The impact of Chinese import competition on Italian manufacturing*

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Abstract

This paper documents the effects of increased import competition from China on the Italian labor market. In line with recent studies (Autor et al., 2013, 2014), we take two complementary approaches and study both the effects on local labor markets and on manufacturing workers. Our analysis shows that the Italian local labor markets which were more exposed to Chinese trade by means of their industry composition ended up suffering larger manufacturing and overall employment losses. Nevertheless, back-of-the-envelope calculations suggest that the aggregate effect on total manufacturing employment is modest. At the individual level, contrary to what has been documented for many developed countries, workers initially employed in more exposed manufacturing industries did not suffer long term losses in terms of lower earnings or more discontinuous careers. While they were indeed less likely than other similar workers to continue working in manufacturing, they were also able to carry out successful transitions towards the non-tradable sector, in other areas with better job opportunities.

JEL classification: F14, F16.
Keywords: Import competition; Italy; China; Manufacturing; Local labor markets; Worker mobility

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1 Introduction

China's economic growth in the last 30 years has been unprecedented. Thanks to a series of market-oriented reforms started in the late 70s, and culminated with the WTO accession in 2001, it came to be the third largest world economy and biggest manufacturing producer. In recent years, a growing literature has quantified the effect that such an economic rise has had on the labour markets of developed economies, mostly via international trade (see Autor et al. (2016) for a review). While a robust finding from this line of work is that the "China shock" has displaced manufacturing jobs and deteriorated the careers of incumbent manufacturing workers, the margins of adjustment and the workers' transitions towards other parts of the economy seem to be country specific.

In this paper we investigate the impact of increased Chinese import competition, during the 1991-2007 period, on the Italian labor market. Our analysis takes two complementary approaches. In the first part of the paper we make use of Italian Census data and the Italian Statistical Register of Active Enterprises (ASIA) to look at the effects of Chinese trade from the perspective of local labor markets (LLMs). Here we follow the methodology used by Autor et al. (2013) and investigate whether areas specialized in industries subsequently hit by Chinese competition lost more manufacturing jobs in the 1990s and 2000s. In the second part of the paper we take advantage of administrative matched employer-employee data to examine the careers of a subpopulation of individuals who were employed in manufacturing at the start of the 1990s, this time following the work of Autor et al. (2014). We ask whether those individuals who in 1991 were working in industries subsequently more exposed to Chinese import competition were more likely to lose their job in the following years and, if so, whether they were able to carry out successful job transitions towards other firms, in and out of the manufacturing sector. Our focus on incumbent workers in 1991, long before China enter the WTO, has the advantage of allowing us to better control for the endogenous selection of workers into different manufacturing industries and to let us study long-run outcomes.

We find that LLMs traditionally specialized in import-competing sectors see a decrease in manufacturing employment, with no counterbalancing increase in the non-tradable sector. In the aggregate, however, this fall is modest in size. If we compare the evolution of the share of working-age population employed in manufacturing over the period 2001-2007 of two areas respectively at the 75th and at the 25th percentile of our import competition measure, we see that the former experiences a differential decrease of about 0.6 percentage points, a 5.3% fall in relative terms. Following the methodology developed in Autor et al.

(2013), a back-of-the-envelope calculation reveals that the "China shock" would have displaced around 24,000 jobs during the 1991-2001 period and 119,000 jobs during the 2001-2007 period. While China can account for about half of the overall manufacturing decline (280,000 jobs) observed in the period, these figures are very modest if one considers that the number of individuals employed in manufacturing stood at 5.1 million in 1991.[1]

We are not the first to find muted effects of Chinese import competition on manufacturing employment. In other European countries such as France, Germany and Norway, the number of manufacturing jobs lost because of Chinese import competition stands between 1 and 4% of 1995 manufacturing employment. The same number is close to 9% in the US and 14% in Spain (Table 1). A more detailed comparison between the Italian and the US case reveals that the difference in the overall effects stems from a higher *marginal* impact of import competition in the US. While Italian local labor markets experienced bigger increases in Chinese competition compared to their US counterparts, this was not enough to compensate for the greater sensitivity of US employment to such competition.

While we cannot provide a definite answer as to why the marginal effect appears lower in Italy, we provide some suggestive evidence that industry composition may play a role. A decomposition of the overall impact into industry-level effects, developed in Goldsmith-Pinkham et al. (2018), shows that in Italy negative employment changes are mainly driven by the textile and clothing sectors, inclusive of footwear, in the US, instead, by consumer electronics, integrated circuits, toys and furniture. This is suggestive that the effect may be different because different industries are driving the results in the two cases. While it's difficult pin down exactly why certain industries have suffered more we hope that this observation will stimulate further research into the differentiated impacts of the "China shock". Surely, Italy has remained relatively shielded from the rising import competition in consumer electronics and integrated circuits that characterized the US over the same period (Goldsmith-Pinkham et al., 2018; Bloom et al., 2019).

Our individual-level analysis reveals that those manufacturing workers employed in more exposed industries in 1991 were subsequently more likely to terminate their work relationship at their initial employer and move out of manufacturing altogether. Quite interestingly though, we also find that such workers did not spend more time into non-employment, nor earned less than other similar individuals when in work. This is because they were more likely to carry out successful transitions, predominantly towards unskilled labor intensive industries within the non-tradable sector.[2] In addition, we document that

[1] Authors' calculations based on the 1991 Istat Census.

[2] In order to classify non-tradable industries we employ the Eurostat "knowledge-intensive" definition.

part of these job moves can be explained by increases in geographical mobility. To the best of our knowledge we are the first to find a response along this margin.

Overall our results suggests that while the rise of China has certainly implied concentrated employment losses in some local labor markets and some industries, this was not enough to cause an overall decline in manufacturing employment in Italy. As a matter of fact, even though the manufacturing share of employment has witnessed a steady decline during the last fifteen years, Italy has experienced only a limited fall in the absolute number of people working in manufacturing, compared to other developed countries (see Figure 1). Moreover, workers' transitions out of manufacturing were helped by sustained employment growth in the non-tradable sector, which characterized Italy during those years. While the manufacturing employment share of working-age population has decreased by 1.4 p.p. during the 1991-2007 period, the non-tradable share went up by 9.0 p.p., leading to an overall rise of the employment rate of 7.6 p.p..[3] Correspondingly, the unemployment rate has been on a declining path from the late 1990s until the onset of the Great Recession, reaching 6% in 2007.[4] All in all, the "China shock" seems to have hit in a moment of favorable labor market conditions, when it would have been relatively easy for workers to find alternative job opportunities outside of manufacturing.[5]

Our paper contributes to the growing literature on the effects of Chinese import competition on the labor markets of developed economies. At an aggregate level, all existing studies document negative employment effects. However, some important differences emerge in terms of size. In Spain, Donoso et al. (2015) find employment effects much larger than Autor et al. (2013) found in their seminal paper on the US. They rationalize this with the presence of labor market rigidities that do not allow wages to respond to trade shocks. To the contrary Balsvik et al. (2015) find attenuated effects of Chinese competition in Norway, with job destruction being limited to few thousands units. For France, Malgouyres (2017) also finds smaller effects compared to the US, although bigger than in Norway. A peculiar case is represented by Germany. Dauth et al. (2014) find that while areas specialized in import-competing industries lost employment, this was more than compensated by gains in areas specialized in export-oriented industries. The latter led to a gain of approximately 300,000 jobs that would not have otherwise arisen. In Portugal Cabral et al. (2018) and Branstetter et al. (2019) find muted effects on the domestic market, but strong effects on export markets. Previous literature on the Italian

[3] Authors' calculations based on Istat Census data and Italian Statistical Register of Active Enterprises.
[4] IStat (2019)
[5] It is worthy noticing that employment growth in the non-tradable sector occurred equally strongly in areas more or less exposed to Chinese import competition, as we show in Section 4.2

case has pointed out that industries hit by import competition from low-wage countries lost employment compared to other manufacturing industries and that this is especially true in low-skill and labor intensive industries (Federico, 2014). In our paper, we are able extend the analysis and to look at the local labor market and the individual level margins of adjustment to trade shocks.

At the individual level, the general consensus so far reached is that the "China shock" has adverse consequences on workers' careers, mostly due to the partial inability of transferring industry-specific skills to other sectors. For the US Autor et al. (2014) find negative effects on earnings, but not on the number of years with positive earnings. While workers of all skill levels are equally likely to separate from their initial employer, low-skilled workers are the hardest hit, because they keep churning among exposed industries and find it hard to transition to the services sector. Higher-skilled workers, instead, are able to move out of manufacturing, with no apparent loss in earnings. Qualitatively similar results have also been found for Germany (Dauth et al., 2018) and Denmark (Utar, 2018), where the service sector can account for the majority of the transitions towards new employers. In contrast to the previous papers, we find that displaced workers were able to complete successful job transitions, thanks to the favourable labor market conditions, suggesting that new jobs were created in industries whose skill requirements were close enough to those needed in their previous jobs. This has mitigated the otherwise negative impact of increased international competition on the time spent in employment as well as on cumulative earnings.

