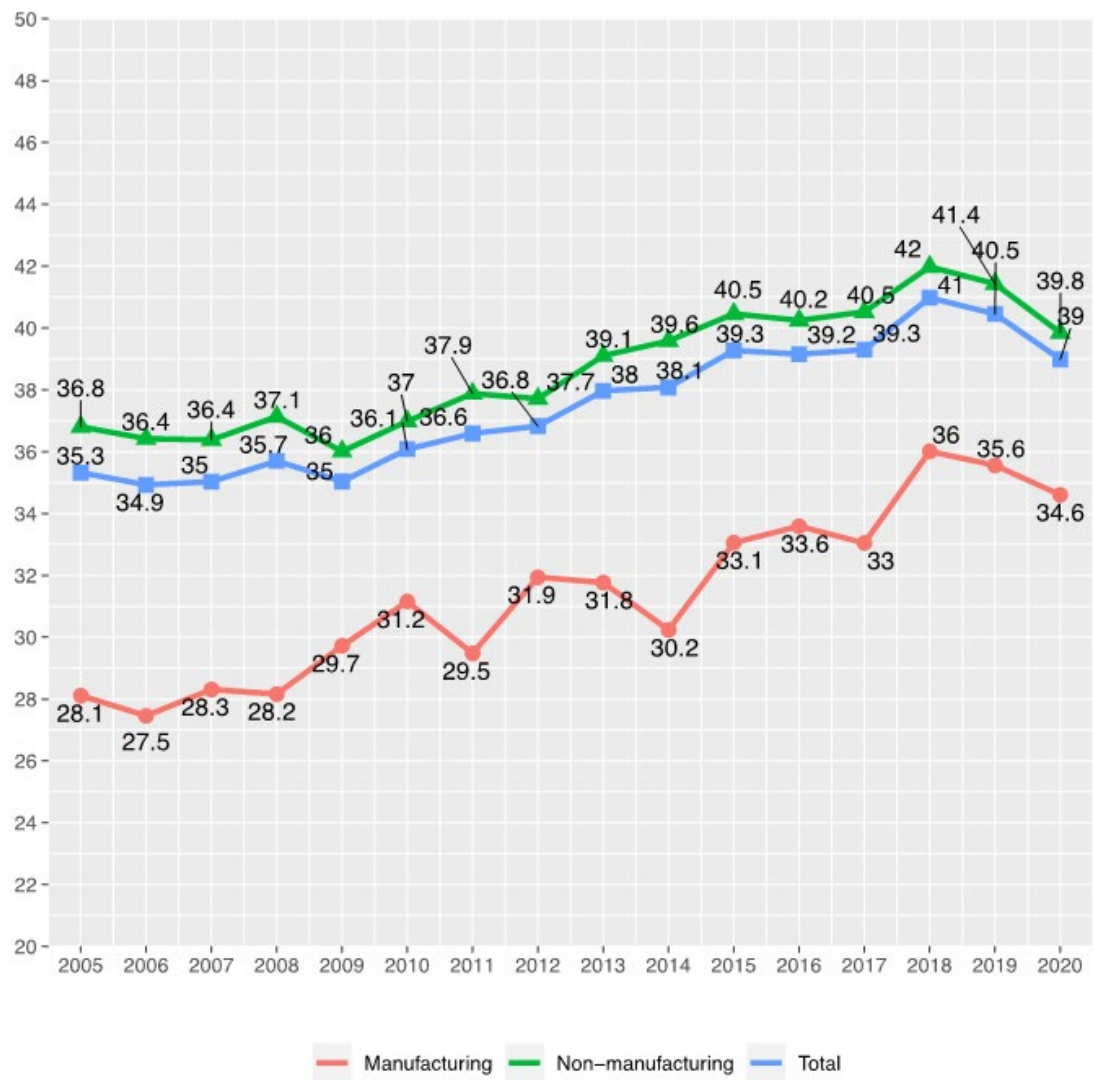
Source: Author's calculations using labour force data from ENOE (INEGI) and the national urban poverty lines (CONEVAL).

► Figure 2. WPRE gap between manufacturing and non-manufacturing industries (ratio of WPRE manufacturing to WPRE non-manufacturing)



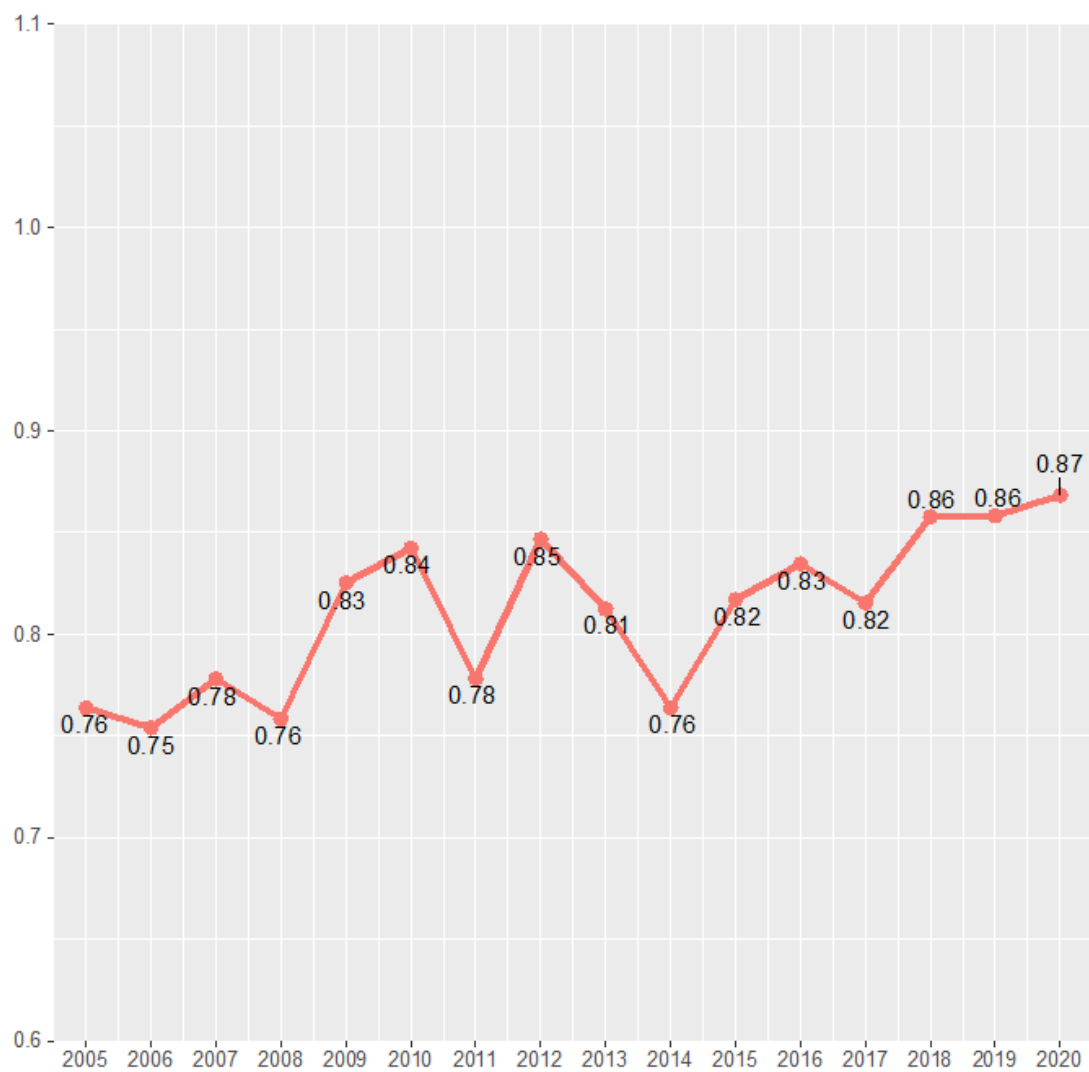
Source: Author's calculations using labour force data from ENOE (INEGI) and the national urban poverty lines (CONEVAL).

► Figure 3. Employees with low pay rates (ELPR) (percentage of employees paid less than two-thirds of median earnings)



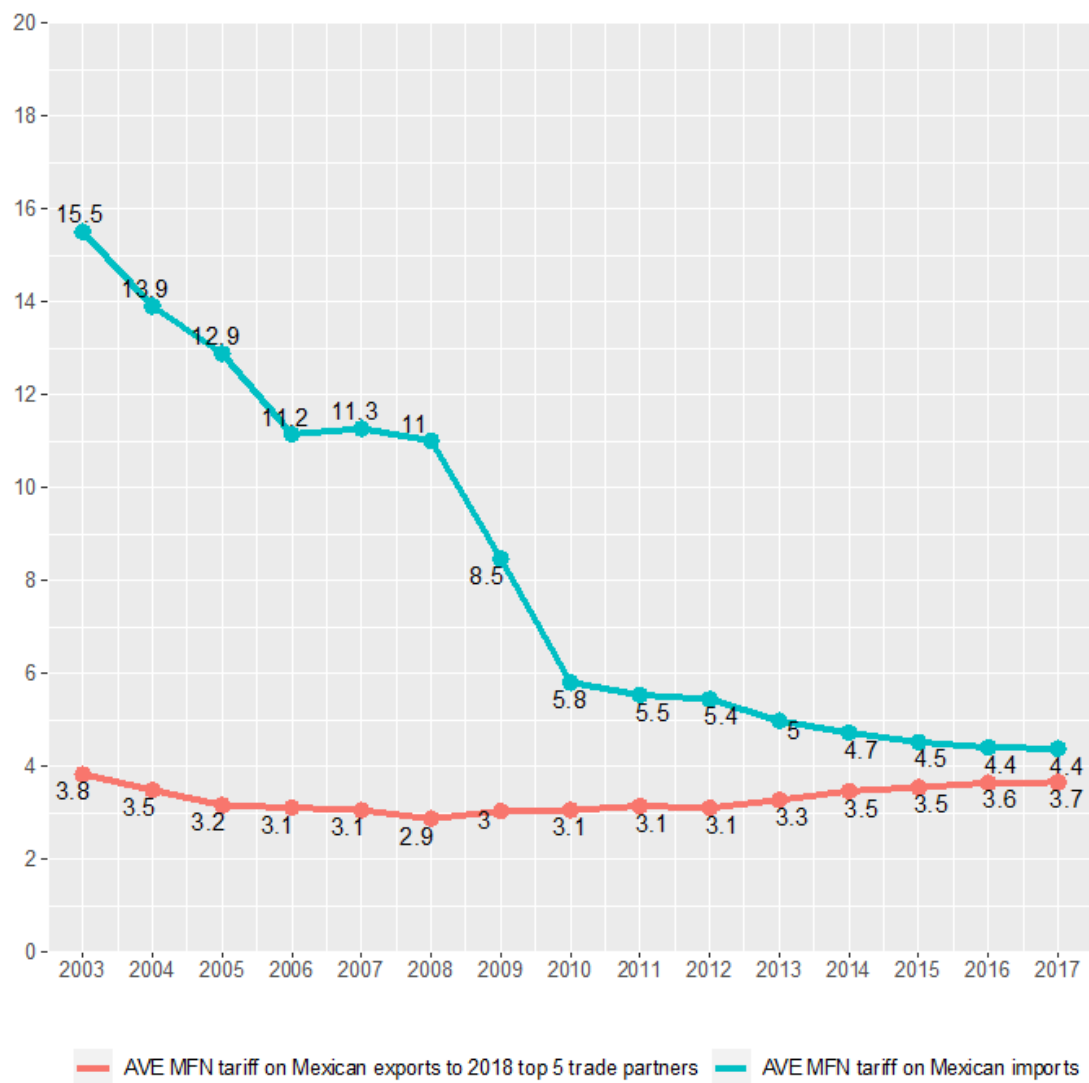
Source: Author's calculations using labour force data from ENOE (INEGI).

► Figure 4. ELPR gap between manufacturing and non-manufacturing industries (ratio of ELPR manufacturing to ELPR non-manufacturing)



Source: Author's calculations using labour force data from ENOE (INEGI).

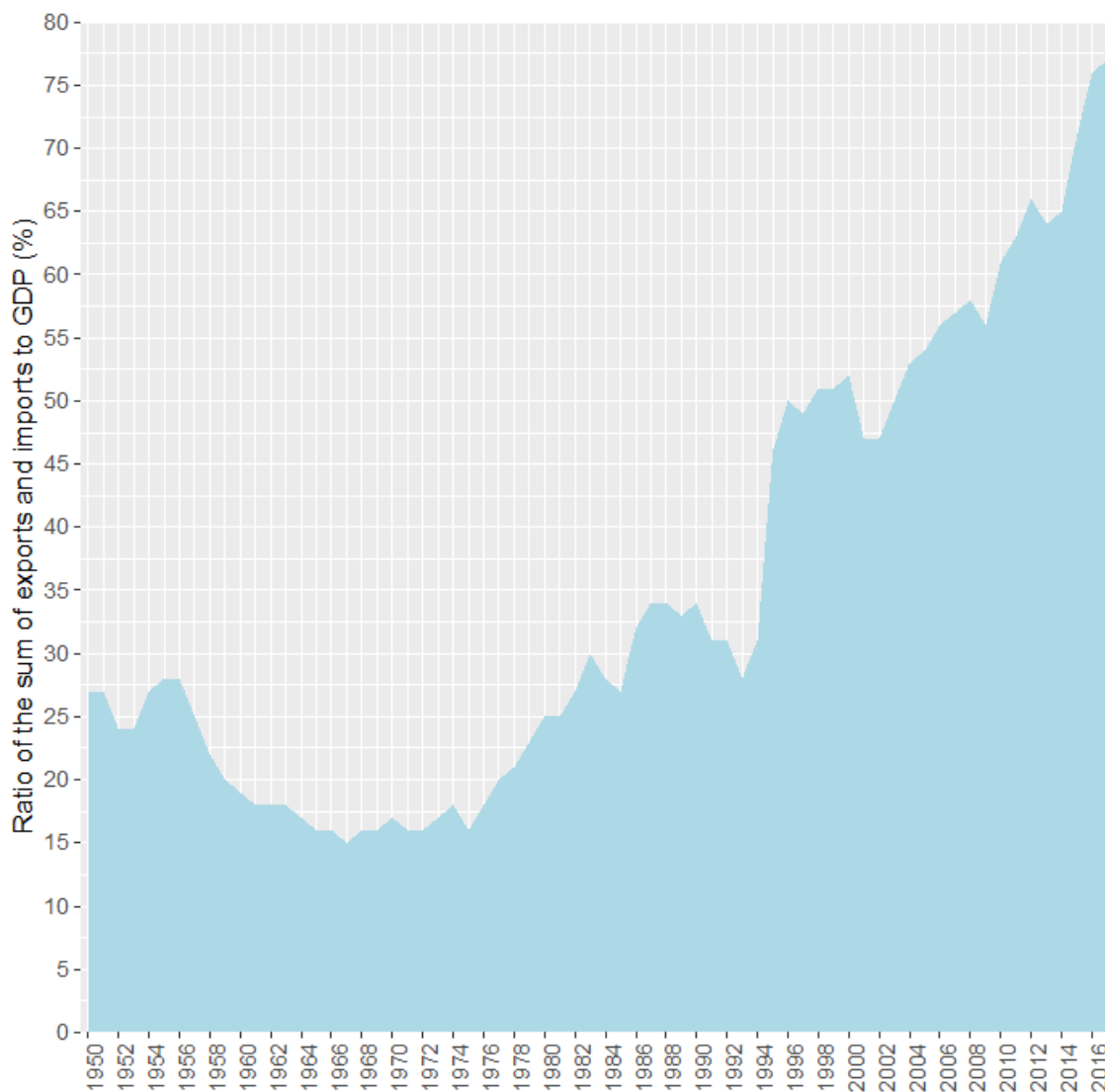
► Figure 5. Weighted average tariffs on Mexican imports and exports, 2003–17



Note: Weights equal to import/export volumes at the six-digit HS level.

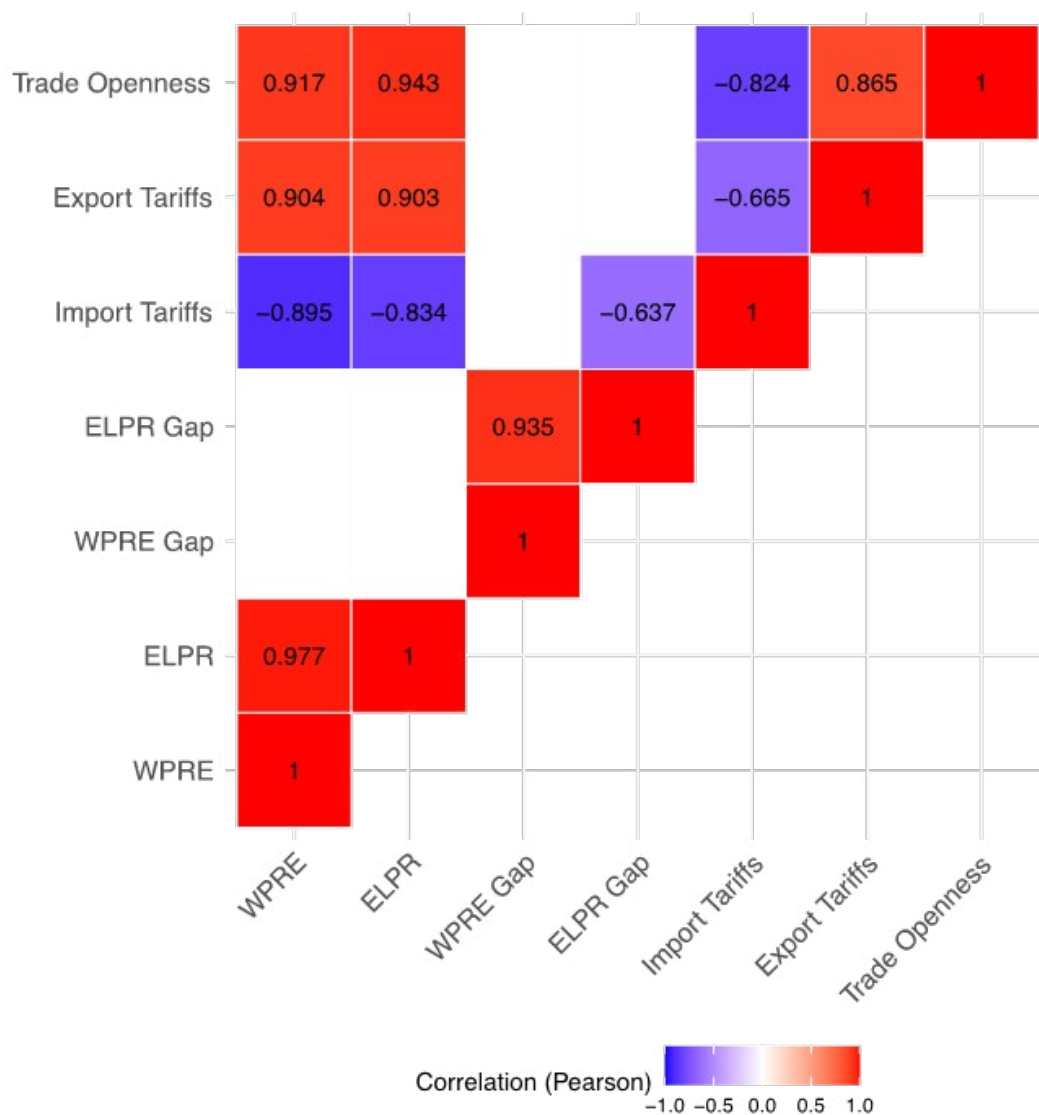
Source: Author's calculations with data from WTO.