The paper is organized as follows: in Section 2 we describe our data sources. In Section 3 we describe how we construct our measure of import exposure and detail our IV strategy. In Sections 4 and 5 we report our analyses at the local labour market and individual level, respectively. In Section 6 we conclude.

2 Data and measurement

For the purpose of this study we combine data from different sources. International trade data comes from UN Comtrade and Eurostat. The former contains import flows at the product level classified at the 6-digit HS level, for over 170 countries, starting from 1991. Since Italian data is not present for 1991 in Comtrade, we integrate it with data from Eurostat. We convert ECU-valued trade flows from Eurostat into dollars using the average nominal ECU/$ exchange rate for 1991. We also deflate all import values so that they are

expressed in 2007 dollars at constant prices. We aggregate product-level data to the level of 4-digit ISIC rev. 3 industries, using the concordances provided by Eurostat-RAMON. Domestic production data, needed to construct import penetration measures at the 4-digit level, comes from the Unido-INDSTAT4 database. In the remainder of the paper the term "industry" refers to 4-digit classifications and the term "sector" to 2-digit classifications.

China's share of world exports in goods soared from 2% in 1990 to about 15% in 2015. As for Italy, real imports from China have also been rising during the whole period. In 1991 Italy imported goods from China for a total value $3.1 billion. The same figure was around $28.1 billion in 2007, a 800% real increase. Over the same period, overall imports grew by a factor of 170%. An important feature of this exceptional growth is the high degree of variation across sectors. Table 2 reports 1991-2007 changes in the import penetration ratio and employment shares in total manufacturing employment for 22 2-digit sectors. The greatest incraese in import penetration occurred in sectors linked to textile and furniture, while industries that experienced the lowest increases are in the food and beverage sectors. The three most exposed sectors constituted 19.1% of the total manufacturing employment in 1991, indicating that Italy was relatively specialized in those sectors subsequently hit by Chinese competition.[6] In 2007, the same three 2-digit sectors accounted for 15.8% of total manufacturing employment, which approximately corresponds to a 1/5 decrease.

In the regional analysis our unit of interest is the local labor market (LLM). We obtain information on LLMs from the National Institute of Statistics (Istat). LLMs are groups of municipalities with strong commuting ties, and are similar to commuting zones in the US.[7] In 1991, Istat grouped Italy's 8,101 municipalities in 784 local labor markets. For each LLM we collect employment data by industry in 1981, 1991 and 2001 from the manufacturing census and in 2007 from the Italian Statistical Register of Active Enterprises (ASIA). In order to match industry employment data to international trade data, we convert all employment-related variables from the original NACE classification to the ISIC Rev. 3 classification up to the level of 4 digits. In order to construct demographic and socio-economic control variables at the LLM level in 1991, we draw information from the Population Census at the municipality level. We report descriptive statistics in Table 3, panel (a). Similarly to other developed economies, manufacturing employment as a share of working age population has been declining in the last two decades. However,

[6] If there was no correlation between import exposure and initial specialization we would expect that the first three sectors occupy $(100/22) \times 3 \times 100 = 13.6\%$ of total manufacturing employment.

[7] For more details about the methodology, see ISTAT. (1997) and Coppola and Mazzotta (2005)

a strong growth in the non-tradable sector has lead the overall employment rate to rise markedly, more than in other OECD countries.

In the worker-level analysis, we focus on the subpopulation of manufacturing workers who were employees of manufacturing firms in 1991. We draw information on their career before and after 1991, and up to 2007 from the Italian Social Security Institute (INPS). We rely on a matched employer-employee dataset covering the universe of workers from the population of privately employed individuals in Italy. Public sector, farming and self-employment are not present in the dataset. For each job spell in every year we observe worker and firm identifiers, together with gross earnings, number of weeks worked in full time equivalent units, part-time status and a coarse occupational code (apprentice, blue collar, high-skilled blue collar, white collar, middle manager or manager). For each worker we also observe a series of basic demographic characteristics such as gender, year of birth and place of birth. As for their firms, we observe 4-digit industries and municipality for each establishment.[8] We select a sample of approximately 700,000 workers born between 1952 and 1970, who were between 21 and 55 years old during the 1992-2007 period. We exclude individuals born in earlier cohorts because industry specific retirement patterns may act as a confounder. We restrict our attention to workers with high labor market attachment, who had a year-round job in the manufacturing sector in 1991, but were also employed the whole time in the three years before. In Table 3, panel (b), we display descriptive statistics. Out of the 192 months between 1991 and 2007, the average worker spent 157 months in employment, cumulatively earned 15 times her initial average annual salary, displaying a wage growth of 14% of her initial average annual salary for every 12 months spent in employment. One-third of our sample is made of females, while 70% is made of blue collar workers. Only 2% of these individuals were born abroad. In the years from 1988 to 1991, the average worker was earning a mean salary of $\exp 10.6 \approx 23,000$ euros and experienced a wage growth of around 9%.

3 Empirical strategy

Our empirical strategy closely follows recent work by Autor et al. (2016). We exploit variation in the growth of Italian imports from China across narrowly defined manufac-

[8] Our definition of an establishment is based on the *matricola contributiva* in the INPS dataset, that is the level at which firms pay social security contributions. For a given firm a *matricola* includes a set workers whose activities can be attributed to a unique 4-digit industry, and the set has organizational and managerial autonomy.

turing industries. For each industry j our measure of the increase in exposure to Chinese competition is the change in the import penetration ratio:

$$\Delta IP_{jt}^{ITA} = \frac{\Delta M_{jt}^{ITA}}{Y_{j,91} + M_{j,91} - X_{j,91}}, \tag{1}$$

where ΔM_{jt}^{ITA} is the real change in Italian imports from China in industry j between period t and $t-1$; $Y_{j,91}$ is domestic production in 1991; $M_{j,91}$ is total imports in 1991 and $X_{j,91}$ is total exports in 1991. Import penetration captures the fraction of Italian domestic consumption (for goods produced in j) accounted for by Chinese producers. It can also be seen as the market share in sales that China occupies in the Italian market.

We use this measure in two different ways. In Section 4 we apportion industry-level changes as in equation 1 to LLMs, depending on their initial employment shares in such industries. Our aim there is to investigate how local exposure to import competition translates into declines of manufacturing and overall employment at the local level. In Section 5, instead, we attribute industry-level changes directly to individual workers, depending on their industry of their employer in 1991. There we are interested in studying the adverse consequences of international trade on job biographies and explore the margins of adjustment that workers have to recover from an increase in trade exposure.

One could be concerned that the measure in 1 is correlated with unobserved industry shocks in Italy, which also explain employment dynamics. This would prevent identification by means of simple OLS.[9] In order to obviate to this issue we employ an instrumental variable strategy aimed at isolating changes in Chinese trade that are due to productivity improvements in China, rather than domestic industry shocks. Consistently with the recent literature (Acemoglu et al., 2016; Autor et al., 2016, 2014, 2013) we instrument the measure in equation 1 with an analogous one that replaces changes in Chinese exports to Italy with changes in Chinese exports to other developed countries (OC). This is equal to:

$$\Delta IP_{jt}^{OC} = \frac{\Delta M_{jt}^{OC}}{Y_{j,91} + M_{j,91} - X_{j,91}} \tag{2}$$

[9]Say that technological improvements in a given industry allows Italian firms to sell more goods at lower prices. This could independently affect both Italian firms' labor demand and consumer demand for Chinese goods, biasing the OLS coefficient. The sign of the bias would depend on what exactly happens to labor demand (which could increase or decrease following the technological improvement) and to consumer demand for Chinese goods (which could decrease or increase depending on whether the goods are substitute or complements).

The intuition behind the relevance of this instrument is that a series of structural reforms in China have increased its productive capacity in a specific set of industries where the economy had a comparative advantage. As a consequence China started exporting more in these industries across a wide variety of destinations. In order for this instrument to be valid, it must be that common patterns in Chinese trade across developed economies do not reflect correlated demand or technology shocks across high income countries. Although we cannot rule out this completely we choose our set of high-income countries so that this risk is minimized. We select all countries used in Autor et al. (2013), with the inclusion of the US, but exclude European countries, where Italian exports and trade flows are concentrated. Our countries include therefore: The US, Australia, Canada, Japan and New Zealand. Import flows that are common between Italy and this set of countries is more likely to capture the common Chinese supply-side component rather than a correlated demand component.