► Figure 6. Trade openness in Mexico, 1950–2017



Source: Our World in Data. Trade Openness, 1950 to 2017, Oxford Martin School, University of Oxford (available at <https://ourworldindata.org/trade-and-globalization>), based on work by Feenstra, Inklaar and Timmer (2015).

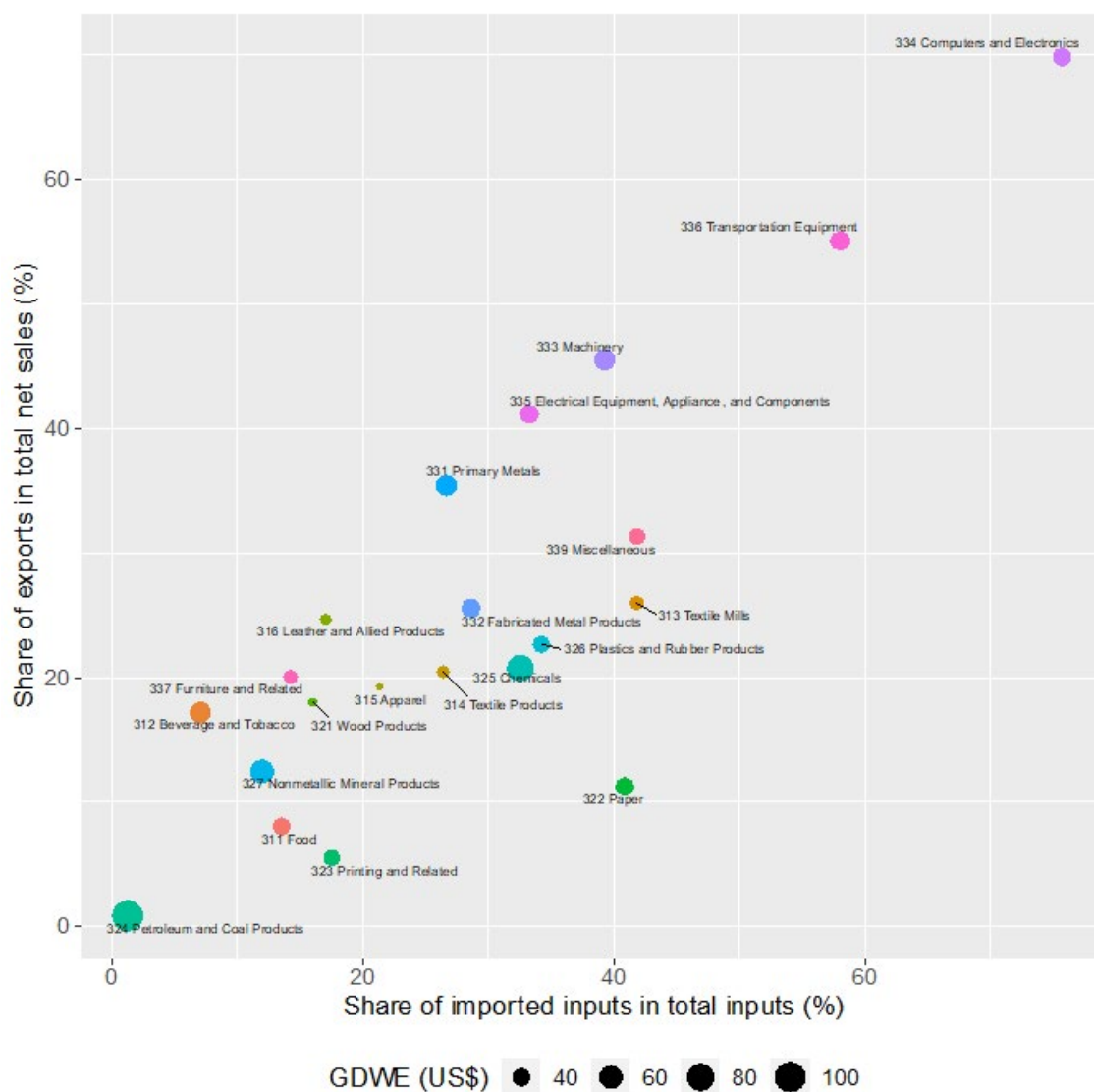
► Figure 7. Correlations for trade and decent work indicators



Notes: Trade Openness = sum of imports and exports as percentage of GDP; Import Tariffs = weighted average MFN import tariff; Export Tariffs = weighted average MFN export tariffs to top five partners; WPRE = working poverty rate of employed persons; ELPR = employees with low pay rates; WPRE Gap = WPRE manufacturing / WPRE non-manufacturing; ELPR Gap = ELPR manufacturing / ELPR non-manufacturing. Only significant correlations (at a 5 per cent level) are shown.

Source: Author's calculations using data from ENOE (INEGI), WTO and Our World in Data (based on Feenstra, Inklaar and Timmer 2015).

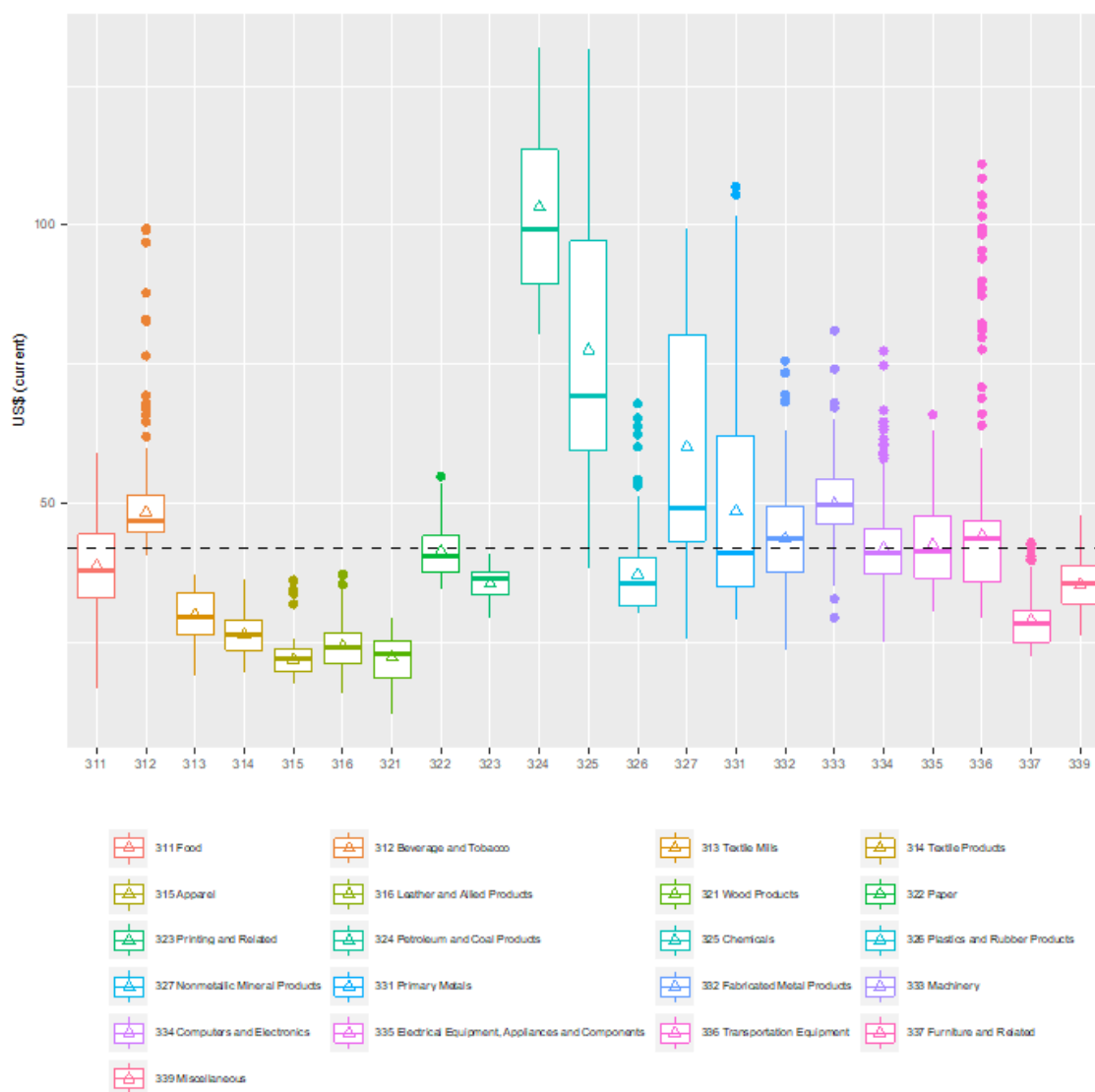
► **Figure 8. Globalization and gross daily wages per employee (GDWE) (2003–18 weighted average figures for three-digit NAICS Mexican manufacturing)**



Note: Weights equal to the number of establishments surveyed for each year-subsector.

Source: Author's calculations using data from the establishment-level surveys for the manufacturing sector EIA-03, EAIM-09 and EAIM-13 (INEGI).

► Figure 9. Gross daily wages per employee (GDWE) (distribution of four-digit NAICS annual means, grouped by three-digit NAICS subsector)



Note: Triangles represent weighted means for each three-digit NAICS subsector. The dashed line indicates the weighted mean for the full sample.

► **Figure 10. Share of imported inputs in total inputs (*inputs*) (distribution of four-digit NAICS annual means, grouped by three-digit NAICS subsector)**



Note: Triangles represent weighted means for each three-digit NAICS subsector. The dashed line indicates the weighted mean for the full sample.

► **Figure 11. Share of exports in total sales (*exports*) (distribution of four-digit NAICS annual means, grouped by three-digit NAICS subsector)**



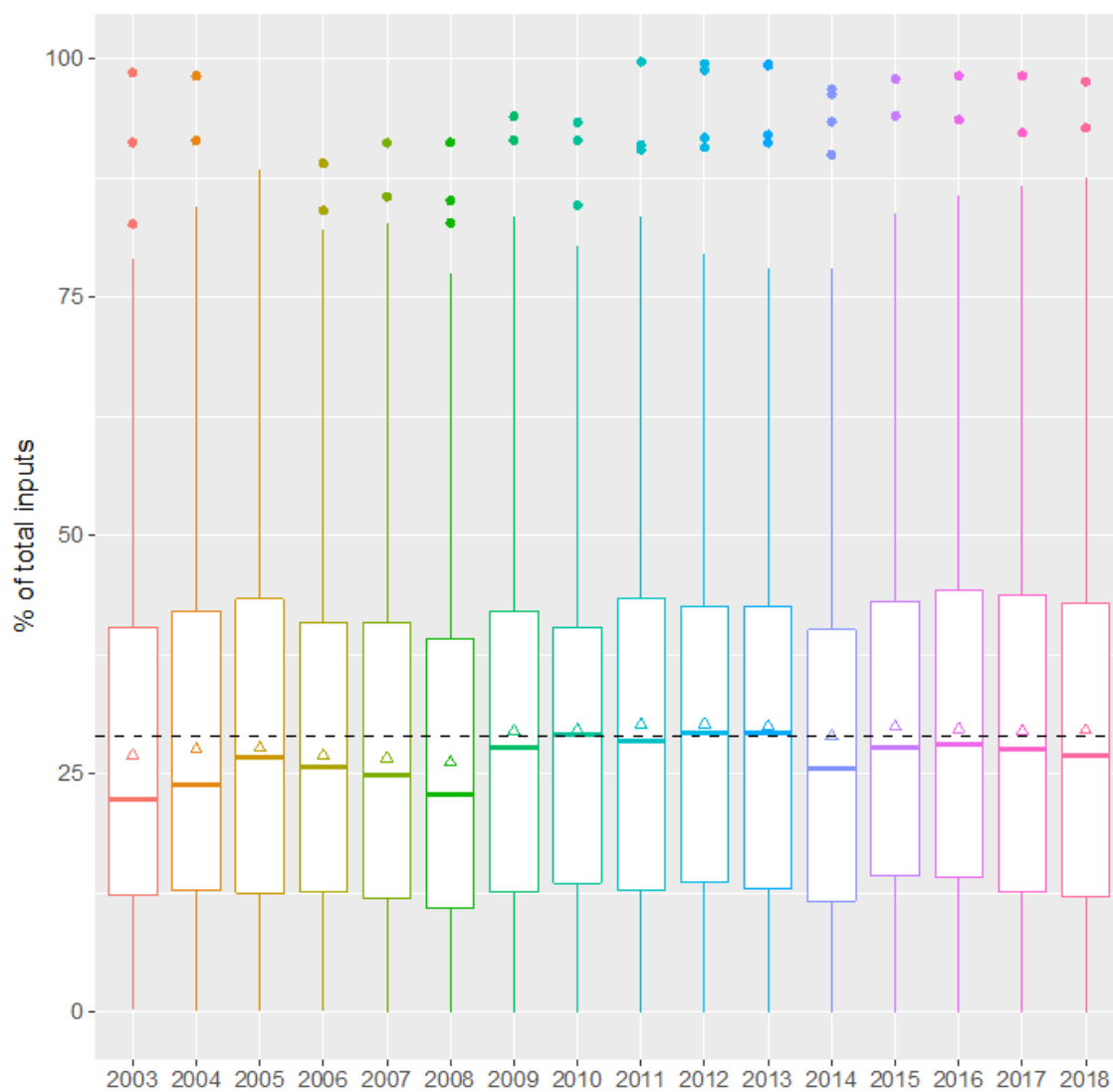
Note: Triangles represent weighted means for each three-digit NAICS subsector. The dashed line indicates the weighted mean for the full sample.

► Figure 12. Gross daily wages per employee (GDWE) (distribution of four-digit NAICS means for each year in the sample)



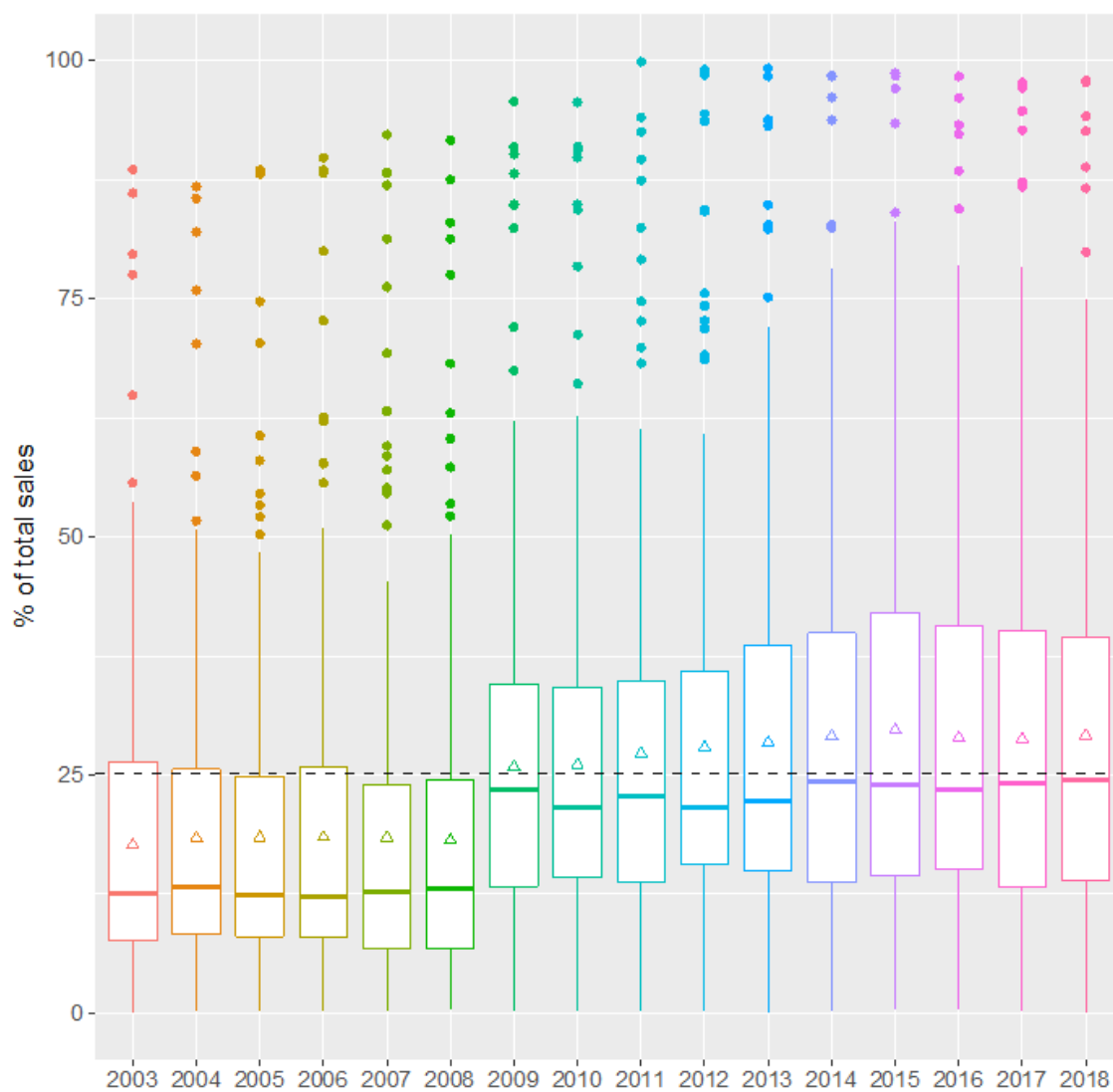
Note: Triangles represent weighted means for each year. The dashed line indicates the weighted mean for the full sample.

► **Figure 13. Share of imported inputs in total inputs (*inputs*) (distribution of four-digit NAICS means for each year in the sample)**

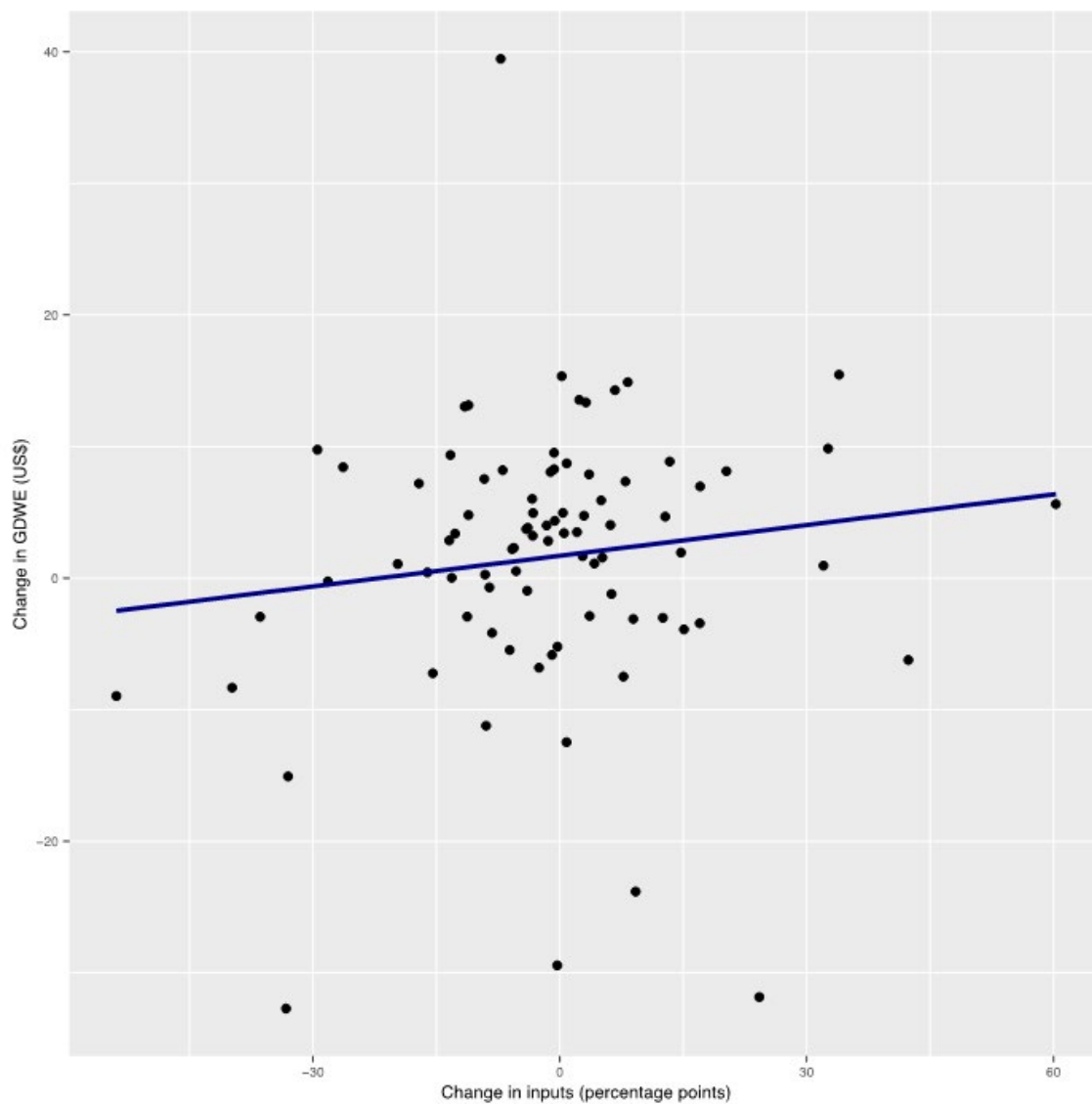


Note: Triangles represent weighted means for each year. The dashed line indicates the weighted mean for the full sample.

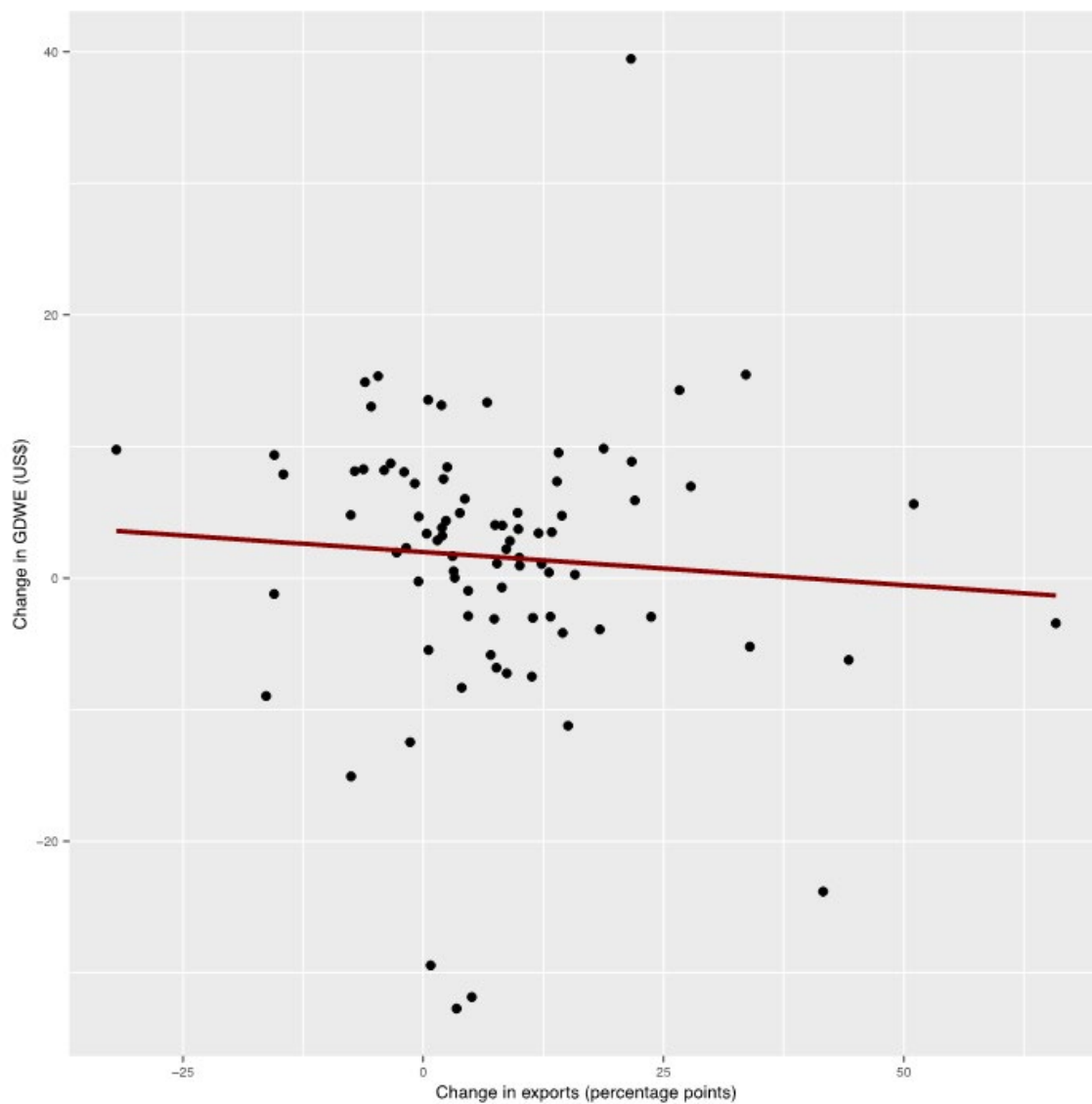
► Figure 14. Share of exports in total sales (*exports*) (distribution of four-digit NAICS means for each year in the sample)



Note: Triangles represent weighted means for each year. The dashed line indicates the weighted mean for the full sample.

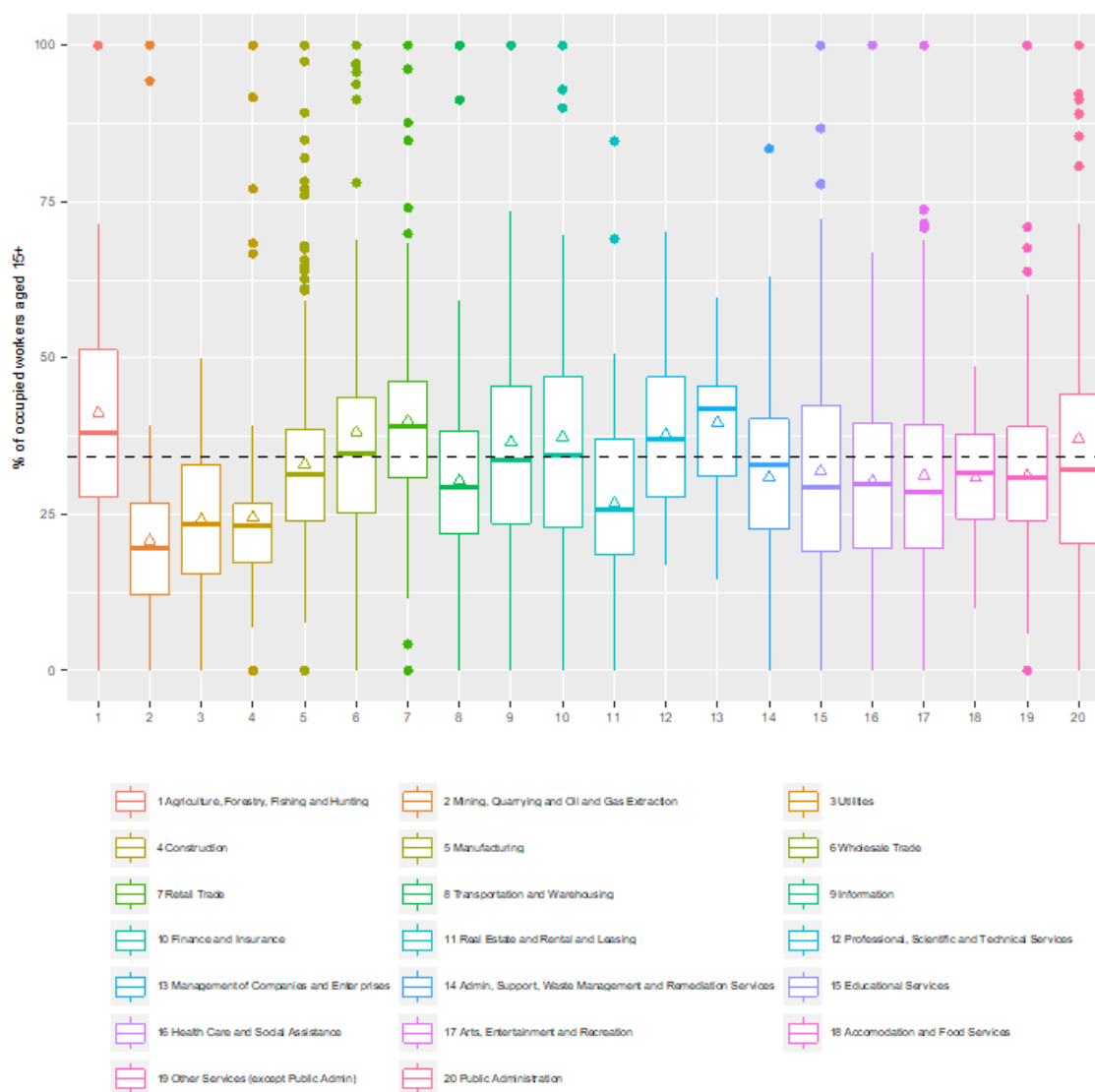
► Figure 15. Share of imported inputs (*inputs*) vs. gross daily wage per employee (GDWE), 2003–18

Note: Observations are four-digit NAICS industry mean values. The estimated equation of the simple regression line is $y = 1.698 + 0.078x$.

► Figure 16. Share of exports (*exports*) vs. gross daily wage per employee (GDWE), 2003–18

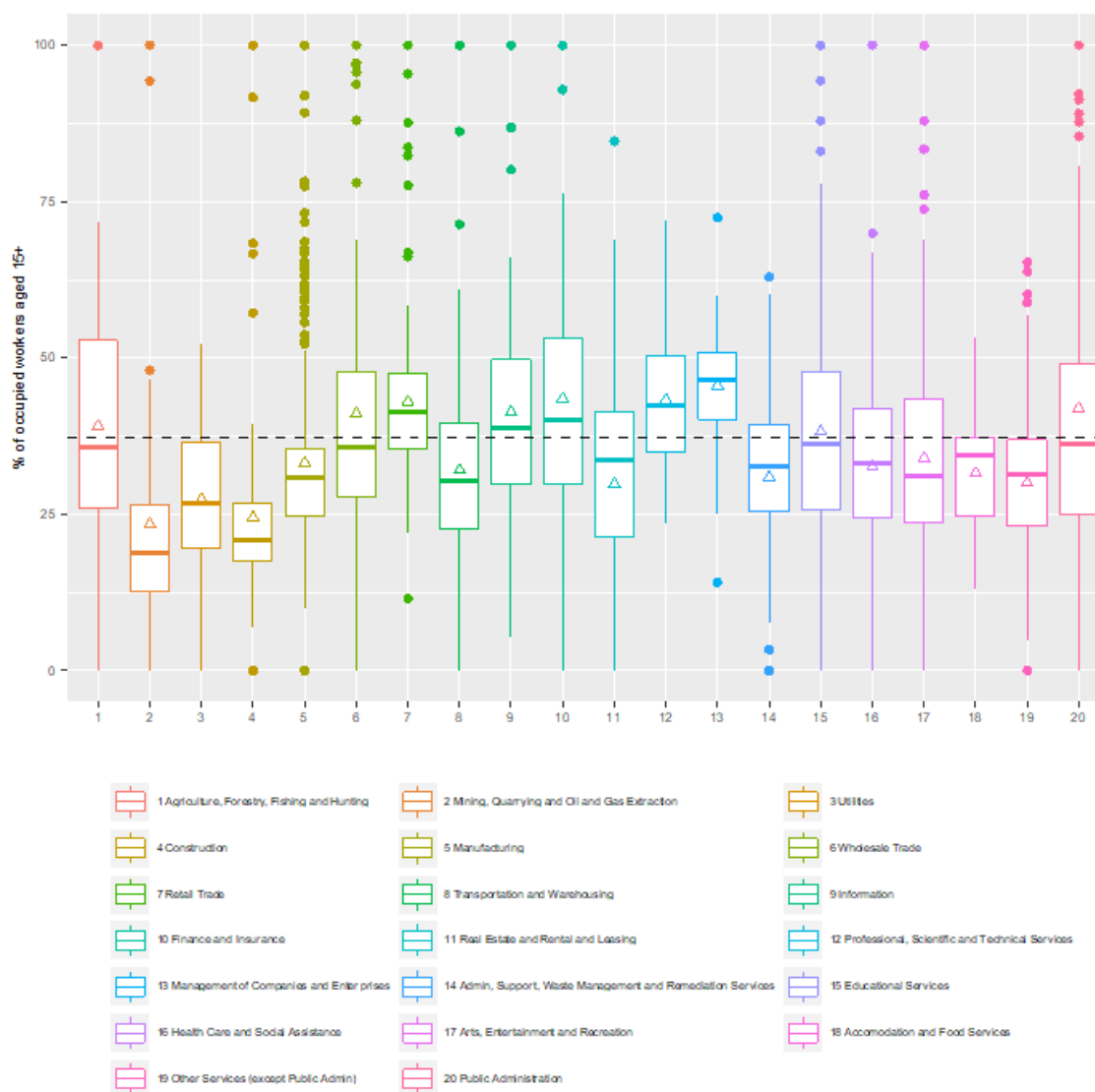
Note: Observations are four-digit NAICS industry mean values. The estimated equation of the simple regression line is $y = 1.983 - 0.050x$.

► Figure 17. Working poverty rate of employed persons (WPRE) (distribution of four-digit NAICS annual means, grouped by two-digit NAICS sectors)



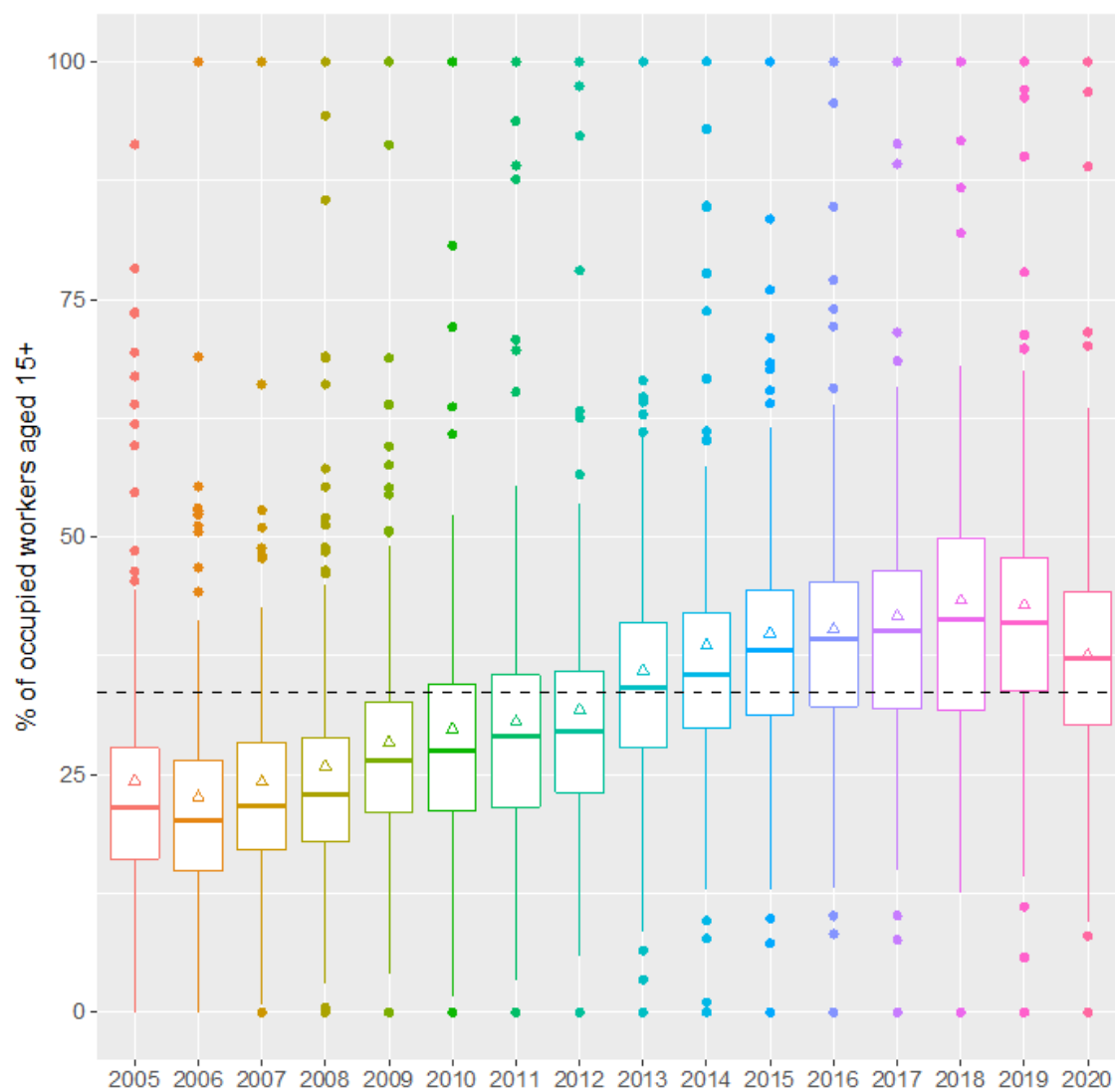
Note: Triangles represent weighted means for each two-digit NAICS sector. The dashed line indicates the weighted mean for the full sample.