4 Local labor market evidence

Our aim in this section is to understand the relationship between changes in import competition from China and changes in manufacturing employment, which we measure as the share of working age population employed in manufacturing, at the local labor market level. Our empirical strategy, first developed in Autor et al. (2013), uses a Bartik-type measure where nation-wide industry changes in import penetration are apportioned to LLMs via initial local employment shares in those industries. The design exploits variation in the initial specialization of LLMs to generate variation in exposure to Chinese competition. Our measure of exposure is:

$$\Delta IP_{it}^{ITA} = \sum_{j} \frac{L_{ij,1991}}{L_{i,1991}} \Delta IP_{jt}^{ITA}, \tag{3}$$

where ΔIP_{jt}^{ITA} is the change in import penetration between period t and $t-1$ for industry j. $L_{ij,1991}$ is employment in industry j in LLM i in 1991, while $L_{i,1991}$ is total private non-agricultural employment in LLM i in 1991. The cross-sectional variation in ΔIP_{it}^{ITA} comes from two sources: (a) differences in the initial manufacturing share of employment[10] and, (b) differences in the industry mix within manufacturing. In our preferred

[10]Imports from China consist almost exclusively of manufacturing goods. Given this fact, consider a situation where ΔIP_{jt} is constant and equal to k for every industry j in the manufacturing sector. Then

specification we always control for the share of manufacturing employment in 1991, so that the cross-sectional variation only comes from differences in industrial composition across areas with similar manufacturing intensity. By means of their initial specialization, some LLMs experienced marked increases in import penetration while others remained relatively shielded from it. Two LLMs at the 25th and 75th percentile of import exposure, experienced a differential change in import penetration from China of 0.64 percentage points during the 1991-2001 period, and of 2.7 percentage points during the 2001-2007 period.

In Figure 2 we present heatmaps of both changes in the share of working-age population employed in manufacturing and changes in the import penetration ratio, for the 2001-2007 period. Both changes are first residualized against the start-of-period share of manufacturing employment. The hardest-hit areas are concentrated in the North-East (Veneto) and Center (Tuscany and Marche). In the North-West (Piemonte) and vast part of the South (Campania, Molise, Basilicata), competition was lower. We now turn to our estimating equation:

$$\Delta Y_{it} = \alpha_r + \gamma_t + \beta \Delta IP_{it}^{ITA} + X'_{i,'91}\delta + \epsilon_{it}, \tag{4}$$

where our main outcome of interest is the change in the share of working-age individuals who work in manufacturing; α_r are 20 "NUTS 2" region fixed effects; $X'_{i,'91}$ is a vector of LLM-level controls measured in 1991, namely the female employment rate and the share of manufacturing employment in private non-farm employment; ϵ_{it} is an error term.[11] We estimate Equation 4 in long differences, stacking the two periods 1991-2001 and 2001-2007. We normalize variables to decade-equivalent changes[12], and include a decade dummy (γ_t). Unless otherwise specified, all regressions are weighted by start of period working-age population. We cluster standard errors at the LLM level to account for serially correlated shocks over time within areas. The differenced specifications net out unobservable time-

$\Delta IP_{it} = k \cdot L^m_{i,1991}/L_{i,1991}$, where $L^m_{i,1991}$ is total manufacturing employment. It follows that the shock is higher by contruction in those LLMs with higher employment share in manufacturing in 1991.

[11] Contrary to Autor et al. (2013), we do not have good measures of education and the incidence of routine occupations at the local level. These controls are aimed at capturing changes in technology that may be correlated with import exposure and explain the evolution of manufacturing employment. To obviate to this lack of measurement we try to control for these factors indirectly, by using (twenty) region fixed effects, under the assumption that these characteristics do not vary extensively across local labor markets in the same region. We also try specifications with region × decade fixed effects and show that results are similar.

[12] This involves multiplying both the dependent variable and ΔIP by 10/6 in the second period (2001-2007).

invariant LLM characteristics, which explain the level of manufacturing employment. Our specification in long differences measures long-run changes and should not be affected by year-to-year volatility in manufacturing employment or trade flows.

As described in Section 3, one possible concern when estimating Equation 4 by OLS, is that ΔIP_{it}^{ITA} could be correlated with the error term because of domestic industry-specific shocks. In order to obviate to these problems we instrument our measure in 3 with:

$$\Delta IP_{it}^{OC} = \sum_{j} \frac{L_{ij,1991}}{L_{i,1991}} \Delta IP_{jt}^{OC}, \tag{5}$$

that is an analogous measure that replaces changes in Chinese exports to Italy with changes in Chinese exports to a subset of other developed countries (OC). In the next section we present the results from our analysis.

4.1 Chinese trade and manufacturing employment

Table 4 presents the main results of the local labor market analysis. In Panel (a) we report 2SLS estimates of the effect of Chinese import competition on the share of working-age individuals employed in manufacturing. Corresponding first-stage estimates and K-P F-statistics are displayed in Panel (b).[13] In all specifications we detect a negative and strongly significant effect of increases in import competition on the manufacturing share. The coefficient associated with the ΔIP_{it}^{ITA} variable in column (1) of panel (a) indicates that, over a decade, a percentage-point increase in import penetration from China is associated with a 0.253 percentage points decline in the share of working age individuals working in manufacturing.[14] In column (2) we introduce 20 regional dummies, meant to capture unobserved differential trends in employment dynamics. During this period, the manufacturing share in working age population was growing more in the South of Italy compared to the North, mostly because of increases in labor force participation, traditionally low in the South. The introduction of geographic dummies partially attenuates the size of our effect of interest, which still remains strong and significant. Compared to specification in column (2), column (3) further adds to the analysis demographic and economic controls measured in 1991, which may independently affect the manufacturing share at the LLM level. Both the share of manufacturing employment and the female employment share are strong predictors of the decline in manufacturing. However the

[13] Table A.1 in the Appendix reports OLS estimates of the same specifications.
[14] The level of the share in 1991 was 11.66%, so this implies a 1.7% change.

coefficient on our variable of interest decreases only by 1/4 compared to column (2) and remains highly significant. Finally, in column (4) we estimate our model with the full set of controls but without weighting for working age population in the LLM at the beginning of the period. The main results are unaffected, suggesting the results are not driven by a few and very large LLMs. In order to probe the robustness of our results, in column (5) and (6) we also include region-by-decade fixed effects, with or without population weights. While the coefficient is smaller, it is still statistically significant. Across all columns, first stage estimates suggest a very strong and statistically significant relationship between our endogenous variable and the instrument. First stage estimates are very stable across specifications.

In order to assess the relative contribution of China in explaining changes in Italian manufacturing employment, we employ a back-of-the-envelope calculation developed in Autor et al. (2013). [15] Our preferred specification to carry out this exercise is the one in column (3). On the one hand it is more comparable to the main specification in Autor et al. (2013), against which we benchmark our results. On the other hand we want to make sure that the size of the overall effects we find is not driven by the choice of a relatively small estimate from Table 4. Our coefficient of interest in column (3) indicates that, over a decade, a percentage point increase in the share of domestic spending that falls on Chinese goods lowers the share of working age individuals employed in manufacturing by 0.146 percentage points. Since the average local labor market saw a real increase in Chinese import penetration of 0.7 percentage points between 1991 and 2001, and of 3.5 percentage points in the six years between 2001 and 2007, we obtain that Chinese import competition would have reduced the manufacturing share in working age population by 0.1 (0.146×0.7) percentage points in the first period and 0.51 (0.146×3.5) percentage points in the second period. Since the overall change in such share has been -0.55 percentage points in the first period, and -0.89 percentage points in the second period, we obtain that China could account for 18% (0.1 over 0.55) of such decrease in the first period, and 58% (0.51 over 0.89) in the second period.

As highlighted in Autor et al. (2013), this benchmarking exercise may overstate the share of the decline that is attributable to China. While $\hat{\beta}_{2SLS}$ reflects the causal effect of an increase in China's productive capacity on Italian manufacturing, ΔIP_{it}^{ITA} reflects both supply and demand changes. Insofar increases in import demand by Italian consumers

[15] The key assumption behind this exercise is that the cross-sectional differences across LLMs that we have estimated mainly reflect absolute declines in the number of jobs. Migration across areas constitutes one potential threat to the validity of this exercise. In Section 4.2 we show that population counts do not respond to the China shock.

have less negative effects on employment, our calculation would overstate China's contribution to the decline in Italian manufacturing. Same as in their paper, we rescale the effects multiplying them by the share of variance in ΔIP_{it}^{ITA} accounted for by ΔIP_{it}^{OC}.[16] We find this share to be 61% in our sample. This implies that China can account for 11% of the Italian manufacturing decline in the 1991-2001 period and for 35% of the decline in the 2001-2007 period. Multiplying these shares by 1991 working age population would imply a loss of around 23,700 jobs in the first period and a loss of 119,400 jobs in the second period. We will discuss how these effects compare to those in other studies in section 4.3.