► Figure 18. Employees with low pay rates (ELPR) (distribution of four-digit NAICS annual means, grouped by two-digit NAICS sectors)



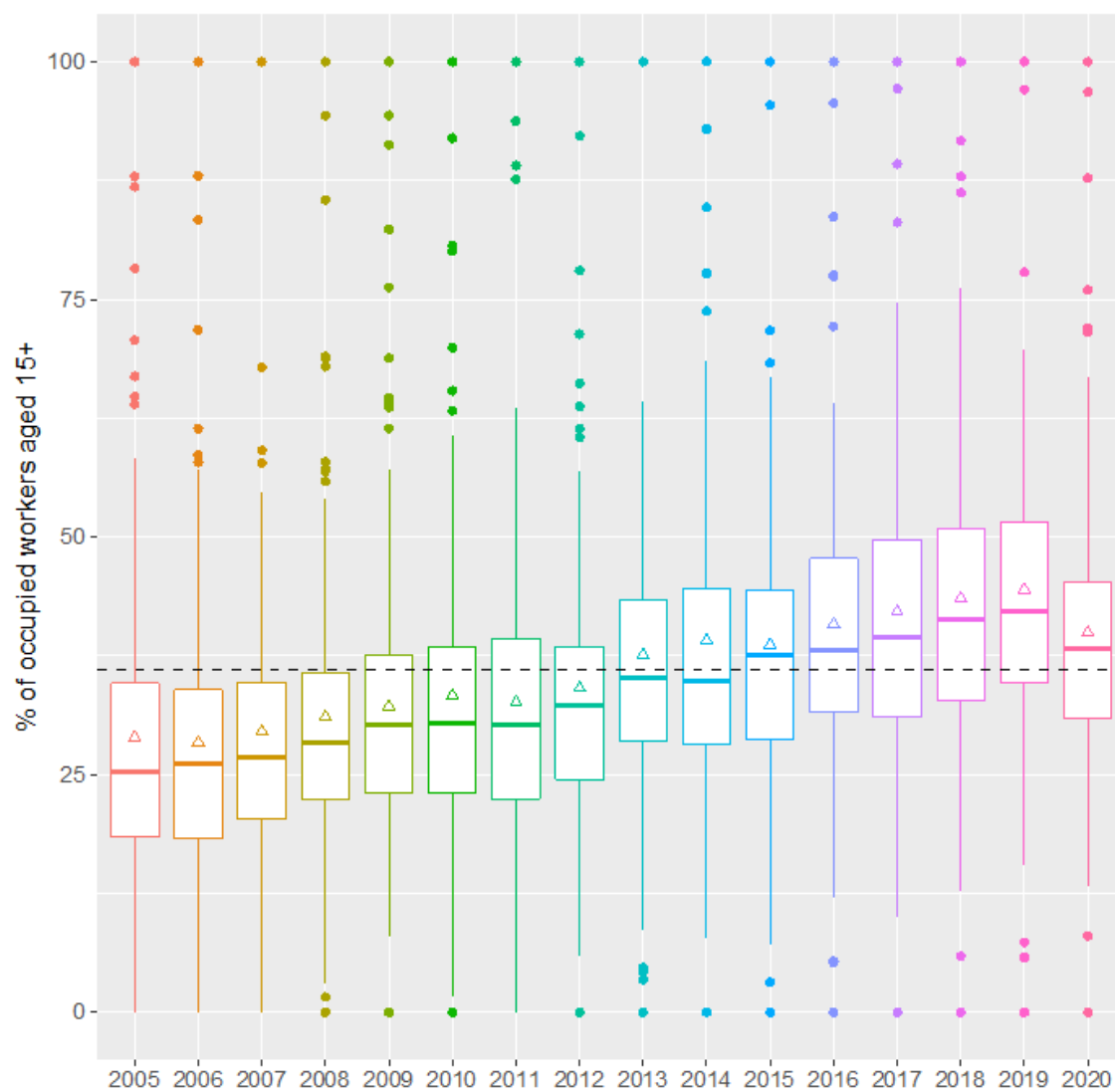
Note: Triangles represent weighted means for each two-digit NAICS sector. The dashed line indicates the weighted mean for the full sample.

► Figure 19. Working poverty rate of employed persons (WPRE) (distribution of four-digit NAICS means for each year in the sample)



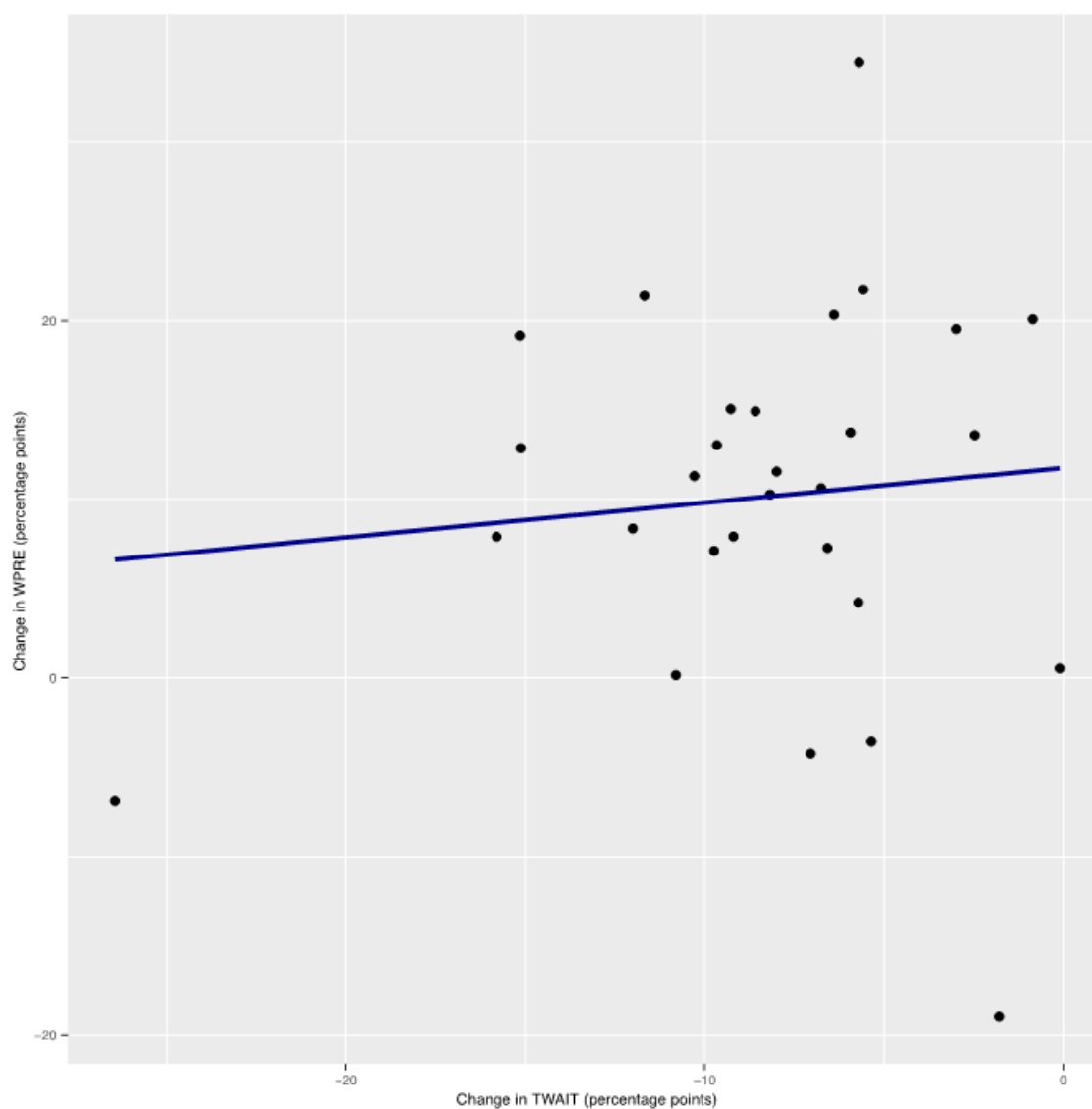
Note: Triangles represent weighted means for each year. The dashed line indicates the weighted mean for the full sample.

► **Figure 20. Employees with low pay rates (ELPR) (distribution of four-digit NAICS means for each year in the sample)**



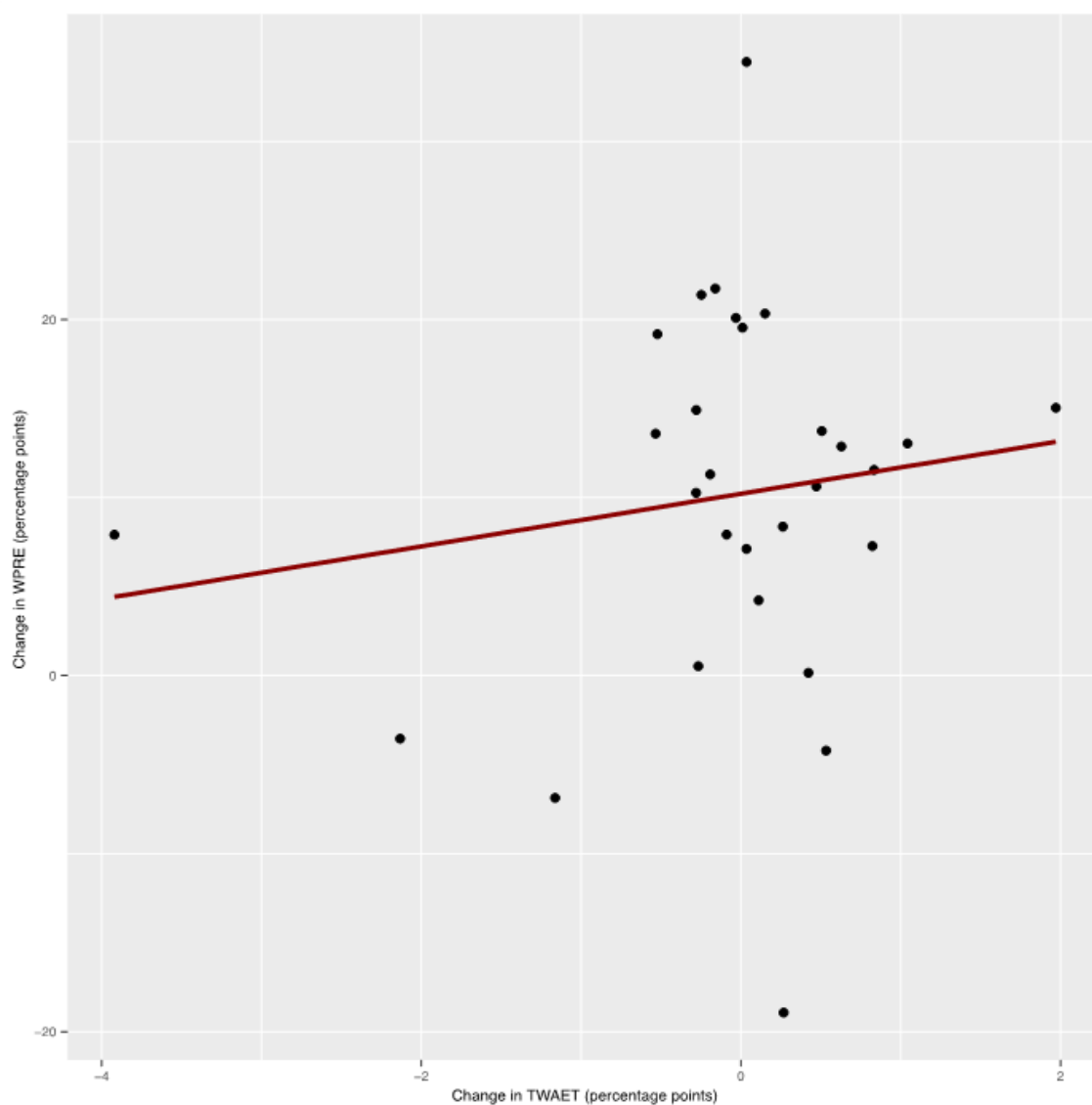
Note: Triangles represent weighted means for each year. The dashed line indicates the weighted mean for the full sample.

► Figure 21. Trade-weighted average import tariffs (TWAIT) vs. working poverty rate of employed persons (WPRE), 2005–17



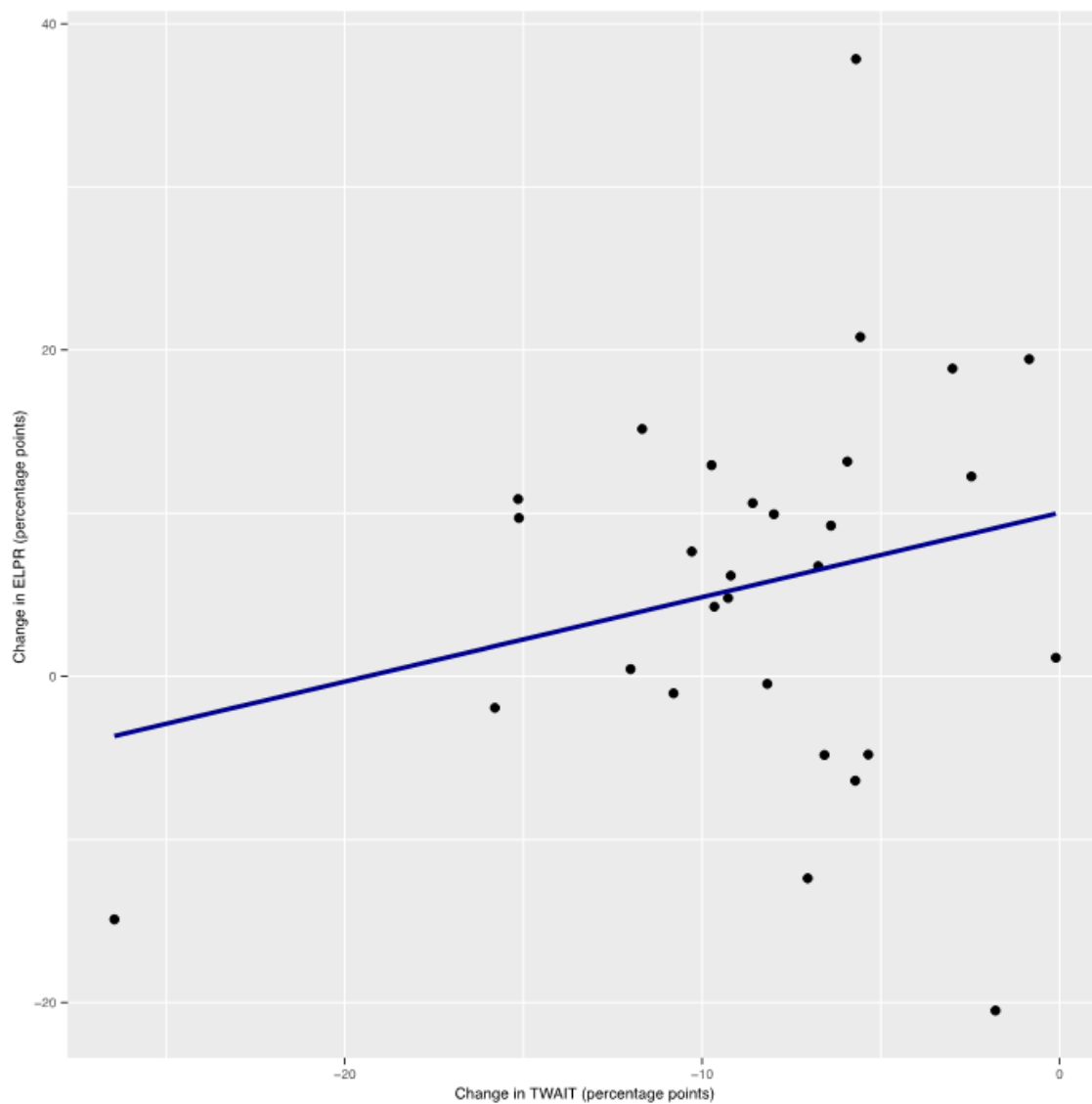
Note: Observations are four-digit NAICS mean values for tradable industries only. The estimated equation of the simple regression line is $y = 11.754 + 0.194x$.