A final concern with our empirical strategy is that the rise in imports in specific industries could be a consequence of the fall in employment in those same industries in Italy. While the IV strategy already aims at addressing these concern, we probe our results with an additional set of analyses. We regress 1981-1991 (past) changes in manufacturing employment against 1991-2001 and 2007-2001 (future) changes in import penetration, properly instrumented. This amounts to check whether areas subsequently hit by Chinese competition were already trending differently in previous decades. In Table 5 we show the results. While in some instances the absolute value of point estimates is greater than that of our main effects, we fail to find any statistically significant relationship between past employment dynamics and Chinese trade. Areas later hit by Chinese competition were not on a significantly different trend beforehand.

4.2 Other labour market outcomes at the local level

The indirect effects of trade with China on employment in other sectors may be ambiguous in sign. On the one hand there could be employment reallocation towards the non-tradable sector. This reallocation channel predicts that bigger decreases in the share of manufacturing employment should cause an increase in the share of non-manufacturing employment, with no net effect on total employment. On the other hand if the local negative demand shock depresses local consumption, employment could fall also in the non-tradable sector, further depressing employment at the local level. In this setting, areas hit by Chinese competition may become less attractive and lose population out of migration responses.

We use slight modifications of the estimating equation in 4 to shed light on these different

[16] The details of this calculation are presented in the Theory Appendix of Autor et al. (2013)

adjustment mechanisms. In Table 6 we study three different outcomes: the number of people employed in the non-tradable sector over working age (15-64) population, the total number of people working over working age population and, finally the log change in working age population. Results in Table 6 suggest that in those LLMs that were more exposed to Chinese trade, the decline in manufacturing employent (column 1) was not compensated by an increase in employment in the non-tradable sectors (column 2). Given that working age population did not change in response to increased competition (column 4) total private non-farm employment in those LLMs fell (column 3).

4.3 Why are effects small?

According to Autor et al. (2013), the China shock can account for the loss of about 1.5 million jobs in the US over the 1991-2007 period, that is 8.9% of total US manufacturing employment in 1995. Compared to the figures in Autor et al. (2013), perhaps surprisingly, similar studies of the effects of the China shock in European countries have found much more muted effects of Chinese import competition on manufacturing employment.

In Table 1 we compare similarly-constructed figures for selected OECD countries on which studies are available. For all countries the figures are always obtained through the back-of-the-envelope calculation developed in Autor et al. (2013).[17] In Italy, France, Germany and Norway, the number of jobs lost represents between 1% and 4% of 1995 manufacturing employment, reflecting a striking similarity in the magnitude of the response. Among European countries with available studies only Spain represents an exception with a decline of almost 14%.[18]

In terms of the econometric model employed in these studies, differences in these figures could be explained either by the fact that US local labor markets were more exposed to Chinese import competition (higher ΔIP_{it}), or that the marginal effect of each p.p. increase of import penetration was higher in the US (higher β), or that the share of variance in import penetration that can be explained by the instrumental variable is greater for the US. In order to assess the relative contribution of these factors, we replicate the analysis in Autor et al. (2013), making use of data from the replication packages of Autor et al. (2013) and Acemoglu et al. (2016). Specifically, for comparability purposes,

[17] In some instances these numbers were directly reported in the paper. In some other instances we have computed them combining various pieces of information within papers.

[18] We recall that, in Germany, job losses in import competing industries have been more than compensated by job creation in export-oriented industries during the same period (Dauth et al., 2014).

we substitute the original import per worker measure employed in Autor et al. (2013) with an import penetration one, built thanks to data from Acemoglu et al. (2016). We leave other parts of their specification unchanged.[19]

Our results are reported in Table 7. In column (1) we report the estimated β coefficients for Italy and the US. In the US, one percentage point increase of import penetration over a decade is associated with a 0.674 decline in the share of working-age population working in manufacturing. This estimated marginal effect is 4.62 times larger than in the Italian case. In column (2) and (3) we examine the average increase in import penetration in US and Italy during the first decade (1990s) and the second decade (2000s), respectively. Averages are weighted by local labor market working-age population. While in the 1990s Italy and the US saw virtually the same p.p. increase in import penetration from China, in the 2000s we see a much greater increase in Italy. Average import penetration was $1/0.31 = 3.22$ times higher in Italy in the 2000s. This could be explained by the fact that Italy displays a higher degree of overall trade openness compared to the US. In column (4) we compare the share of variance in the national measure of import penetration that can be explained by the instrumental variable. As explained in Autor et al. (2013) multiplying the implied effect by this share should isolate the component of Chinese import competition that stems from productivity improvements in China. This factor is also higher in the US, by a factor of 1.3. Overall, we can say that while Italian local labor markets were more exposed to Chinese import competition, the marginal effect of such competition was stronger in the US, yielding overall stronger effects.

Smaller marginal effects in Italy could be due to some institutional feature of the labor market. Short time work programs (*Cassa Integrazione Guadagni* in Italy) could have played a role in preserving job matches and sustain employment, while firms adjusted on some other margin (e.g. physical investment). Unfortunately we do not have access to high-quality data on the Italian short time work program before 2005, so this is not an avenue that we can explore any further.

Another reason could have to do with industry composition. First, Italy and the US were specialized in very different industries already in the mid 1990s. The US had higher employment shares in high-tech sectors linked to computing and ICT, while Italy was specialized in lower-tech sectors linked to textile and clothing (T&C), together with leather

[19]For the construction of the import penetration measure, Acemoglu et al. (2016) use two time windows, 1991-1999 and 1999-2007 that are slightly different from Autor et al. (2013) and ours. We therefore appropriately rescale these 8-year long differences so that they reflect decade-equivalent changes (multiplying by 8/10). Industry employment shares are always fixed at 1988.

goods. In 1995, Electrical machinery and optical equipment accounted for 14.4% of manufacturing employment in the US, while the same number was only 6.8% in Italy. Conversely, in 1995 20% of Italian manufacturing employment was accounted for by T&C and leather goods, while the same share was around half of that in the US (9.1%).[20]

The common view is that China exports low-tech goods that are intensive in the use of labor. Given these specialization patterns this would have implied bigger employment losses in Italy, compared to the US. However, starting from the early 2000s, the structure of Chinese exports changed in favour of consumer electronics and other relatively high-tech goods, in a way that was not expected for a country with that level of development (Rodrik, 2006; Schott, 2008).[21] The relative convenience of Chinese goods in these sectors has likely put competitive pressure on US producers. While such higher-tech goods gained prevalence, it is still true that China was exporting high quantities of T&C goods. However, empirical evidence using European data shows that import competition in T&C has led to technology upgrading within, and reallocation of workers towards, the best firms in the sector (Bloom et al., 2016). One might argue that such reallocation within T&C may have limited aggregate employment losses in manufacturing. In addition to this, Italian varieties in T&C may have suffered less from Chinese competition as they were already part of a higher-quality and relatively insulated market niche (Truett and Truett, 2014).

In what follows we use techniques developed by Goldsmith-Pinkham et al. (2018) to analyze whether the local labor market effects in the two countries are indeed driven by different industries. The authors show that the 2SLS estimator based on a Bartik instrument (like ours) can be expressed as a weighted average of industry-specific marginal effects, where the weights depend on the relative strength of industry-specific first stages.[22] In our setting, these industry-specific weights depend on the (relative) strength with which Italian imports from China in an industry can be explained by the Chinese supply shock, as captured by Chinese exports to other countries.[23]

Results are reported in Table 8. In Panel (a) we report the top five industries in terms

[20] We retrieve aggregate data for the US from the County Business Pattern files for 1995, freely available at https://www.census.gov/data/datasets/1995/econ/cbp/1995-cpb.html. For T&C (including leather) we consider 2-digit SIC codes 22, 23, 31. For Electrical machinery and optical equipment, we consider 3-digit SIC code 357 and 2-digit codes 36, 38.

[21] One emblematic case in this respect is Lenovo's acquisition of the IBM PC division in december 2004.

[22] These weights are referred to as Rotemberg weights (Rotemberg, 1983). Although the weights always sum to one, negative weights are possible. This happens when the first stage coefficient associated to one industry and the overall one are opposite in sign. In our sample, as in Autor et al. (2013), negative weights are quantitatively unimportant.

[23] For the US we still use data from the replication packages described above, in exactly the same way.

of industry-specific weights (α_k) for the US, together with the associated marginal effects (β_k). Electronic computers and semiconductors strongly contribute to the overall decline. The importance of such industries is also consistent with recent evidence from Bloom et al. (2019), who find that most of China-related employment changes in the US are driven by large multinationals in high-tech sectors switching from manufacturing activities (probably offshored) to service activities. We also find negative effects in furniture and toys, consistent with fast and marked increases in import penetration.[24] Perhaps surprisingly, communication equipment (radio and TV) did not witness employment changes, despite strong import competition. When turning to Panel (b), we find a very different set of industries driving effects in Italy. We find that import changes in the textile and clothing (T&C) sector are associated with employment declines and none of the high-tech sectors rank among the top five. The industry that carries the highest weight is the cutting and shaping of stone. While in this industry Chinese imports rose substantially, this did not cause a fall in employment. This is likely due to strong foreign demand of certain Italian stone varieties (e.g. marble sold to China) that prevented labor demand from falling.[25] These results show that the effects in the two countries are driven by different industries. Understanding the differences between the aggregate effects on the two sides of the Atlantic is an interesting avenue of research that we plan to pursue in other work.

5 Worker level evidence

Our focus in this section is to examine the career trajectories of incumbent workers who were employed in manufacturing in 1991, and were subsequently hit by import shocks of different magnitudes depending on the precise industry they were working in. While the focus on this subpopulation of individuals does not offer a complete picture of what happened to the careers of *all* manufacturing workers from 1991 till 2007, it allows us to better control for the endogenous selection of workers across different industries, while offering a medium to long-run overview of the effects of the China shock at the worker level.

[24] Reporters from the *Wall Street Journal* have also been arguing that the rise in import competition from China can account for consistent employment declines in the furniture industry (Davis and Hilsenrath, 2016)

[25] The inclusion of the stone-cutting industry is not the only factor responsible for the difference in effects. When repeating the analysis removing such industry, we find a $\hat{\beta}_{2SLS} = -0.315$. The ensuing back-of-envelope calculation of Section 4.1 yields an overall loss of 255,000 manufacturing jobs, amounting to 5.5% of 1995 manufacturing employment, which is still lower than the effect found by Autor et al. (2013) for the US.

In all that follows we consider a 16 year period (1991-2007) and look at cumulative outcomes related to the time spent employed and earnings. Our research design in this section follows Autor et al. (2014). Similarly to them, after assessing the overall impact of Chinese trade on careers we decompose outcomes according to where they are accrued: initial employer, other employers, initial 2-digit manufacturing sector, other 2-digit manufacturing sectors, the non-tradable sector, initial local labor market or other local labor markets. We compare individuals who are observationally similar in 1991, except for their narrow industry affiliation. In doing so, we control not only for observable individual characteristics, but also characteristics of the firm and sector where these workers were employed at the time. For identification we use variation within broad manufacturing sub-sectors and within local labor markets.

We attribute 1991-2007 changes in import penetration to each worker based on the 4-digit industry of their employer in 1991. When a worker has more than one job in 1991, we consider the spell where the worker earns the highest share of income for that year. As highlighted in Section 3, we instrument changes in the Chinese import penetration in Italy with changes in Chinese import penetration for a selected set of high income countries. We attribute the value of the instrument to each worker based on their industry affiliation in 1988, instead of 1991, to exclude that our effects can be explained by job transitions in anticipation of Chinese trade.

Our empirical specification is very similar in spirit to Autor et al. (2014). Our preferred specification takes the form:

$$Y_{ij} = \alpha + \beta_1 \Delta IP_{jt} + \beta_2 IP_{j,91} + X'_{ij}\gamma + X'_j\delta + \theta_k + \eta_s + \epsilon_{ij}, \tag{6}$$

where Y_{ij} is the outcome of interest for worker i employed in 1991 in industry$j$, ΔIP is the 1991-2007 change in import penetration, $IP_{j,91}$ is the level of import penetration for that same industry in 1991. X'_{ij} is a vector of individual characteristics, all measured at the beginning of the period. This includes a dummy for being female, year of birth dummies, a dummy for being foreign-born, dummies for the age of entry into the labour market, the log of average annual earnings and log change in earnings between 1988 and 1991, a dummy for being a part-time worker, and six dummies related coarse occupational codes.[26] We also include firm level controls measured at the main job the worker holds in 1991: the dimensional class of the firm and the log of the average wage in the firm. X'_j is a vector of 4-digit industry characteristics. We include the share of white collars workers

[26]These are apprentice, blue collar, high-skilled blue collar, white collar, middle manager, manager.

in 1991, the change in the industry employment share between 1983 and 1991, and the log change in the industry average wage between 1983 and 1991. We also use dummies for 14, broadly defined, manufacturing sub-sectors (θ_k) and local labor market fixed effects (η_s). We cluster standard errors at the level of 1991 4-digit industry, to account for the fact that the long-run outcomes are correlated for individuals initially employed at the same firm, or in the same industry.

5.1 Import competition and individual careers

In Table 9 we present 2SLS estimates of equation 6 for different labor market outcomes at the individual level. Regardless of the measure used, we fail to detect any economically significant impact of Chinese import competition on individual careers. This stands in contrast with previous work, which has systematically detected losses for the average exposed worker (Autor et al., 2014; Utar, 2018; Dauth et al., 2018) Column (1) reports the estimated effect of changes in Chinese import penetration on the cumulative number of months with at least one day of employment. The coefficient is not significantly different from zero, and 95% confidence intervals exclude any economically meaningful effects. The point estimate of 0.013 indicates that a 10 percentage-points increase in import penetration is associated with a 4-days ($0.013 \times 10 \times 365/12 = 3.95$) increase in the time spent in employment over a 16-year period.[27] While this indicates a null effect of Chinese trade along the *extensive* margin of employment, it is not conclusive about the *intensive* margin. After a trade shock, workers could remain employed but see their number of working weeks or hours reduced. In columns (2) and (3) we investigate this channel by looking at the cumulative number of weeks and the number of full-time-equivalent (FTE) weeks worked. Any difference in the effects on these two variables should reflect a change in working hours. We find no negative effect along these margins. If anything, we see a slight increase in the number of weeks worked, although the impact is very small in size. A 10 percentage-point increase in import penetration is at most associated with a 5 days ($0.088 \times 10 \times 6 = 5.3$) increase in time spent in employment, over a period of 16 years.[28]

In the next two columns we look at earnings-related measures. In column (4) we study cumulative earnings normalized by average 1988-1991 yearly earnings, while in column (5) we look at cumulative earnings per 12 months worked, always normalized by average

[27] A 10 p.p. increase in import penetration is approximately the difference faced two workers employed in industries at the 25th percentile and the 75th percentile of import exposure, respectively (that is 10.7 p.p.)

[28] Results are robust to the set of control variables included (see Table A.2 in the Appendix).

initial earnings (a proxy for wages).[29] More exposed workers did not face any appreciable income loss compared to observationally similar, but less exposed, individuals. As a consequence they did not face lower wages conditional on working.[30]

The fact that the overall impact is not distinguishable from zero does not imply that more exposed workers did not experience any change in their career. It could be that workers experienced a negative shock at their initial employer but were able to adjust by finding job opportunities at new firms, potentially in other sectors and other localities. In Table 10 we unpack the total effects analyzed in Table 9 into a component observed at the initial employer and a (complementary) component observed at other employers. For ease of exposition we only report effects on the number of months worked, cumulative earnings and earnings per effective year worked. In panel (a) we find that more exposed workers spend less time at their initial employer (column (2)) but that such loss is entirely compensated by transitions towards other firms (column (3)). This is reflected in cumulative earnings changes at the initial employer vs other employers (panel (b)). Conditional on moving towards other firms, workers obtain slightly higher earnings, compared to observationally similar workers who also move. The coefficient in panel (c), column (3) indicates that a 10 p.p. increase in import penetration leads to an earning growth 0.3% of average 1988-1991 yearly earnings every 12 months worked.

5.2 Where do workers find new job opportunities?

We have established that, on average, more exposed workers did not lose in terms of time spent in employment or earnings, because of trade. Losses at the initial employer are compensated by transitions towards other firms. In this subsection we investigate where these gains are accrued. We look separately at sectoral mobility and geographical mobility. Similarly to Section 5.1, in Table 11 decompose outcomes observed at new employers into a component that is accrued within the initial sector and other ones accrued outside. Our estimates indicate that new job opportunities are to be found in the non-tradable sector. More exposed workers spend less time working in their initial 2-digit sector and equally in other 2-digit sectors within manufacturing. Results in panel (c) indicate modest earn-

[29] Compared to a specification with log earnings on the l.h.s. and individual fixed effects, such normalization only uses of information on workers' careers that is unaffected by the subsequent rise of Chinese trade (Autor et al., 2014).

[30] The coefficient in column (4) implies that a 10 p.p. increase in import penetration causes a cumulative earnings difference of 3% of average yearly earnings in 1988-1991. Given that the average (gross) salary is around 23,300 euros, the coefficient implies a gain of 700 euros over 16 years

ing growth (compared to the counterfactual) due to transition towards the non-tradable sector.