► Figure 22. Trade-weighted average export tariffs (TWAET) vs. working poverty rate of employed persons (WPRE), 2005–17



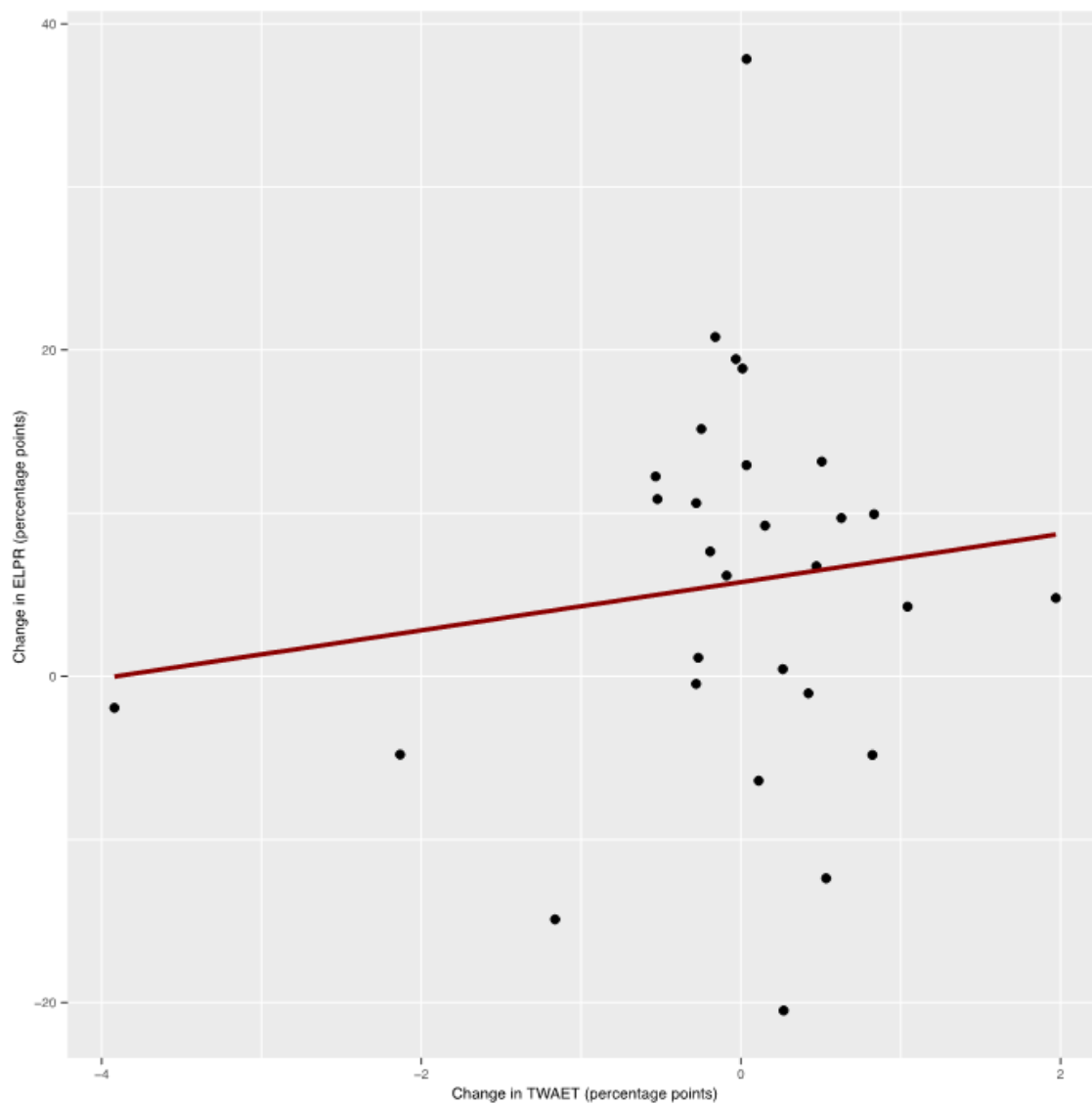
Note: Observations are four-digit NAICS mean values for tradable industries only. The estimated equation of the simple regression line is $y = 10.214 + 1.478x$.

► Figure 23. Trade-weighted average import tariffs (TWAIT) vs. employees with low pay rate (ELPR), 2005–2017



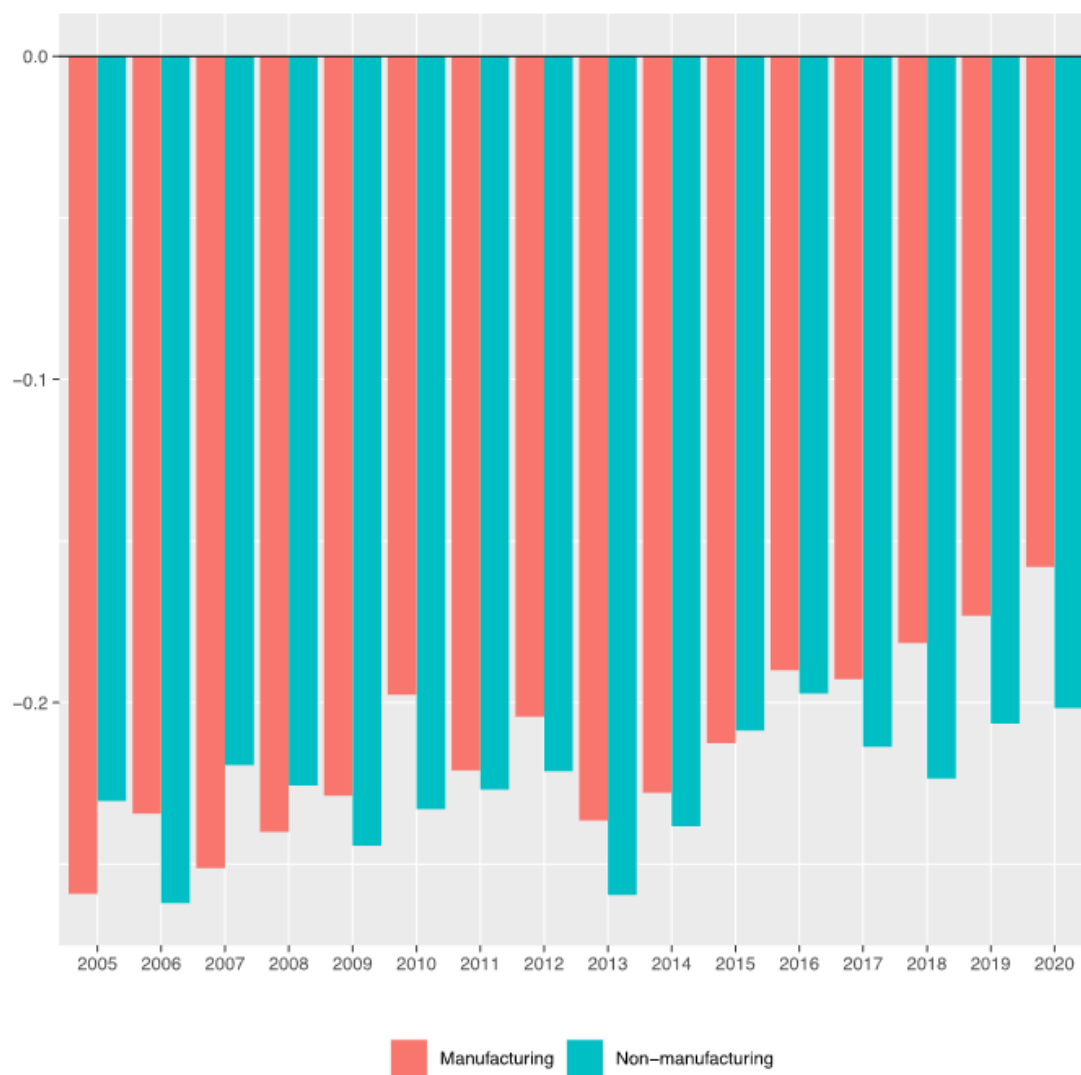
Note: Observations are four-digit NAICS mean values for tradable industries only. The estimated equation of the simple regression line is $y = 10.025 + 0.518x$.

► Figure 24. Trade-weighted average export tariffs (TWAET) vs. employees with low pay rate (ELPR) 2005–2017



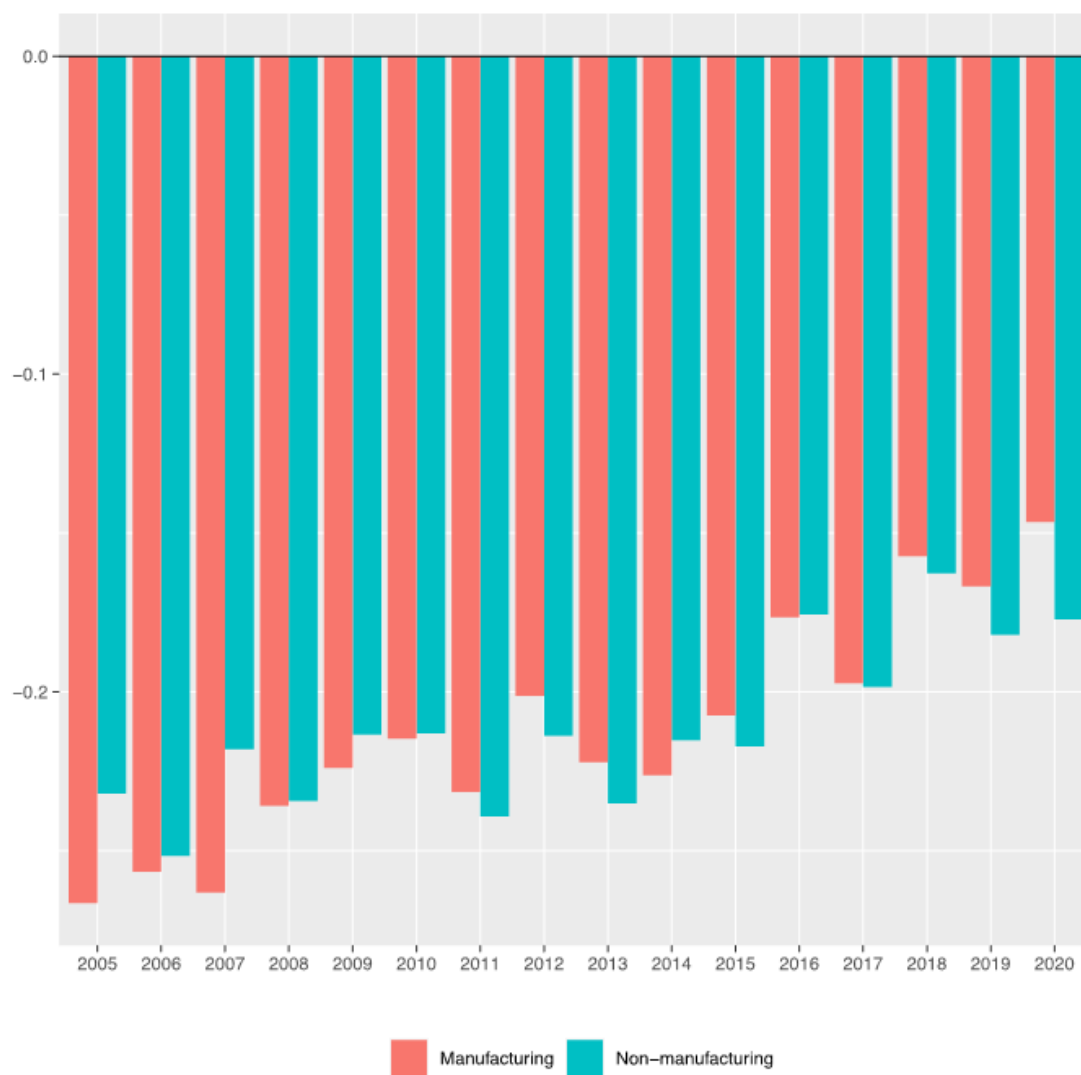
Note: Observations are four-digit NAICS mean values for tradable industries only. The estimated equation of the simple regression line is $y = 5.772 + 1.477x$.

► Figure 25. Working poverty rate for employed persons (WPRE) (weighted average differentials for manufacturing and non-manufacturing industries, four-digit NAICS level)



Note: Weights are equal to the inverse of the variance of the corresponding estimated coefficients.

► **Figure 26. Employees with low pay rates (ELPR) (weighted average differentials for manufacturing and non-manufacturing industries, four-digit NAICS level)**



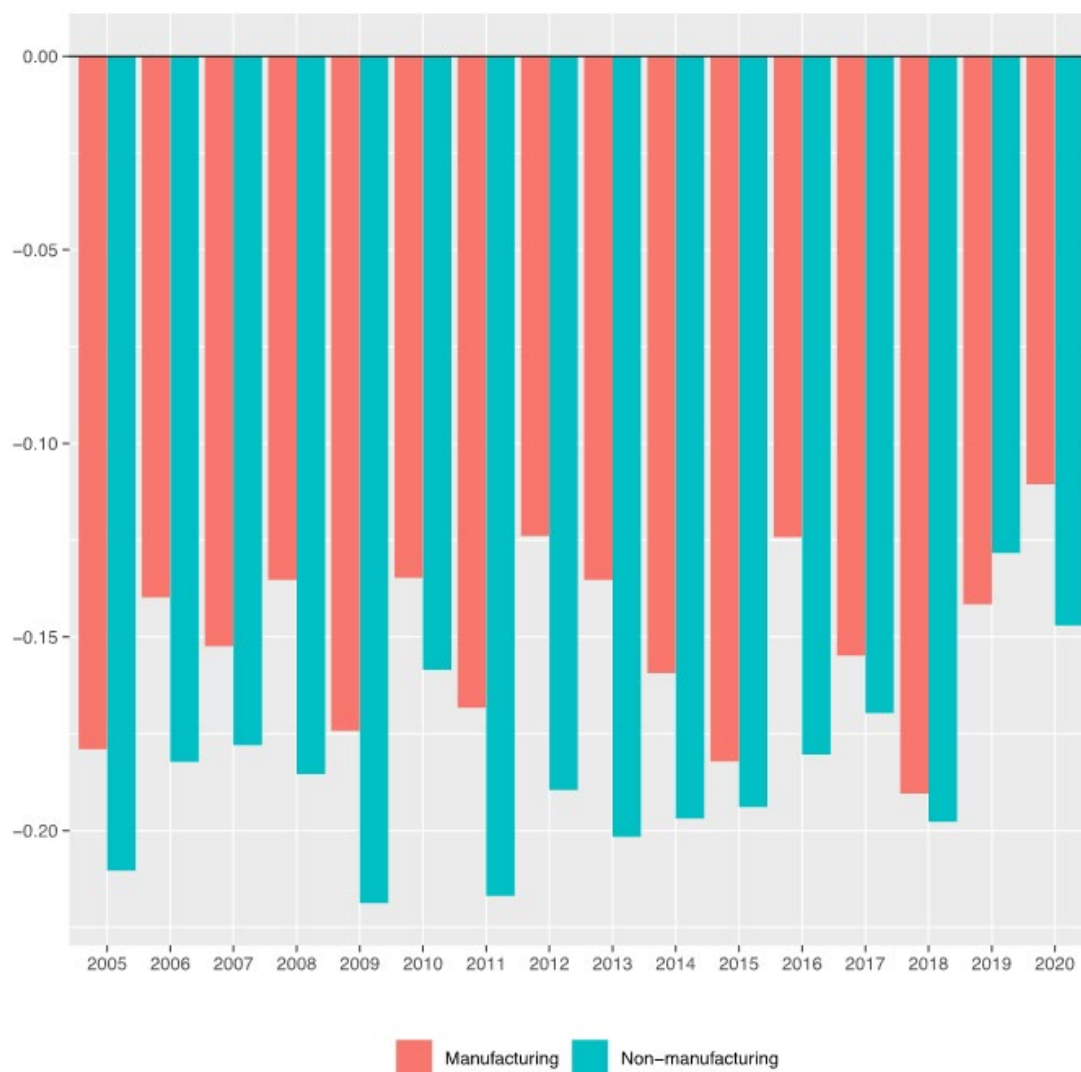
Note: Weights are equal to the inverse of the variance of the corresponding estimated coefficients.

► **Figure 27. Working poverty differentials for informal workers (i-WPRE) (weighted average informal-formal differentials for manufacturing and non-manufacturing industries, four-digit NAICS level)**



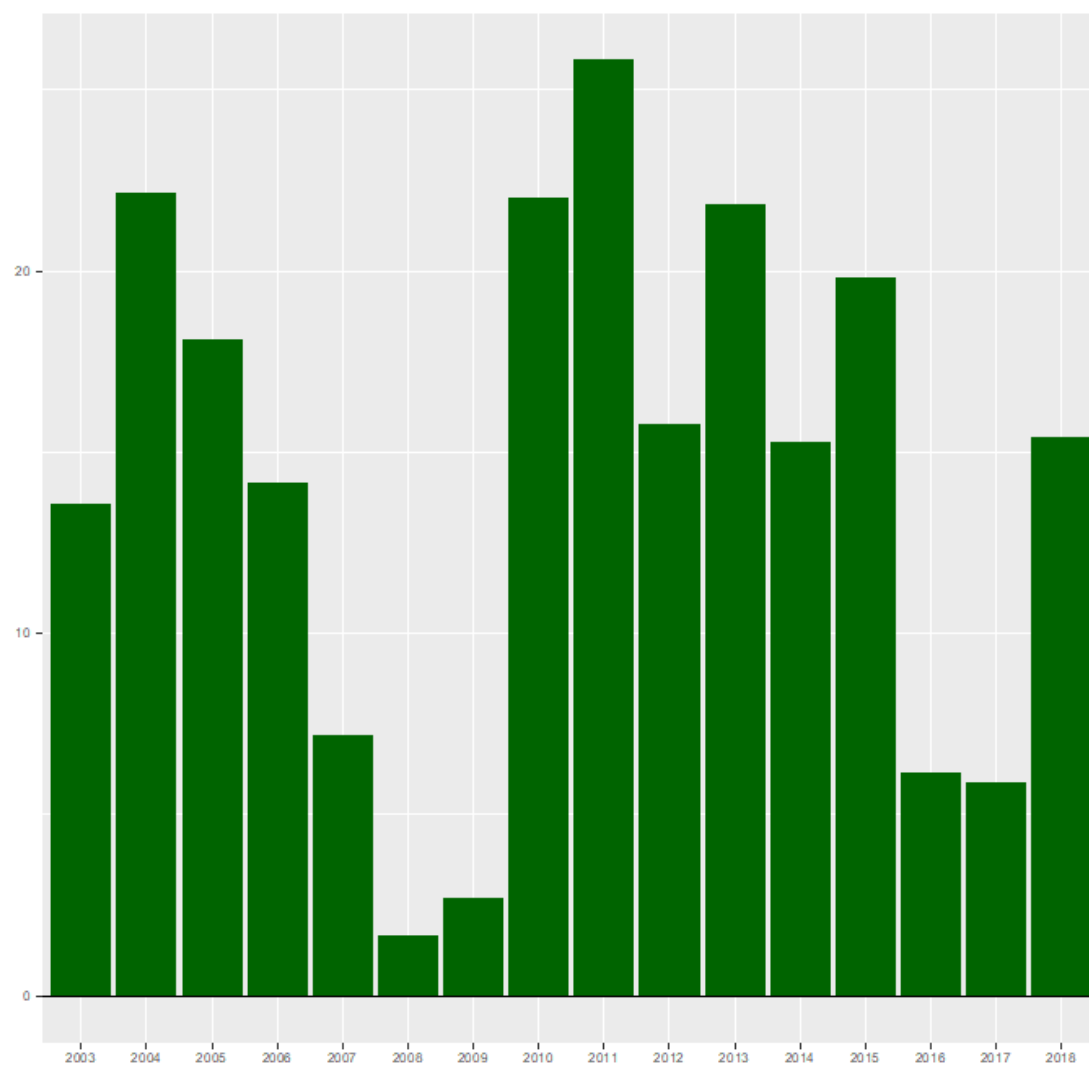
Note: Weights are equal to the inverse of the variance of the corresponding estimated coefficients.