The importance of the non-tradable sector sector in smoothing out trade shocks in manufacturing is not new in the literature. However previous studies document either that these transitions do not allow workers to fully counteract their initial shock, or that only a subset of them, the high-skilled, is able change sector in a successful way (Autor et al., 2014; Utar, 2018; Dauth et al., 2018; Dix-Carneiro and Kovak, 2019). We offer two sets of possible explanations for why transitions to the non-tradable sector have been particularly successful for Italian manufacturing workers. The first is that employment growth in non-tradables was strong, when compared to other developed economies. For example, between 1991 and 2007, its employment share went from 57% to 66% (+15.7%) in Italy and from 72% to 77% (+6.9%)in the US.[31] (ILO, 2019). Therefore, the sector as a whole could provide a high number of vacancies for workers leaving manufacturing jobs. The second is that the skill content of the average job in non-tradables in Italy was sufficiently low so that manufacturing workers could easily switch. As a consequence manufacturing workers could more easily re-employ themselves in such sector. In Table 12 we separate non-tradable industries into "knowledge-intensive" (KIA) and "non-knowledge-intensive", according to the Eurostat definition, and check which ones can account for most of the transitions.[32] As expected, non-KIA industries account for 100% of job transitions outside of manufacturing that occur because of Chinese trade.

In Table 13 we investigate differential patterns of geographical mobility. Our results indicate that exposed workers were more likely to spend more time outside of their initial LLM (panel (a), column (3)), earning more as a consequence (panel (c), column (3)). For exposed workers, the number of extra months worked in a different LLM (panel (a), column (3)) is lower in magnitude than the number of extra months worked in the non-tradable sector found in Table 11. This suggests that part of the new employment opportunities in the non-tradable sector are found close to home, but a substantial component requires commuting to other local labor markets. In Table 14 we further decompose geographical mobility responses according to whether they occur within the same region or outside the initial region. We find that workers find new job opportunities outside their region. These result stand in contrast with all previous worker-level studies on the impact of Chinese trade, where no geographical mobility responses have been found (see e.g. Autor et al.

[31] This difference is exacerbated by the fact that, at the same time, the number of manufacturing jobs was declining in the US and staying constant in Italy.

[32] A 2-digit sector is classified as "knowledge-intensive" if more than 1/3 of its employees have completed tertiary education

(2014); Dix-Carneiro and Kovak (2019)). This is also at odds with another strand of literature that has highlighted the relatively weak relationship between labour demand shocks and population in Italy (Ciani et al., 2019, among others). The higher degree of geographical mobility in Italy in response to the China shock thus constitutes a puzzle that we aim to investigate in future research.

6 Conclusions

In this paper we studied the effect of the recent rise of China as major worldwide manufacturing producer on local labor markets and individual workers' careers in Italy. While a robust finding from recent works (Autor et al., 2013; Donoso et al., 2015) is that trade with China can account for a substantial fraction of the decline of manufacturing employment, we find that the impact on the Italian labor market has been modest. The lack of an overall change in employment levels does not imply, however, that the manufacturing sector did not experience some important transformations during this period. Opposite to a marked decrease in the share of manufacturing workers employed in more traditional sectors like textile and apparel, in fact, there was a corresponding increase in other sectors like metal manufacturing and machinery (Brandolini and Bugamelli, 2009).

The "China shock" could also have deteriorated the careers of incumbent manufacturing workers, whose industry-specific skills may not have allowed successful transitions towards other parts of the economy (Autor et al., 2016). Instead, our results suggest that the presence of new job opportunities in low-skill-intensive industries in the non-tradable sector can help workers to perform successful transitions, absorbing the initial shock. We also document that successful transition were associated with an increase in geographical mobility towards areas with better job opportunities.

While the presence of job opportunities in low-skill-intensive industries outside of manufacturing can be peculiar to the Italian case, where non-tradables were gaining employment shares, our results indicate that the ability of an economy to absorb an external shock crucially depends on the macroeconomic context. From this perspective, it should be not surprising that the effects of the China shock vary tremendously across countries, as documented by existing studies.

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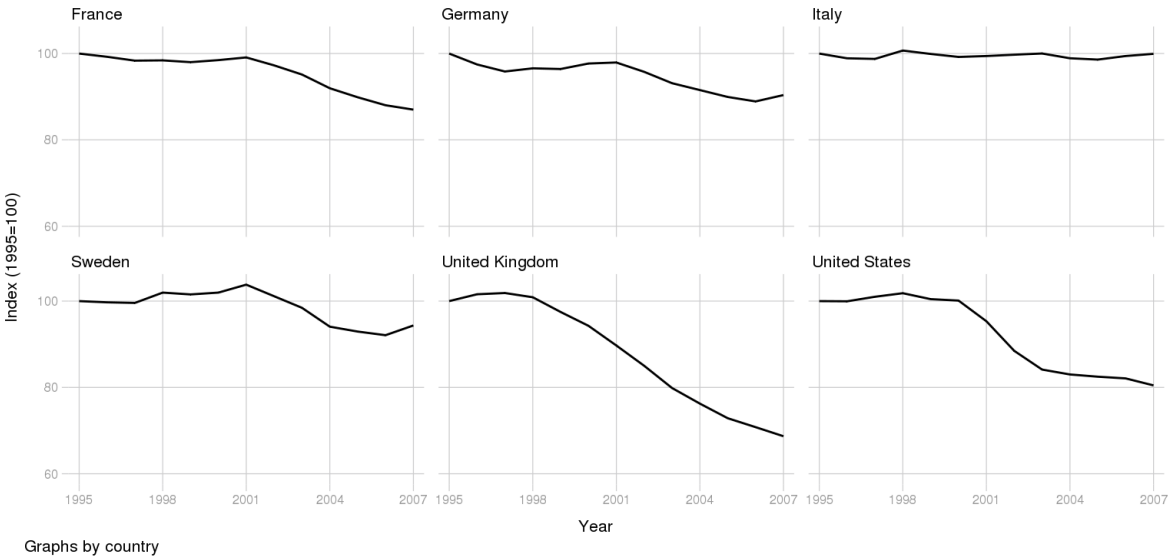
7 Tables and Figures

Table 1: International comparison of the effects of Chinese import competition

	Jobs lost		**Manuf. Empl$_{1995}$**	**Perc. drop**
Country	(1) 1990s	(2) 2000s	(3)	(4)
France	16,000	88,000	3,497,000	2.97%
Germany		312,000*	8,040,000	3.88%
Italy	24,000	119,000	4,637,000	3.08%
Norway	750	3,400	395,000	1.05%
Spain	51,000	280,000	2,385,000	13.87%
United States	548,000	980,000	17,231,000	8.87%

Notes: The table reports the number of manufacturing jobs that were lost due to the rise of China (columns 1-2), the number of manufacturing jobs in 1995 (column 3), and the corresponding percentage drop (column 4), by country. Figures in columns 1-2 are obtained via a variance decomposition first presented in Autor et al. (2013) and only uses the supply-side component of trade with China. Results for France come from (Malgouyres, 2017, p.422) and authors' calculations based on descriptive statistics in Table 1 of the same paper. Results for Germany come from (Dauth et al., 2014, p.1656), and results are only available for the whole 1988-2008 period, indicated with (*). Effects also include Eastern-European exposure. Results for Spain come from (Donoso et al., 2015, p. 1756) and authors' calculations based on footnote 14 of the same paper. Results from Norway come from (Balsvik et al., 2015, pp. 142-143). Results from the US come from (Autor et al., 2013, p.2140). Aggregate manufacturing figures in column 3 are obtained from EU-KLEMS (O'Mahony and Timmer, 2009; Jäger, 2016) for European countries and authors' calculations on figures in Balsvik et al. (2015), OECD (2019) and Eurostat (2019) for Norway. Numbers in column (4) are obtained by summing numbers in columns 1-2 and dividing by the corresponding figure in column (3). Time windows are slightly different across studies: Autor et al. (2013) uses 1991-2000 and 2000-2007. Malgouyres (2017) uses 1995-2001 and 2001-2007. Donoso et al. (2015) use 1999-2003 and 2003-2007. Balsvik et al. (2015) uses 1996-2001 and 2002-2007. Dauth et al. (2014) uses 1988-2008.

Figure 1: Employment in manufacturing across selected OECD countries



Notes: The Figure displays changes in the total number of workers employed in manufacturing (1995=100). Author's elaboration on EU-KLEMS data (O'Mahony and Timmer, 2009; Jäger, 2016) for European countries, and Current Employment Statistics (Establishment Survey) for the US (U.S. Bureau of Labor Statistics, 2020).