► Figure 28. Low pay rate differentials for informal workers (i-ELPR) (weighted average informal-formal differentials for manufacturing and non-manufacturing industries, four-digit NAICS level)



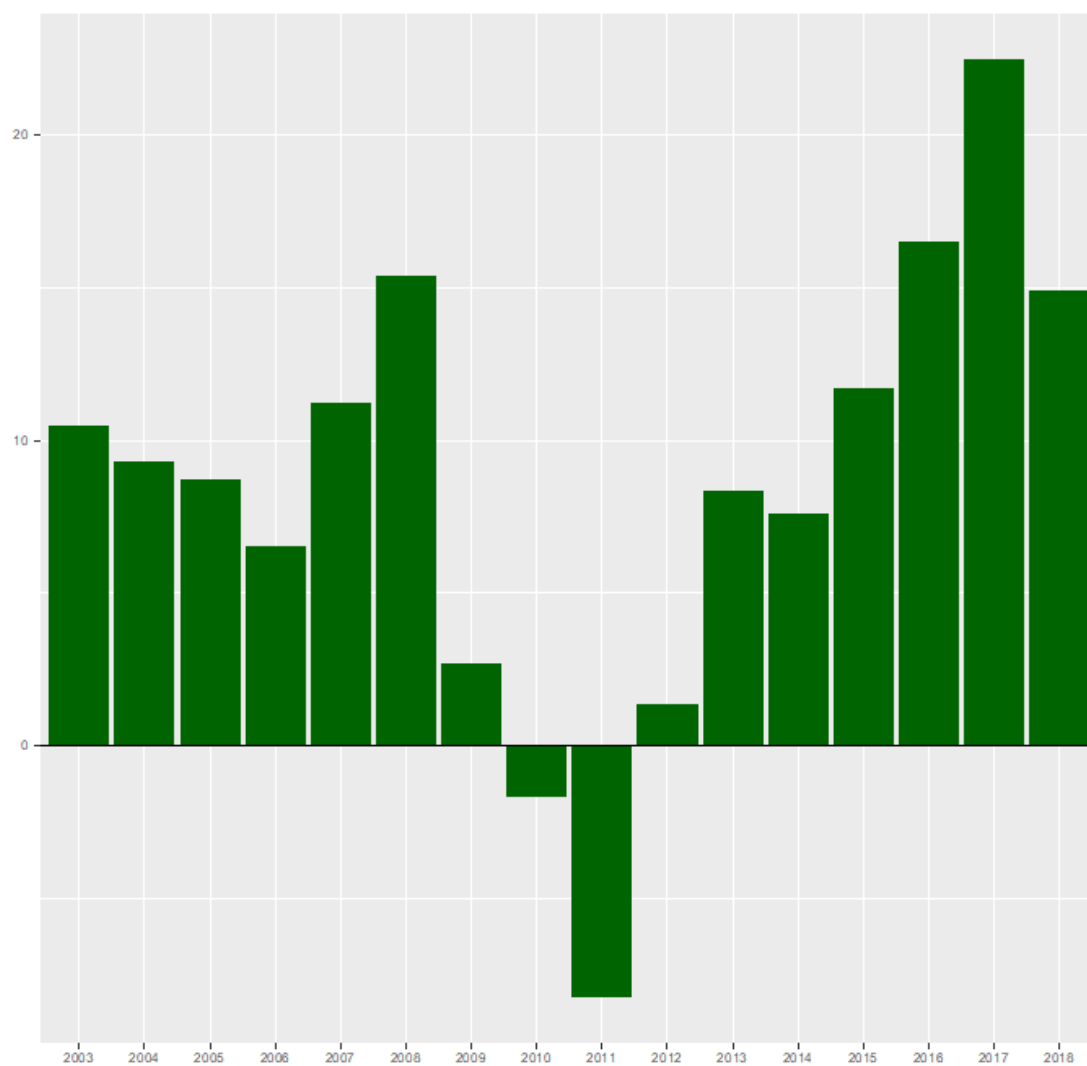
Note: Weights are equal to the inverse of the variance of the corresponding estimated coefficients.

► **Figure 29. Share of imported inputs in total inputs (*inputs*) (weighted average industry differentials for manufacturing, four-digit NAICS level)**



Note: Weights are equal to the inverse of the variance of the corresponding estimated coefficients.

► Figure 30. Share of exports in total net sales (*exports*) (weighted-average industry differentials for manufacturing, four-digit NAICS level)



Note: Weights are equal to the inverse of the variance of the corresponding estimated coefficients.

► Table 1. Annual mean values of establishment-level variables

Variable	Description	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GDWE	Gross daily wages per employee (US\$, current)	37.3	38.5	41.8	44.8	46.8	48.5	37.2	41.8	45.2	44.3	48.2	47.9	42.1	35.1	36.6	38.1
inputs	Imported inputs (% of total inputs)	27.0	27.5	27.7	26.9	26.7	26.2	29.5	29.6	30.2	30.3	30.0	29.0	29.9	29.7	29.5	29.6
exports	Net exports (% of total net sales)	17.7	18.4	18.5	18.5	18.4	18.2	25.9	26.1	27.3	27.9	28.4	29.1	29.7	28.9	28.8	29.2
women	Female workers (% of total employment)	26.9	27.0	27.3	27.8	27.9	27.7	31.8	32.2	31.9	31.9	31.8	32.0	31.9	32.1	32.1	32.1
hours	Daily hours worked per employee	8.5	8.6	8.5	8.7	8.7	8.7	8.6	8.7	8.8	8.8	8.9	8.8	8.8	8.4	8.4	8.4
fuel	Fuel and lubricants cost (% of total costs)	2.5	2.6	2.6	2.6	2.6	2.6	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9
energy	Electricity cost (% of total costs)	2.6	2.7	2.8	2.8	2.8	2.9	3.3	3.4	3.4	3.5	3.6	3.7	3.2	3.0	3.1	3.2
subcontract	Labour subcontracting cost (% of total costs)	3.2	3.2	3.2	3.2	3.0	2.8	2.9	3.0	2.9	2.7	2.6	2.5	2.5	2.4	2.4	2.4
advertising	Advertising cost (% of total costs)	1.5	1.4	1.4	1.4	1.4	1.3	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
freight	Freight cost (% of total costs)	2.9	2.5	2.5	2.4	2.4	2.4	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
maquila	Maquila income (% of total income)	2.7	2.5	2.7	2.6	2.5	2.5	15.3	15.3	14.2	13.9	14.2	14.1	14.2	13.9	14.4	14.8
profit	Profit margin (% of total income)	31.9	32.0	31.6	31.8	31.6	31.4	36.1	35.8	34.9	35.1	35.1	35.3	36.2	36.8	37.0	37.3
productivity	Production per hour (US\$, thousand)	41.6	45.2	50.9	55.4	59.8	65.5	41.7	46.9	53.2	53.2	55.8	56.1	48.3	43.6	46.5	47.7
machinery	Machinery and equipment (% of total assets)	67.3	67.3	67.6	67.7	67.9	68.0	63.9	64.2	64.4	64.7	65.0	64.8	64.8	64.9	65.0	65.1
assets	Annual change in total assets (%)	-3.1	-2.3	-2.6	-2.4	-2.4	-2.6	-2.5	-2.1	-2.0	-1.2	-2.3	-1.4	-1.0	-0.4	-0.7	-1.7
industry	Total number of 4-digit NAICS industries	84	84	84	84	84	84	86	86	86	86	86	86	86	86	86	86
class	Total number of 6-digit NAICS industries	231	231	231	231	231	231	240	240	240	240	240	240	240	239	239	239
establishment	Total number of establishments	7 292	7 294	7 278	7 221	6 947	6 626	10 606	10 785	10 499	10 146	9 805	9 535	9 304	10 281	10 160	10 086

Source: Variables constructed by the author using data from INEGI's EIA-03, EAIM-09 and EAIM-13 surveys.

► Table 2. Annual mean values of worker-level variables

Variable	Description	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
WPPE	Workers in households with total monthly income below the national poverty line (% of occupied workers aged 15+)	26.9	26.4	26.5	27.6	30.2	31.4	32.6	33.0	35.4	36.2	36.4	36.7	37.1	38.6	37.5	35.6
ELPR	Workers with wages below 2/3 the median wage in the labour market (% of occupied workers aged 15+)	31.4	31.3	31.5	32.9	32.8	33.6	34.2	34.5	35.3	34.9	35.1	35.5	35.3	36.9	36.3	35.5
age	Years of age	37.2	37.4	37.6	37.7	38.0	38.1	38.2	38.4	38.7	38.6	38.9	39.0	39.2	39.4	39.6	39.8
schooling	Years of education completed	9.1	9.2	9.4	9.5	9.5	9.6	9.7	9.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6
women	Female workers (% of occupied workers aged 15+)	37.3	38.2	38.6	38.8	38.7	38.9	38.7	39.3	39.2	39.3	39.3	39.4	39.5	39.3	40.0	40.9
married	Workers who are married or cohabitate (% of occupied workers aged 15+)	61.9	61.6	61.9	61.4	61.8	61.4	61.4	61.2	61.5	62.7	62.2	62.5	62.0	61.6	60.9	60.1
leader	Workers who are head of household (% of occupied workers aged 15+)	48.6	48.1	47.9	47.3	47.4	47.6	47.8	47.4	47.4	47.9	48.0	47.8	47.8	47.4	46.8	46.0
informal	Workers whose main job is informal (% of occupied workers aged 15+)	54.1	53.3	52.4	52.6	54.2	55.1	54.8	55.4	54.9	53.5	52.8	52.9	52.7	52.2	51.6	51.0
employer	Workers who are employers (% of occupied workers aged 15+)	5.0	5.2	5.2	5.4	4.8	5.0	4.8	5.0	4.8	4.4	4.4	4.6	4.8	4.8	4.9	5.0
exporter	Workers living in a net exporter state (% of occupied workers aged 15+)	43.2	43.0	42.9	42.9	43.4	43.6	43.5	43.9	43.6	43.3	43.2	43.1	42.9	44.2	42.5	44.6
obs	Total number of observations	162 124	169 398	170 453	170 375	163 588	164 148	161 893	165 240	161 593	165 855	167 696	166 412	165 580	166 715	175 489	182 553

Note: Net exporter states are ones whose exports' trade value is larger than their imports' trade value, according to data from the Mexican Ministry of Economy (see <https://datamexico.org/es/profile/geo/mexico#economia-comercio-internacional>).

Source: Variables constructed by the author using data from INEGI's ENOE survey.

► Table 3. Panel data models for ln(GDWE)

	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	PM	RE	FE	FE with 1-year-lagged globalization variables	FE + LDV	FE on 2003–08 sub-sample	FE on 2009–18 sub-sample
<i>inputs</i>	0.004 [0.0002] ***	0.001 [0.0002] ***	0.000 [0.0001]	0.000 [0.0001]	0.000 [0.0001]	0.000 [0.0002]	-0.0004 [0.0002] .
<i>exports</i>	0.0004 [0.0002] *	0.001 [0.0002] ***	0.000 [0.0002]	0.000 [0.0002]	0.000 [0.0002]	0.000 [0.0002]	0.000 [0.0002]
<i>women</i>	-0.002 [0.0002] ***	0.000 [0.0002]	0.000 [0.0002]	0.000 [0.0002]	0.000 [0.0002]	0.000 [0.0002]	0.000 [0.0003]
<i>ln(hours)</i>	0.926 [0.011] ***	1.117 [0.012] ***	0.359 [0.022] ***	0.359 [0.024] ***	0.299 [0.025] ***	0.359 [0.030] ***	0.354 [0.031] ***
<i>fuel</i>	-0.003 [0.001] ***	0.000 [0.001]	0.000 [0.001]	0.001 [0.001]	0.000 [0.001]	0.003 [0.001] **	-0.001 [0.001]
<i>energy</i>	0.001 [0.001]	0.005 [0.001] ***	0.002 [0.001]	0.002 [0.001]	0.002 [0.001]	0.003 [0.002] *	0.004 [0.001] ***
<i>subcontract</i>	-0.003 [0.001] ***	-0.001 [0.001]	-0.001 [0.001]	-0.001 [0.001]	-0.001 [0.0005]	-0.001 [0.001]	0.000 [0.001]
<i>advertising</i>	0.024 [0.002] ***	0.008 [0.003] **	0.004 [0.002] **	0.004 [0.002] *	0.002 [0.001]	0.002 [0.002]	0.001 [0.002]
<i>freight</i>	0.009 [0.001] ***	0.003 [0.001] *	0.000 [0.001]	-0.001 [0.001]	0.000 [0.001]	-0.001 [0.001]	0.001 [0.001]
<i>maquila</i>	0.012 [0.0004] ***	0.007 [0.0004] ***	0.003 [0.0003] ***	0.003 [0.0004] ***	0.003 [0.0003] ***	0.003 [0.0005] ***	0.003 [0.0004] ***
<i>profit</i>	0.005 [0.0003] ***	0.001 [0.0003] **	0.000 [0.0002]	0.0004 [0.0002] .	0.0003 [0.0002] *	-0.001 [0.0003] **	0.000 [0.0003]
<i>ln(productivity)</i>	0.358 [0.005] ***	0.240 [0.006] ***	0.135 [0.006] ***	0.137 [0.007] ***	0.113 [0.006] ***	0.154 [0.008] ***	0.124 [0.008] ***
<i>machinery</i>	0.001 [0.0002] ***	0.001 [0.0002] ***	0.000 [0.0002]	0.000 [0.0002]	0.000 [0.0001]	0.000 [0.0002]	0.0004 [0.0002] .
<i>assets</i>	0.00001 [0.00001] .	0.000 [0.00001]	0.000 [0.00001]	0.000 [0.000003]	0.000 [0.000002]	0.000 [0.000002]	0.0000 [0.00001]
<i>industries</i>	86	86	86	86	86	84	86
<i>firms</i>	15 054	15 054	15 054	14 420	13 676	6 267	13 095
<i>years</i>	1 to 13	1 to 13	1 to 13	1 to 12	1 to 11	1 to 6	1 to 8
<i>obs</i>	91 947	91 947	91 947	76 520	61 867	34 191	57 756

Notes: Significance codes: *** 0 to 0.001; ** 0.001 to 0.01; * 0.01 to 0.05; . 0.05 to 0.1. Arellano (1987) robust standard errors clustered by firm are shown in brackets.

► Table 4. Linear probability model for working poverty of employed persons (WPPE)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>age</i>	0.002 *** [0.0002]	0.002 *** [0.0002]	0.003 *** [0.0002]	0.003 *** [0.0002]	0.003 *** [0.0002]	0.003 *** [0.0002]	0.003 *** [0.0002]	0.003 *** [0.0002]	0.004 *** [0.0002]	0.004 *** [0.0002]	0.004 *** [0.0002]	0.004 *** [0.0002]	0.004 *** [0.0002]	0.004 *** [0.0002]	0.004 *** [0.0003]	0.003 *** [0.0002]
<i>schooling</i>	-0.018 *** [0.002]	-0.017 *** [0.002]	-0.015 *** [0.002]	-0.015 *** [0.002]	-0.014 *** [0.002]	-0.015 *** [0.001]	-0.015 *** [0.002]	-0.014 *** [0.002]	-0.011 *** [0.002]	-0.014 *** [0.002]	-0.012 *** [0.001]	-0.014 *** [0.002]	-0.012 *** [0.002]	-0.010 *** [0.002]	-0.011 *** [0.002]	-0.013 *** [0.003]
<i>schooling²</i>	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]
<i>women</i>	-0.003 [0.007]	-0.011 . [0.006]	-0.012 * [0.005]	-0.012 * [0.005]	-0.017 ** [0.006]	-0.014 * [0.006]	-0.015 * [0.006]	-0.018 * [0.007]	-0.021 *** [0.005]	-0.019 *** [0.004]	-0.022 *** [0.005]	-0.022 *** [0.005]	-0.028 *** [0.006]	-0.029 *** [0.006]	-0.023 *** [0.006]	-0.023 *** [0.004]
<i>married</i>	-0.044 *** [0.004]	-0.046 *** [0.004]	-0.049 *** [0.004]	-0.046 *** [0.005]	-0.053 *** [0.004]	-0.058 *** [0.005]	-0.053 *** [0.004]	-0.054 *** [0.006]	-0.059 *** [0.005]	-0.059 *** [0.004]	-0.058 *** [0.005]	-0.053 *** [0.005]	-0.052 *** [0.005]	-0.049 *** [0.005]	-0.044 *** [0.004]	-0.050 *** [0.004]
<i>leader</i>	-0.029 *** [0.005]	-0.034 *** [0.004]	-0.041 *** [0.004]	-0.043 *** [0.003]	-0.054 *** [0.003]	-0.047 *** [0.004]	-0.059 *** [0.004]	-0.057 *** [0.004]	-0.060 *** [0.004]	-0.065 *** [0.003]	-0.063 *** [0.004]	-0.064 *** [0.004]	-0.066 *** [0.004]	-0.068 *** [0.003]	-0.066 *** [0.003]	-0.057 *** [0.003]
<i>informal</i>	0.093 *** [0.013]	0.083 *** [0.011]	0.083 *** [0.013]	0.080 *** [0.012]	0.079 *** [0.014]	0.079 *** [0.013]	0.075 *** [0.012]	0.061 *** [0.012]	0.065 *** [0.013]	0.066 *** [0.011]	0.067 *** [0.013]	0.055 *** [0.012]	0.053 *** [0.013]	0.043 ** [0.014]	0.047 *** [0.012]	0.045 *** [0.010]
<i>employer</i>	-0.004 [0.007]	0.008 [0.010]	0.026 ** [0.009]	0.021 * [0.009]	0.023 * [0.009]	0.015 [0.010]	0.024 ** [0.009]	0.022 . [0.012]	0.030 ** [0.011]	0.024 * [0.012]	0.038 *** [0.010]	0.029 * [0.012]	0.025 * [0.010]	0.029 ** [0.010]	0.014 [0.010]	0.018 . [0.010]
<i>exporter</i>	-0.003 [0.006]	0.014 ** [0.005]	-0.013 * [0.006]	-0.026 *** [0.007]	-0.050 *** [0.006]	-0.031 *** [0.007]	-0.046 *** [0.008]	-0.055 *** [0.006]	-0.054 *** [0.007]	-0.045 *** [0.005]	-0.038 *** [0.005]	-0.042 *** [0.006]	-0.055 *** [0.006]	-0.032 *** [0.006]	-0.049 *** [0.005]	-0.034 *** [0.008]
<i>obs</i>	162 124	169 398	170 453	170 375	163 588	164 148	161 893	165 240	161 593	165 855	167 696	166 412	165 580	166 715	175 489	182 553

Notes: Significance codes: *** 0 to 0.001; ** 0.001 to 0.01; * 0.01 to 0.05; . 0.05 to 0.1. All regressions include city and industry dummy variables. Robust standard errors clustered at the four-digit NAICS industry level are shown in brackets.

► Table 5. Linear probability model for employees with low pay rate (ELPR)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>age</i>	0.003 *** [0.0003]	0.003 *** [0.0002]	0.003 *** [0.0003]	0.003 *** [0.0002]	0.004 *** [0.0003]	0.003 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]
<i>schooling</i>	-0.016 *** [0.001]	-0.016 *** [0.002]	-0.014 *** [0.002]	-0.015 *** [0.002]	-0.013 *** [0.002]	-0.015 *** [0.002]	-0.014 *** [0.002]	-0.015 *** [0.002]	-0.012 *** [0.002]	-0.014 *** [0.003]	-0.012 *** [0.002]	-0.013 *** [0.002]	-0.011 *** [0.003]	-0.011 *** [0.002]	-0.012 *** [0.003]	-0.014 *** [0.003]
<i>schooling²</i>	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]
<i>women</i>	0.016 [0.011]	0.009 [0.011]	0.008 [0.010]	0.008 [0.010]	0.000 [0.012]	0.007 [0.010]	0.003 [0.011]	-0.005 [0.011]	-0.002 [0.008]	-0.004 [0.008]	-0.007 [0.008]	-0.012 [0.009]	-0.019 [0.010]	-0.020 * [0.008]	-0.013 [0.008]	-0.015 * [0.007]
<i>married</i>	-0.040 *** [0.006]	-0.042 *** [0.006]	-0.044 *** [0.006]	-0.042 *** [0.006]	-0.043 *** [0.004]	-0.048 *** [0.005]	-0.043 *** [0.005]	-0.046 *** [0.006]	-0.044 *** [0.005]	-0.047 *** [0.004]	-0.044 *** [0.005]	-0.038 *** [0.005]	-0.038 *** [0.005]	-0.036 *** [0.005]	-0.030 *** [0.005]	-0.035 *** [0.004]
<i>leader</i>	-0.081 *** [0.008]	-0.078 *** [0.007]	-0.085 *** [0.007]	-0.088 *** [0.008]	-0.094 *** [0.006]	-0.092 *** [0.007]	-0.093 *** [0.007]	-0.092 *** [0.007]	-0.097 *** [0.007]	-0.094 *** [0.006]	-0.090 *** [0.007]	-0.100 *** [0.006]	-0.092 *** [0.005]	-0.097 *** [0.006]	-0.092 *** [0.006]	-0.085 *** [0.005]
<i>informal</i>	0.150 *** [0.016]	0.140 *** [0.016]	0.135 *** [0.017]	0.125 *** [0.015]	0.113 *** [0.016]	0.121 *** [0.015]	0.110 *** [0.015]	0.097 *** [0.015]	0.087 *** [0.015]	0.084 *** [0.013]	0.081 *** [0.015]	0.070 *** [0.014]	0.063 *** [0.015]	0.047 ** [0.015]	0.050 *** [0.012]	0.057 *** [0.011]
<i>employer</i>	0.005 [0.009]	0.017 [0.012]	0.044 *** [0.011]	0.036 ** [0.013]	0.058 *** [0.012]	0.044 ** [0.014]	0.053 *** [0.011]	0.058 *** [0.012]	0.066 *** [0.013]	0.067 *** [0.016]	0.073 *** [0.012]	0.075 *** [0.012]	0.068 *** [0.012]	0.077 *** [0.013]	0.057 *** [0.012]	0.052 *** [0.012]
<i>exporter</i>	-0.003 [0.006]	0.012 * [0.005]	-0.006 [0.006]	-0.023 *** [0.006]	-0.043 *** [0.007]	-0.029 *** [0.007]	-0.038 *** [0.008]	-0.043 *** [0.007]	-0.046 *** [0.007]	-0.034 *** [0.005]	-0.035 *** [0.006]	-0.041 *** [0.006]	-0.050 *** [0.006]	-0.033 *** [0.005]	-0.044 *** [0.007]	-0.026 ** [0.008]
<i>obs</i>	162 124	169 398	170 453	170 375	163 588	164 148	161 893	165 240	161 593	165 855	167 696	166 412	165 580	166 715	175 489	182 553

Note: Significance codes: *** 0 to 0.001; ** 0.001 to 0.01; * 0.01 to 0.05; . 0.05 to 0.1. All regressions include city and industry dummy variables. Robust standard errors clustered at the four-digit NAICS industry level are shown in brackets.

► Table 6. Linear probability model for informal workers in working poverty (i-WPRE)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>age</i>	0.003 *** [0.0003]	0.003 *** [0.0003]	0.003 *** [0.0003]	0.003 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0002]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.005 *** [0.0003]	0.005 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0002]	0.005 *** [0.0002]	0.005 *** [0.0003]	0.004 *** [0.0003]
<i>age × informal</i>	-0.001 *** [0.0003]	-0.001 *** [0.0003]	-0.001 ** [0.0003]	-0.001 ** [0.0003]	-0.001 * [0.0003]	-0.001 *** [0.0003]	-0.002 *** [0.0003]	-0.001 ** [0.0003]	-0.001 *** [0.0003]	-0.001 *** [0.0003]	-0.002 *** [0.0003]	-0.001 *** [0.0003]	-0.001 *** [0.0003]	-0.001 *** [0.0003]	-0.001 *** [0.0003]	-0.001 *** [0.0003]
<i>schooling</i>	-0.013 *** [0.003]	-0.011 *** [0.003]	-0.007 *** [0.002]	-0.012 *** [0.003]	-0.011 *** [0.003]	-0.007 ** [0.002]	-0.009 *** [0.002]	-0.012 *** [0.003]	-0.002 [0.002]	-0.007 * [0.003]	-0.001 [0.002]	-0.010 ** [0.003]	-0.003 [0.004]	-0.004 [0.004]	-0.002 [0.003]	-0.007 [0.004]
<i>schooling × informal</i>	-0.003 [0.003]	-0.005 [0.003]	-0.008 *** [0.002]	-0.002 [0.003]	-0.001 [0.003]	-0.008 ** [0.003]	-0.004 [0.002]	-0.0002 [0.003]	-0.007 ** [0.003]	-0.005 [0.003]	-0.011 *** [0.003]	-0.003 [0.003]	-0.008 * [0.004]	-0.005 [0.004]	-0.008 * [0.003]	-0.004 [0.004]
<i>schooling²</i>	0.001 *** [0.0001]	0.001 *** [0.0001]	0.0004 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.0004 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.0004 *** [0.0001]	0.001 *** [0.0001]	0.0004 *** [0.0001]	0.001 *** [0.0001]	0.0005 ** [0.0002]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0002]
<i>schooling² × informal</i>	-0.00003 [0.0001]	0.0001 [0.0002]	0.0002 * [0.0001]	0.00003 [0.0001]	-0.00004 [0.0001]	0.0002 [0.0001]	0.0001 [0.0001]	-0.0001 [0.0001]	0.0001 [0.0001]	0.0001 [0.0001]	0.0002 [0.0001]	-0.001 [0.0002]	0.0002 [0.0002]	0.0001 [0.0002]	0.0001 [0.0002]	0.000 [0.0002]
<i>women</i>	-0.018 *** [0.004]	-0.023 *** [0.004]	-0.024 *** [0.004]	-0.024 *** [0.004]	-0.030 *** [0.005]	-0.031 *** [0.005]	-0.027 *** [0.005]	-0.030 *** [0.005]	-0.029 *** [0.005]	-0.030 *** [0.004]	-0.036 *** [0.004]	-0.031 *** [0.004]	-0.039 *** [0.004]	-0.037 *** [0.004]	-0.026 *** [0.004]	-0.031 *** [0.004]
<i>women × informal</i>	0.030 *** [0.009]	0.021 * [0.010]	0.021 ** [0.008]	0.024 ** [0.007]	0.025 ** [0.009]	0.031 *** [0.008]	0.022 * [0.009]	0.023 * [0.011]	0.008 [0.008]	0.020 ** [0.007]	0.026 ** [0.008]	0.015 [0.010]	0.022 * [0.010]	0.016 [0.009]	0.002 [0.008]	0.014 [0.008]
<i>married</i>	-0.046 *** [0.004]	-0.045 *** [0.004]	-0.048 *** [0.004]	-0.048 *** [0.004]	-0.053 *** [0.004]	-0.060 *** [0.004]	-0.059 *** [0.004]	-0.057 *** [0.005]	-0.059 *** [0.005]	-0.060 *** [0.004]	-0.063 *** [0.004]	-0.054 *** [0.004]	-0.054 *** [0.005]	-0.052 *** [0.004]	-0.050 *** [0.005]	-0.053 *** [0.004]
<i>married × informal</i>	0.001 [0.008]	-0.003 [0.007]	-0.005 [0.007]	0.0004 [0.008]	-0.001 [0.007]	0.002 [0.008]	0.010 [0.007]	0.005 [0.011]	0.001 [0.008]	0.0003 [0.007]	0.008 [0.006]	0.001 [0.008]	0.004 [0.008]	0.007 [0.009]	0.012 [0.007]	0.004 [0.007]
<i>leader</i>	-0.019 *** [0.004]	-0.032 *** [0.004]	-0.033 *** [0.004]	-0.032 *** [0.005]	-0.050 *** [0.004]	-0.051 *** [0.004]	-0.055 *** [0.005]	-0.052 *** [0.005]	-0.068 *** [0.005]	-0.064 *** [0.004]	-0.071 *** [0.004]	-0.069 *** [0.004]	-0.067 *** [0.005]	-0.070 *** [0.004]	-0.068 *** [0.004]	-0.061 *** [0.004]
<i>leader × informal</i>	-0.017 [0.009]	-0.002 [0.008]	-0.012 [0.007]	-0.018 * [0.007]	-0.006 [0.006]	0.008 [0.007]	-0.005 [0.006]	-0.006 [0.006]	0.016 [0.008]	0.0004 [0.006]	0.016 ** [0.006]	0.010 [0.006]	0.004 [0.007]	0.006 [0.006]	0.005 [0.006]	0.010 [0.005]
<i>employer</i>	0.048 * [0.022]	0.064 ** [0.023]	0.084 *** [0.020]	0.083 ** [0.025]	0.084 *** [0.021]	0.076 ** [0.023]	0.083 *** [0.024]	0.092 *** [0.023]	0.116 *** [0.026]	0.098 *** [0.022]	0.103 *** [0.026]	0.112 *** [0.026]	0.097 ** [0.030]	0.105 *** [0.028]	0.086 ** [0.029]	0.085 *** [0.024]
<i>employer × informal</i>	-0.098 *** [0.025]	-0.115 *** [0.021]	-0.118 *** [0.021]	-0.122 *** [0.026]	-0.121 *** [0.023]	-0.118 *** [0.026]	-0.115 *** [0.025]	-0.133 *** [0.024]	-0.159 *** [0.027]	-0.142 *** [0.024]	-0.122 *** [0.030]	-0.164 *** [0.027]	-0.138 *** [0.032]	-0.146 *** [0.030]	-0.137 *** [0.029]	-0.122 *** [0.025]
<i>exporter</i>	-0.016 ** [0.005]	0.002 [0.005]	-0.015 * [0.006]	-0.031 *** [0.007]	-0.059 *** [0.006]	-0.051 *** [0.007]	-0.059 *** [0.006]	-0.075 *** [0.006]	-0.078 *** [0.007]	-0.063 *** [0.007]	-0.064 *** [0.009]	-0.043 *** [0.012]	-0.067 *** [0.009]	-0.047 *** [0.008]	-0.074 *** [0.008]	-0.051 *** [0.011]
<i>exporter × informal</i>	0.020 0.011	0.016 * [0.008]	0.004 [0.012]	0.008 [0.011]	0.014 [0.011]	0.030 [0.008]	0.022 [0.013]	0.031 ** [0.011]	0.036 *** [0.010]	0.027 ** [0.009]	0.040 *** [0.010]	0.000 [0.013]	0.017 [0.010]	0.022 * [0.010]	0.037 *** [0.010]	0.026 * [0.011]
<i>obs</i>	162 124	169 398	170 453	170 375	163 588	164 148	161 893	165 240	161 593	165 855	167 696	166 412	165 580	166 715	175 489	182 553

Notes: Significance codes: *** 0 to 0.001; ** 0.001 to 0.01; * 0.01 to 0.05; . 0.05 to 0.1. All regressions include city and industry dummy variables. Robust standard errors clustered at the four-digit NAICS industry level are shown in brackets.

► Table 7. Linear probability model for informal employees with low pay rates (i-ELPR)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>age</i>	0.003 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0003]	0.004 *** [0.0002]	0.005 *** [0.0004]	0.005 *** [0.0003]	0.005 *** [0.0002]	0.005 *** [0.0003]	0.005 *** [0.0004]	0.005 *** [0.0003]	0.005 *** [0.0003]	0.005 *** [0.0003]	0.005 *** [0.0002]	0.005 *** [0.0002]	0.005 *** [0.0002]	0.005 *** [0.0003]
<i>age × informal</i>	-0.001 ** [0.0005]	-0.002 *** [0.0004]	-0.002 ** [0.0005]	-0.001 *** [0.0004]	-0.001 ** [0.0004]	-0.002 *** [0.0005]	-0.002 *** [0.0004]	-0.002 *** [0.0005]	-0.001 ** [0.0005]	-0.002 *** [0.0005]	-0.002 *** [0.0005]	-0.001 * [0.0005]	-0.001 * [0.0005]	-0.001 * [0.0005]	-0.001 * [0.0004]	-0.001 ** [0.0004]
<i>schooling</i>	-0.015 *** [0.002]	-0.012 *** [0.003]	-0.007 *** [0.002]	-0.012 *** [0.003]	-0.011 *** [0.003]	-0.007 * [0.003]	-0.007 * [0.003]	-0.008 ** [0.003]	-0.002 [0.003]	-0.004 [0.003]	0.002 [0.002]	-0.006 [0.003]	0.000 [0.004]	0.001 [0.003]	-0.001 [0.004]	-0.004 [0.004]
<i>schooling × informal</i>	-0.0001 [0.003]	-0.003 [0.003]	-0.006 * [0.003]	-0.003 [0.003]	-0.001 [0.003]	-0.009 * [0.003]	-0.007 * [0.003]	-0.006 [0.004]	-0.011 *** [0.003]	-0.009 ** [0.003]	-0.016 *** [0.003]	-0.004 [0.004]	-0.010 * [0.004]	-0.011 ** [0.004]	-0.009 * [0.004]	-0.009 * [0.005]
<i>schooling²</i>	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0002]	0.001 *** [0.0001]	0.001 *** [0.0001]	0.001 *** [0.0002]	0.001 *** [0.0001]	0.001 *** [0.0002]	0.001 *** [0.0002]
<i>schooling³ × informal</i>	0.00001 [0.0001]	0.0001 [0.0002]	0.0002 [0.0001]	0.0001 [0.0002]	0.0000 [0.0001]	0.0003 [0.0002]	0.0002 [0.0002]	0.0001 [0.0002]	0.0003 * [0.0002]	0.0002 [0.0002]	0.0005 *** [0.0001]	0.0000 [0.0002]	0.0002 [0.0002]	0.0003 [0.0002]	0.0001 [0.0002]	0.0001 [0.0002]
<i>women</i>	-0.017 ** [0.006]	-0.021 *** [0.006]	-0.024 *** [0.006]	-0.021 *** [0.006]	-0.033 *** [0.006]	-0.029 *** [0.006]	-0.034 *** [0.005]	-0.038 *** [0.005]	-0.028 *** [0.005]	-0.033 *** [0.004]	-0.041 *** [0.005]	-0.036 *** [0.004]	-0.049 *** [0.006]	-0.046 *** [0.004]	-0.037 *** [0.004]	-0.040 *** [0.004]
<i>women × informal</i>	0.073 *** [0.013]	0.064 *** [0.013]	0.069 *** [0.012]	0.061 *** [0.013]	0.067 *** [0.013]	0.074 *** [0.012]	0.075 *** [0.013]	0.065 *** [0.014]	0.050 *** [0.011]	0.061 *** [0.010]	0.069 *** [0.011]	0.049 ** [0.018]	0.062 *** [0.014]	0.053 *** [0.010]	0.050 *** [0.013]	0.052 *** [0.011]
<i>married</i>	-0.039 *** [0.004]	-0.041 *** [0.004]	-0.044 *** [0.004]	-0.049 *** [0.004]	-0.054 *** [0.004]	-0.053 *** [0.004]	-0.052 *** [0.004]	-0.054 *** [0.005]	-0.049 *** [0.005]	-0.054 *** [0.004]	-0.055 *** [0.004]	-0.049 *** [0.004]	-0.049 *** [0.004]	-0.046 *** [0.004]	-0.043 *** [0.005]	-0.046 *** [0.004]
<i>married × informal</i>	-0.009 [0.011]	-0.007 [0.011]	-0.004 [0.011]	0.007 [0.010]	0.014 [0.008]	0.005 [0.007]	0.011 [0.009]	0.010 [0.012]	0.008 [0.008]	0.012 [0.008]	0.018 * [0.007]	0.016 * [0.007]	0.018 * [0.008]	0.018 * [0.008]	0.023 *** [0.007]	0.018 * [0.008]
<i>leader</i>	-0.045 *** [0.005]	-0.053 *** [0.003]	-0.059 *** [0.004]	-0.059 *** [0.004]	-0.068 *** [0.004]	-0.070 *** [0.004]	-0.074 *** [0.005]	-0.068 *** [0.004]	-0.083 *** [0.004]	-0.080 *** [0.004]	-0.083 *** [0.004]	-0.086 *** [0.004]	-0.079 *** [0.005]	-0.090 *** [0.003]	-0.083 *** [0.004]	-0.078 *** [0.004]
<i>leader × informal</i>	-0.066 *** [0.013]	-0.047 *** [0.012]	-0.048 ** [0.014]	-0.054 ** [0.012]	-0.047 *** [0.011]	-0.039 ** [0.012]	-0.034 * [0.014]	-0.041 ** [0.012]	-0.023 [0.012]	-0.025 * [0.010]	-0.013 [0.011]	-0.024 * [0.012]	-0.023 * [0.011]	-0.013 [0.011]	-0.016 [0.012]	-0.012 [0.010]
<i>employer</i>	0.075 *** [0.021]	0.089 *** [0.022]	0.111 *** [0.023]	0.111 *** [0.027]	0.132 *** [0.027]	0.120 *** [0.028]	0.131 *** [0.025]	0.142 *** [0.026]	0.168 *** [0.028]	0.154 *** [0.027]	0.149 *** [0.032]	0.163 *** [0.028]	0.154 *** [0.033]	0.168 *** [0.029]	0.133 *** [0.028]	0.132 *** [0.027]
<i>employer × informal</i>	-0.152 *** [0.036]	-0.169 *** [0.032]	-0.150 *** [0.031]	-0.163 *** [0.036]	-0.161 *** [0.032]	-0.161 *** [0.035]	-0.161 *** [0.030]	-0.170 *** [0.033]	-0.197 *** [0.035]	-0.175 *** [0.034]	-0.147 *** [0.038]	-0.179 *** [0.032]	-0.171 *** [0.039]	-0.177 *** [0.032]	-0.149 *** [0.032]	-0.157 *** [0.031]
<i>exporter</i>	-0.015 ** [0.005]	0.000 [0.006]	-0.016 ** [0.006]	-0.029 *** [0.007]	-0.056 *** [0.006]	-0.056 *** [0.008]	-0.060 *** [0.006]	-0.085 *** [0.007]	-0.084 *** [0.006]	-0.060 *** [0.008]	-0.069 *** [0.008]	-0.051 *** [0.011]	-0.068 *** [0.010]	-0.047 *** [0.006]	-0.079 *** [0.008]	-0.043 ** [0.013]
<i>exporter × informal</i>	0.016 [0.009]	0.016 * [0.007]	0.013 [0.009]	0.007 [0.011]	0.019 [0.011]	0.041 *** [0.010]	0.033 ** [0.011]	0.062 *** [0.012]	0.057 *** [0.011]	0.039 *** [0.010]	0.051 *** [0.009]	0.013 [0.012]	0.026 * [0.011]	0.018 * [0.008]	0.054 *** [0.013]	0.024 [0.013]
<i>obs</i>	162 124	169 398	170 453	170 375	163 588	164 148	161 893	165 240	161 593	165 855	167 696	166 412	165 580	166 715	175 489	182 553

Notes: Significance codes: *** 0 to 0.001; ** 0.001 to 0.01; * 0.01 to 0.05; . 0.05 to 0.1. All regressions include city and industry dummy variables. Robust standard errors clustered at the four-digit NAICS industry level are shown in brackets.