Table 2: Chinese import penetration and industry-level employment shares

	Δ *Import*	*Employment Share (p.p.)*	
	$Penetration_{07-91}$	1991	2007
Tanning and dressing of leather	32.44	4.70	3.53
Furniture and manufacturing n.e.c.	25.84	5.97	6.27
Wearing apparel	19.58	8.46	5.03
Medical, optical and other instruments	13.89	2.27	2.92
Machinery and equipment	13.49	10.45	12.67
Radio, television and communication equip.	12.50	2.70	1.72
Basic metals	11.32	3.33	2.99
Electrical machinery	8.51	4.01	4.20
Textiles	8.16	7.43	4.82
Office, accounting and computing machinery	7.22	0.49	0.32
Fabricated metal products	5.86	11.83	15.93
Rubber and plastic	4.36	3.46	4.39
Other non-metallic mineral products	4.28	5.35	5.37
Other transport equipment	3.85	1.89	2.38
Wood and cork (except furniture)	3.79	3.60	3.66
Chemicals	2.38	4.57	4.17
Motor vehicles, trailers and semi-trailers	1.44	4.16	3.64
Paper	1.33	1.71	1.72
Publishing and printing	0.72	3.78	3.52
Coke, refined petroleum and nuclear fuel	0.61	0.56	0.50
Food and beverages	0.43	8.93	10.22
Tobacco	0.00	0.34	0.03

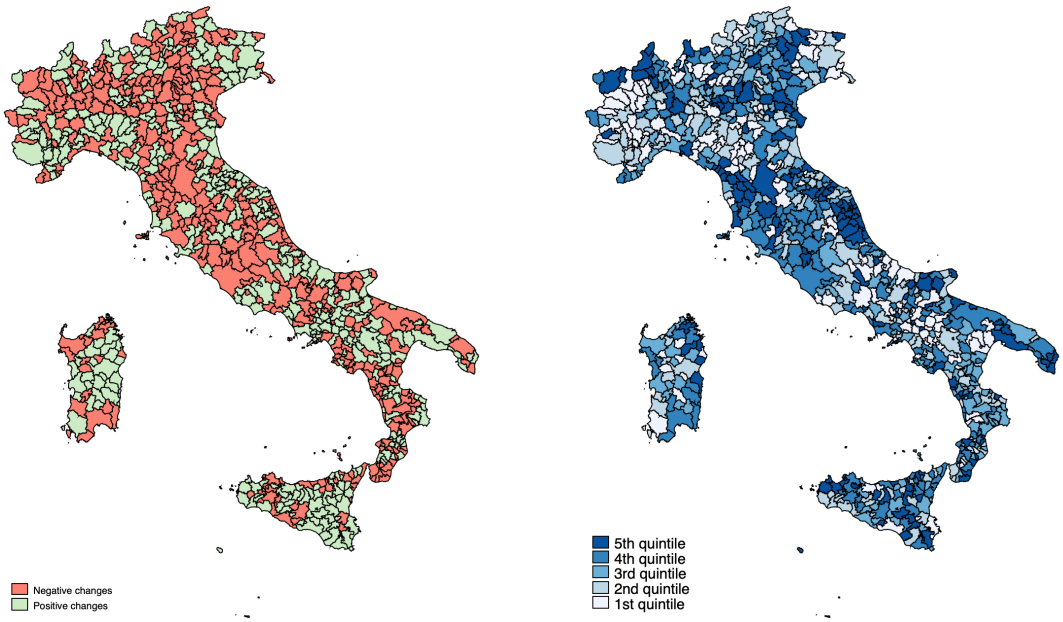
Notes: The second column reports the changes in import penetration from China, between 1991 and 2007, for each 2-digit ISIC3 industry. The change in import penetration is defined as $\Delta IP_{jt}^{ITA} = \Delta M_{jt}^{ITA}/(Y_{j,91} + M_{j,91} - X_{j,91})$. Correspondingly, the last two columns report industry employment shares in total manufacturing employment in 1991 and 2007.

Table 3: Summary statistics

Variable	Mean	Std.Dev.
Panel (a): LLM evidence		
Long-differenced outcomes (1991-2007)		
Δ manufacturing emp/work age pop (p.p.)	-1.43	(2.71)
Δ non-tradables emp/work age pop (p.p.)	9.20	(5.17)
Δ total emp/work age pop (p.p.)	7.77	(5.08)
Import penetration changes (1991-2007)		
Δ Import penetration (1991-2001) (p.p.)	0.68	(0.52)
Δ Import penetration (2001-2007) (p.p.)	3.52	(2.47)
Control variables (1991)		
Female employment rate (p.p.)	27.50	(7.94)
Manufacturing share of empl. in 1991 (p.p.)	33.81	(11.51)
Panel (b): Worker-level evidence		
Cumulative outcomes (1992-2007)		
Months worked	157.26	51.74
Weeks worked	686.75	230.09
FTE weeks worked	674.99	234.59
Cumulative earnings (multiples of 1988-1991 average annual earn.)	15.29	6.52
Cumulative earnings per 12 months worked (multiples of 1988-1991 average annual earn.)	1.14	0.28
Years of positive earnings	13.80	4.10
Control variables (1983-1991)		
Female (share)	0.32	0.47
Apprentice (share)	0.001	0.030
Blue collar (share)	0.72	0.45
White collar (share)	0.27	0.45
Foreign-born (share)	0.021	0.14
$\Delta \log(\text{earnings})_{1988-1991}$	0.09	0.21
Average log(earnings) in 1988-1991	10.06	0.30
Log average firm earnings in 1991	7.06	0.30
Share of white collars in industry in 1991	0.25	0.14
Δlog(Earnings) 1983-1991 of industry	0.70	0.07

Notes: The table provides summary statistics for variables employed in both the local labour market and worker-level analyses. In panel (a) averages are calculated starting from local labor markets and weighted by start-of-period working-age population. In panel (b) we provide summary measures for the set of all workers who had a year-round job in manufacturing in 1991 and also had a year-round job in all years between 1988 and 1990. Months worked are defined as calendar months with at least one day of positive earnings. Cumulative earnings measures are both expressed in multiples of average 1988-1991 earnings.

Figure 2: Changes in manufacturing employment and import penetration across local labor markets



(a) Δ manufacturing share of w.a.p (b) Δ Import penetration

Notes: The Figure displays 2001-2007 changes for 784 local labor markets. Subfigure (a) displays changes in the share of working-age population that is employed in manufacturing. Subfigure (b) displays changes in the import penetration ratio. Both measures are first residualized against the manufacturing employment share in 2001.

Table 4: Imports from China and changes in manufacturing employment (2SLS estimates)

	Δ manuf emp/work age pop (p.p.)					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel (a) : 1991-2007 stacked differences						
ΔImport penetration^{ITA} (p.p.)	-0.253***	-0.203***	-0.146***	-0.132***	-0.094**	-0.098**
	(0.0436)	(0.0478)	(0.0425)	(0.0471)	(0.0380)	(0.0444)
Panel (b) : First stage estimates						
ΔImport penetration^{OC} (p.p.)	0.0621***	0.0587***	0.0555***	0.0585***	0.0524***	0.0557***
	(0.00299)	(0.00333)	(0.00359)	(0.00150)	(0.00341)	(0.00130)
Observations	1568	1568	1568	1568	1568	1568
K-P F-stat.	435.4	311.9	241.5	1538.3	236.0	1837.9
Region FE	NO	YES	YES	YES	NO	NO
Decade FE	YES	YES	YES	YES	NO	NO
Region × decade FE	NO	NO	NO	NO	YES	YES
LLM controls	NO	NO	YES	YES	YES	YES
Weights	YES	YES	YES	NO	YES	NO

Notes: The table presents 2SLS regressions of the change in manufacturing employment over working age (15-64) population against changes in the import penetration ratio, at the local labor market level ($N = 784$). Region FE include 20 dummies. LLM controls include the female employment rate and the manufacturing share in total employment in 1991. The latter corresponds to the number of people employed in manufacturing industries over total private non-farm employment. Regressions in columns 1 to 3, and column 5 are weighted using beginning of period LLM working-age population. Standard errors are clustered at the local labor market level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Future import from China and change of manufacturing employment between 1981 and 1991 (2SLS estimates)

	$\Delta_{'91-'81}$ manuf emp/work age pop (p.p.)			
	(1)	(2)	(3)	(4)
ΔImport penetration$^{ITA}_{1991-2001}$ (p.p.)	0.169	-0.324		
	(0.436)	(1.232)		
ΔImport penetration$^{ITA}_{2001-2007}$ (p.p.)			0.0522	-0.00627
			(0.0665)	(0.211)
Observations	784	784	784	784
K-P F-stat.	620.5	899.3	143.5	617.7
Region FE	YES	YES	YES	YES
LLM controls	YES	YES	YES	YES
Weights	YES	NO	YES	NO

Notes: The table presents 2SLS regressions of the change in manufacturing employment over working age (15-64) population between 1981 and 1991 against changes in future import penetration, at the local labor market level ($N = 784$). In the first two columns the change in future import penetration is computed between 1991 and 2001, in the last two columns the change in import penetration is computed between 2001 and 2007. Region FE include 20 regions dummies. LLM controls include the female employment rate and the manufacturing share in total employment, i.e. the number of people employed in manufacturing industries over total private non-farm employment, measured at the start of the previous decade, i.e. in 1971. Regressions in columns 1 and 3 are weighted using beginning of period LLM working-age population. Standard errors are clustered at the local labor market level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Import from China and other labor market outcomes (2SLS estimates)