► Table 8. Linear model for share of imported inputs in total inputs (*inputs*)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>women</i>	0.060 ** [0.021]	0.044 . [0.024]	0.048 * [0.022]	0.035 [0.024]	0.049 * [0.023]	0.046 * [0.022]	0.058 ** [0.020]	0.042 * [0.019]	0.041 * [0.019]	0.034 . [0.019]	0.031 [0.020]	0.048 * [0.022]	0.067 ** [0.021]	0.065 *** [0.017]	0.068 *** [0.017]	0.066 *** [0.017]
<i>hours</i>	-1.319 [3.608]	-3.963 [2.777]	-2.349 [3.057]	-0.893 [4.237]	2.055 [3.910]	4.160 [3.713]	1.982 [3.024]	-6.439 [4.383]	-7.906 . [4.693]	-3.172 [2.785]	-6.018 * [2.545]	-2.702 [1.797]	-5.695 [3.862]	0.931 [3.010]	0.790 [3.088]	-3.535 [2.525]
<i>GDWE</i>	0.215 *** [0.034]	0.069 * [0.027]	0.055 * [0.023]	0.065 * [0.025]	0.062 * [0.029]	0.100 *** [0.020]	0.139 *** [0.024]	0.140 *** [0.017]	0.096 *** [0.019]	0.091 *** [0.017]	0.092 *** [0.017]	0.053 *** [0.012]	0.050 *** [0.013]	0.048 *** [0.011]	0.042 *** [0.0084]	0.035 *** [0.0081]
<i>fuel</i>	-0.402 *** [0.105]	-0.424 *** [0.117]	-0.465 *** [0.123]	-0.352 *** [0.085]	-0.320 *** [0.076]	-0.271 *** [0.068]	-0.180 ** [0.054]	-0.194 *** [0.052]	-0.239 *** [0.059]	-0.164 ** [0.050]	-0.158 ** [0.053]	-0.212 ** [0.066]	-0.242 ** [0.079]	-0.158 * [0.069]	-0.144 * [0.063]	-0.137 * [0.062]
<i>energy</i>	-0.289 *** [0.079]	-0.309 *** [0.078]	-0.283 ** [0.089]	-0.337 *** [0.075]	-0.279 *** [0.075]	-0.208 ** [0.070]	-0.180 ** [0.062]	-0.180 ** [0.062]	-0.157 * [0.062]	-0.222 ** [0.071]	-0.234 *** [0.062]	-0.165 * [0.077]	-0.173 . [0.097]	-0.268 *** [0.075]	-0.242 ** [0.074]	-0.238 *** [0.068]
<i>subcontract</i>	-0.134 ** [0.046]	-0.098 . [0.058]	-0.074 [0.062]	-0.114 * [0.053]	-0.093 [0.056]	-0.122 . [0.071]	-0.170 ** [0.062]	-0.191 ** [0.057]	-0.158 ** [0.048]	-0.199 *** [0.055]	-0.238 *** [0.061]	-0.184 ** [0.068]	-0.129 *** [0.037]	-0.156 *** [0.041]	-0.127 ** [0.047]	-0.096 [0.068]
<i>advertising</i>	0.084 [0.129]	0.288 ** [0.088]	0.253 * [0.103]	0.283 * [0.114]	0.300 ** [0.108]	0.221 * [0.106]	0.046 [0.131]	-0.042 [0.112]	0.134 [0.161]	0.292 [0.180]	0.217 [0.188]	0.306 . [0.174]	0.390 . [0.206]	0.310 . [0.176]	0.241 [0.168]	0.267 [0.174]
<i>freight</i>	0.083 [0.090]	0.196 * [0.093]	0.160 . [0.090]	0.133 [0.083]	0.178 . [0.095]	0.212 * [0.094]	0.108 [0.106]	0.064 [0.092]	0.099 [0.097]	0.032 [0.081]	0.065 [0.097]	0.084 [0.122]	-0.038 [0.101]	-0.019 [0.101]	0.039 [0.108]	0.053 [0.114]
<i>exports</i>	0.289 *** [0.030]	0.301 *** [0.029]	0.300 *** [0.032]	0.305 *** [0.032]	0.331 *** [0.032]	0.309 *** [0.030]	0.345 *** [0.029]	0.362 *** [0.029]	0.354 *** [0.026]	0.356 *** [0.028]	0.357 *** [0.028]	0.349 *** [0.029]	0.362 *** [0.032]	0.378 *** [0.031]	0.389 *** [0.031]	0.380 *** [0.032]
<i>maquila</i>	-0.067 . [0.040]	-0.011 [0.047]	-0.066 . [0.036]	-0.025 [0.044]	-0.086 * [0.042]	-0.124 *** [0.033]	-0.005 [0.025]	0.005 [0.023]	0.032 [0.023]	0.034 [0.034]	0.001 [0.030]	0.031 [0.032]	-0.013 [0.036]	-0.094 * [0.045]	-0.115 ** [0.038]	-0.143 *** [0.039]
<i>profit</i>	-0.075 ** [0.023]	-0.015 [0.026]	0.002 [0.019]	-0.0033 [0.024]	-0.030 [0.025]	-0.049 * [0.024]	-0.034 [0.021]	-0.068 ** [0.024]	-0.051 * [0.025]	-0.065 * [0.026]	-0.054 * [0.027]	-0.062 * [0.030]	-0.045 [0.028]	-0.031 [0.023]	-0.026 [0.023]	-0.017 [0.024]
<i>productivity</i>	-0.0002 * [0.0001]	0.000 [0.0001]	0.000 [0.0001]	0.000 [0.0001]	0.000 [0.0001]	0.000 [0.0001]	0.004 [0.002]	0.002 [0.002]	0.000 [0.001]	-0.001 [0.001]	0.000 [0.001]	0.000 [0.0005]	0.001 [0.001]	0.000 [0.001]	0.000 [0.0003]	0.000 [0.0004]
<i>machinery</i>	0.029 * [0.014]	0.025 [0.016]	0.036 * [0.017]	0.030 . [0.017]	0.033 . [0.017]	0.033 * [0.016]	0.037 ** [0.013]	0.028 * [0.013]	0.029 * [0.013]	0.030 . [0.016]	0.028 . [0.016]	0.030 * [0.013]	0.035 * [0.017]	0.027 . [0.014]	0.025 [0.016]	0.027 [0.017]
<i>assets</i>	0.006 ** [0.002]	0.015 . [0.009]	0.024 ** [0.007]	0.031 ** [0.010]	-0.001 *** [0.0001]	0.002 [0.027]	0.002 [0.002]	-0.014 [0.029]	0.026 * [0.011]	0.000 [0.0001]	0.120 * [0.053]	0.008 [0.006]	0.009 [0.006]	0.025 [0.022]	0.003 [0.016]	0.145 ** [0.046]
<i>obs</i>	7 292	7 294	7 278	7 221	6 947	6 626	10 606	10 785	10 499	10 146	9 805	9 535	9 304	10 281	10 160	10 086

Notes: Significance codes: *** 0 to 0.001; ** 0.001 to 0.01; * 0.01 to 0.05; . 0.05 to 0.1. All regressions include four-digit NAICS industry dummy variables. Robust standard errors clustered at the four-digit NAICS industry level are shown in brackets.

► Table 9. Linear model for share of exports in total sales (exports)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>women</i>	0.005 [0.028]	0.017 [0.026]	0.007 [0.023]	-0.001 [0.025]	-0.001 [0.025]	0.014 [0.025]	0.005 [0.026]	0.023 [0.027]	0.010 [0.030]	0.014 [0.029]	0.013 [0.029]	-0.005 [0.030]	0.000 [0.034]	-0.003 [0.029]	0.000 [0.026]	0.001 [0.026]
<i>hours</i>	-2.682 [4.016]	-2.156 [3.540]	-2.344 [3.149]	-1.161 [3.104]	-3.717 [4.108]	-6.189 [3.550]	1.913 [2.710]	3.059 [3.440]	7.130 [4.101]	1.588 [2.377]	-0.275 [3.062]	-1.831 [2.166]	-3.700 [3.696]	-6.028 [3.505]	-9.099 ** [3.418]	-4.599 [2.617]
<i>GDWE</i>	0.032 * [0.014]	0.013 [0.008]	0.013 * [0.006]	0.019 * [0.009]	0.020 * [0.010]	0.041 ** [0.012]	-0.0027 [0.015]	-0.011 [0.014]	-0.011 [0.011]	-0.0033 [0.012]	-0.014 [0.011]	0.0045 [0.008]	0.017 * [0.008]	0.014 * [0.007]	0.0092 [0.0050]	0.0083 [0.0045]
<i>fuel</i>	0.040 [0.072]	0.066 [0.057]	0.091 [0.071]	0.047 [0.072]	0.052 [0.059]	0.038 [0.065]	-0.032 [0.063]	-0.018 [0.078]	0.007 [0.067]	-0.050 [0.067]	-0.053 [0.064]	-0.035 [0.067]	-0.105 [0.062]	-0.103 [0.053]	-0.110 * [0.055]	-0.103 [0.054]
<i>energy</i>	-0.003 [0.104]	-0.017 [0.088]	-0.019 [0.082]	0.028 [0.095]	0.017 [0.094]	0.024 [0.082]	-0.064 [0.082]	-0.058 [0.108]	0.006 [0.109]	-0.041 [0.100]	0.014 [0.095]	-0.085 [0.115]	-0.127 [0.133]	-0.057 [0.092]	-0.069 [0.089]	-0.075 [0.090]
<i>subcontract</i>	0.098 [0.049]	0.076 [0.041]	0.009 [0.042]	0.030 [0.044]	0.018 [0.040]	0.023 [0.050]	0.084 [0.048]	0.114 * [0.055]	0.089 [0.054]	0.170 * [0.065]	0.182 * [0.084]	0.179 * [0.071]	0.103 [0.076]	0.099 [0.051]	0.087 [0.053]	0.008 [0.063]
<i>advertising</i>	-0.549 *** [0.130]	-0.534 *** [0.147]	-0.545 *** [0.123]	-0.572 *** [0.140]	-0.591 *** [0.142]	-0.624 *** [0.143]	-0.633 *** [0.149]	-0.467 ** [0.172]	-0.570 * [0.233]	-0.755 ** [0.235]	-0.735 ** [0.242]	-0.786 ** [0.251]	-0.812 ** [0.278]	-0.668 ** [0.230]	-0.522 * [0.217]	-0.605 ** [0.227]
<i>freight</i>	0.502 ** [0.155]	0.506 *** [0.117]	0.609 *** [0.140]	0.532 *** [0.146]	0.505 *** [0.135]	0.564 ** [0.175]	0.634 *** [0.135]	0.641 *** [0.165]	0.667 *** [0.167]	0.791 *** [0.199]	0.765 *** [0.194]	0.851 *** [0.171]	0.816 *** [0.163]	0.755 *** [0.160]	0.698 *** [0.159]	0.721 *** [0.161]
<i>inputs</i>	0.234 *** [0.027]	0.244 *** [0.026]	0.241 *** [0.030]	0.251 *** [0.029]	0.274 *** [0.031]	0.260 *** [0.029]	0.410 *** [0.026]	0.430 *** [0.026]	0.426 *** [0.025]	0.431 *** [0.028]	0.424 *** [0.028]	0.448 *** [0.028]	0.455 *** [0.029]	0.462 *** [0.027]	0.466 *** [0.028]	0.453 *** [0.027]
<i>maquila</i>	0.054 [0.065]	0.075 [0.053]	0.078 [0.061]	0.110 * [0.053]	0.106 [0.062]	0.128 [0.079]	0.083 [0.047]	0.017 [0.052]	-0.011 [0.055]	-0.010 [0.059]	-0.043 [0.053]	-0.036 [0.083]	0.077 [0.092]	0.118 [0.079]	0.091 [0.080]	0.031 [0.074]
<i>profit</i>	-0.015 [0.023]	0.004 [0.022]	0.009 [0.020]	-0.0039 [0.028]	0.008 [0.022]	0.006 [0.023]	0.025 [0.015]	0.038 [0.023]	-0.021 [0.026]	0.016 [0.024]	0.010 [0.024]	0.050 [0.026]	0.048 [0.029]	0.049 [0.029]	0.040 [0.030]	0.034 [0.030]
<i>productivity</i>	-0.0002 *** [0.0001]	-0.0001 [0.0001]	-0.0001 [0.0001]	-0.0001 ** [0.00004]	-0.0001 * [0.0001]	-0.0001 * [0.00004]	-0.0005 [0.002]	0.0003 [0.002]	-0.0001 [0.0004]	0.0002 [0.0003]	-0.0001 [0.0003]	-0.0003 [0.0003]	-0.001 [0.001]	-0.0004 [0.0003]	-0.0001 [0.0001]	-0.0001 [0.0002]
<i>machinery</i>	0.038 * [0.017]	0.043 ** [0.016]	0.049 ** [0.015]	0.057 *** [0.015]	0.058 *** [0.015]	0.064 *** [0.018]	0.034 * [0.015]	0.050 ** [0.016]	0.058 *** [0.015]	0.068 *** [0.017]	0.054 ** [0.018]	0.074 *** [0.018]	0.077 *** [0.018]	0.078 *** [0.016]	0.088 *** [0.016]	0.078 *** [0.016]
<i>assets</i>	-0.001 [0.001]	0.009 [0.010]	0.009 [0.007]	-0.001 [0.012]	0.000 ** [0.0001]	0.037 [0.021]	-0.003 [0.002]	0.048 * [0.019]	0.011 [0.033]	0.0004 [0.0002]	0.243 *** [0.064]	-0.011 [0.016]	0.013 * [0.006]	0.072 * [0.030]	0.012 [0.022]	0.214 *** [0.055]
<i>obs</i>	7 292	7 294	7 278	7 221	6 947	6 626	10 606	10 785	10 499	10 146	9 805	9 535	9 304	10 281	10 160	10 086

Notes: Significance codes: *** 0 to 0.001; ** 0.001 to 0.01; * 0.01 to 0.05; . 0.05 to 0.1. All regressions include four-digit NAICS industry dummy variables. Robust standard errors clustered at the four-digit NAICS industry level are shown in brackets.

► Table 10. Effect of non-preferential trade liberalization and exposure to globalization on working poverty and low pay rates

	WPRE industry differentials				ELPR industry differentials				i-WPRE industry differentials				i-ELPR industry differentials			
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
TWAIT	0.488 *** [0.124]	0.563 *** [0.169]	0.903 *** [0.211]	0.919 ** [0.293]	0.456 *** [0.131]	0.392 ** [0.130]	0.873 *** [0.173]	0.704 *** [0.175]	0.066 [0.087]	0.152 [0.117]	0.433 ** [0.154]	0.463 * [0.198]	0.135 [0.128]	0.178 [0.175]	0.703 *** [0.180]	0.728 ** [0.228]
TWAIT × <i>manufacturing</i>			-1.052 *** [0.290]	-0.991 ** [0.315]			-0.981 *** [0.211]	-0.751 *** [0.189]			-0.561 ** [0.180]	-0.648 ** [0.239]			-0.891 *** [0.196]	-1.144 *** [0.288]
TWAEET	0.183 [0.593]	0.525 [0.644]	2.383 . [1.366]	2.704 * [1.204]	0.553 [0.759]	0.900 [0.691]	3.257 * [1.447]	3.134 ** [1.156]	0.185 [0.402]	-0.057 [0.383]	1.220 [1.098]	1.425 [1.111]	0.255 [0.530]	0.322 [0.630]	1.714 [1.675]	2.374 * [1.202]
TWAEET × <i>manufacturing</i>			-2.224 . [1.319]	-2.683 * [1.227]			-2.962 * [1.415]	-2.965 ** [1.136]			-0.806 [1.169]	-1.162 [1.179]			-1.116 [1.716]	-1.519 [1.334]
<i>inputs</i>			-0.094 [0.066]	-0.118 * [0.060]			-0.096 . [0.053]	-0.121 * [0.050]			0.009 [0.061]	0.025 [0.066]			-0.071 [0.073]	-0.106 [0.072]
<i>exports</i>			-0.223 *** [0.064]	-0.256 *** [0.066]			-0.169 *** [0.049]	-0.211 *** [0.050]			0.041 [0.069]	0.045 [0.076]			-0.054 [0.082]	-0.059 [0.090]
Year dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry trends	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
obs	2 156	2 156	2 156	2 156	2 156	2 156	2 156	2 156	1 983	1 983	1 983	1 983	1 983	1 983	1 983	1 983

Notes: Significance codes: *** 0 to 0.001; ** 0.001 to 0.01; * 0.01 to 0.05; . 0.05 to 0.1. All regressions include year dummies and four-digit NAICS industry dummies. Newey-West standard errors with one lag are shown in brackets.

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