	(1) Mfg. Empl.	(2) Non-trad. Empl.	(3) Total Empl.	(4) Δ log w.a.p.
ΔImport penetration^{ITA}	-0.146***	-0.0412	-0.187**	0.00157
	(0.0425)	(0.0595)	(0.0834)	(0.00106)
Observations	1568	1568	1568	1568
K-P F-stat.	239.5	239.5	239.5	1525.2
Region FE	YES	YES	YES	YES
LLM controls	YES	YES	YES	YES
Weights	YES	YES	YES	NO

Notes: The table presents 2SLS regressions for the stacked difference model between 1991 and 2007. In the first column the dependent variable is the change in manufacturing employment over working age (15-64), as in column 3, panel a of table 4. In the second column the dependent variable is the change in the number of people employed in non-tradables over working age (15-64) population. In the third column the dependent variable is the change in the total number of people employed in the private non-farm sector over working age (15-64) population. Finally, in the last column, the dependent variable is the is the (natural) log change in working age (15-64) population. Coefficients in column (1) and column (2) sum up to the coefficient in column (3). Region FE include 20 regions dummies. LLM controls include the female employment rate and the manufacturing share in total employment, i.e. the number of people employed in manufacturing industries over total private non-farm employment, measured at the start of the period. All regressions are weighted using beginning of period LLM working-age population. Standard errors are clustered at the local labor market level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: A comparison of the effects of Chinese import competition in Italy and the United States

	$\hat{\beta}$ (p.p.)	$\Delta IP_{it}^{\text{1st dec.}}$ (p.p.)	$\Delta IP_{it}^{\text{2nd dec.}}$ (p.p.)	Share of variance explained by IV (%)
	(1)	(2)	(3)	(4)
United States	-0.674	0.61	1.84	79%
Italy	-0.146	0.68	5.86	61%
Ratio US/ITA	4.62	0.90	0.31	1.30

Notes: The table presents key inputs for the back-of-the-envelope calculation developed in Autor et al. (2013) for Italy and the US. The $\hat{\beta}$ estimate in column (1) is the 2SLS estimate of the impact of changes in Chinese import penetration (p.p.) on the share of working-age (15-64) population working in manufacturing (p.p.). More details on the specifications are provided in section 4.3. The changes in import penetration (p.p.) in column (2) and (3) are decade-equivalent changes measured over the 1990s (1st dec.) and the 2000s (2nd dec.). The averages are computed across local labor markets and weighted by start of period working-age population. The scaling factor in column (4) is the fraction of the variance of import exposure that can be explained by the instrumental variable. More details on such share are provided in Theory Appendix B of Autor et al. (2013).

Table 8: Rotemberg weights and industry-specific components

Variable	α_k	β_k	95% CI
Panel (a): United States			
Top 5 Rotemberg weights industries (SIC87DD - 392 industries)			
Electronic Computers	0.133	-0.358	[-0.74, 0.15]
Furniture and Fixtures, NEC	0.118	-0.732	[-1.06, -0.48]
Radio and TV Broadc. and Communic. Equipment	0.063	0.037	[-0.50, 0.83]
Semiconductors and Related Devices	0.052	-0.897	[-1.50, -0.49]
Games, Toys, and Children?s Vehicles	0.048	-0.205	[-0.49, 0.08]
Overall $\beta = -0.674$ (0.073)			
Panel (b): Italy			
Top 5 Rotemberg weights industries (ISIC Rev. 3 - 125 industries)			
Cutting, shaping and finishing of stone	0.557	0.023	[-0.06, 0.11]
Footwear	0.232	-0.276	[-0.43, -0.13]
Wearing apparel, except fur	0.054	-0.307	[-0.60, -0.04]
Knitted and crocheted fabrics	0.025	-0.802	[-1.63, -0.36]
Other general purpose machinery	0.023	-0.114	[-0.55, 0.33]
Overall $\beta = -0.146$ (0.043)			

Notes: The table reports Rotemberg weights (α_k) and associated marginal effects (β_k) for industries with the 5 highest Rotemberg weights, for the United States (panel (a)) and Italy (panel (b)). 95% CI is the weak-IV robust confidence interval developed in Chernozhukov and Hansen (2008). Industries are at the 4-digit level and follow the SIC87DD classification in the United States and the ISIC Rev. 3 classification in Italy. Industry-level effects cannot be compared across panels as the number of industries differs. The overall effect (β) is the IV estimate from using the Bartik instrument.

Table 9: Import competition from China and cumulative labour market outcomes at the individual level over 1991-2007 (2SLS estimates)

	Cumulative Months	Cumulative Weeks	Cumulative FTE weeks	Cumulative Earnings	Cumulative Earnings per year
	(1)	(2)	(3)	(4)	(5)
$\Delta IP^{ITA}_{2007-1991}$	0.013	0.077*	0.088*	0.003	0.009
	(0.011)	(0.045)	(0.045)	(0.002)	(0.009)
Observations	692079	692079	692079	692079	692079
Full controls	YES	YES	YES	YES	YES
K-P F-stat.	458.054	458.054	458.054	458.054	458.054

Notes: The table presents 2SLS regressions of individual labour market outcomes against changes in Chinese import penetration. All outcomes are totals over the 16-year period between 1991 and 2007. In column (1)-(4) the dependent variable is the number of months/weeks/full-time-equivalent weeks with at least one day of positive earnings, respectively. For each spell, full-time equivalent weeks are constructed by multiplying the number of weeks worked by the part-time percentage of that contract. In column (5) the dependent variable is the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings. In column (6) the dependent variable is 100× the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings, divided by $(m_i/12)$, where m_i is the dependent variable in column (1). The latter measure can be interpreted as cumulative earnings per 12 months worked, normalized by average initial earnings. All regressions include a constant, and the full set of controls from specification 6. Standard errors are clustered at the 4-digit sector level and reported in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Import competition from China and labor mobility (2SLS estimates)

	Total	Same firm	Other firm
	(1)	(2)	(3)
Panel (a) : Months with positive earnings			
$\Delta IP^{ITA}_{2007-1991}$	0.013	-0.069**	0.082**
	(0.011)	(0.032)	(0.032)
Panel (b) : Cumulative earnings			
$\Delta IP^{ITA}_{2007-1991}$	0.003	-0.009**	0.011***
	(0.002)	(0.003)	(0.003)
Panel (c) :Earnings per effective year			
$\Delta IP^{ITA}_{2007-1991}$	0.009	-0.007	0.033**
	(0.009)	(0.008)	(0.013)
Full controls	YES	YES	YES
K-P F-stat.	458.054	458.054	458.054

Notes: The table presents 2SLS regressions of individual labour market outcomes against changes in Chinese import penetration in Italy. In panel (a) the dependent variable is the cumulative number of months with positive earnings in the private non-farm sector over the 1991-2007 period. In panel (b) the dependent variable is the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings. In panel (c) the dependent variable is 100× the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings, divided by $(m_i/12)$, where m_i is the dependent variable in panel (a). The latter measure can be interpreted as cumulative earnings per 12 months worked, normalized by average initial earnings. All regressions include a constant, and the full set of controls. Standard errors are clustered at the 4-digit sector level and reported in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Import competition from China and labor mobility (2SLS estimates)

		Within manuf.		Outside manuf.
	Other firm	Same 2-dig	Other 2-dig	Non-tradables
	(1)	(2)	(3)	(4)
Panel (a) : Months with positive earnings				
$\Delta IP^{ITA}_{2007-1991}$	0.082**	-0.065**	-0.047**	0.195***
	(0.032)	(0.031)	(0.021)	(0.028)
Panel (b) : Cumulative earnings				
$\Delta IP^{ITA}_{2007-1991}$	0.011***	-0.008**	-0.005**	0.024***
	(0.003)	(0.003)	(0.002)	(0.003)
Panel (c) :Earnings per effective year				
$\Delta IP^{ITA}_{2007-1991}$	0.033**	-0.015	0.009	0.091***
	(0.013)	(0.025)	(0.021)	(0.013)
Full controls	YES	YES	YES	YES
K-P F-stat.	458.054	458.054	458.054	458.054

Notes: The table presents 2SLS regressions of individual labour market outcomes against changes in Chinese import penetration in Italy. In panel (a) the dependent variable is the cumulative number of months with positive earnings in the private non-farm sector over the 1991-2007 period. In panel (b) the dependent variable is the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings. In panel (c) the dependent variable is 100× the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings, divided by $(m_i/12)$, where m_i is the dependent variable in panel (a). The latter measure can be interpreted as cumulative earnings per 12 months worked, normalized by average initial earnings. All regressions include a constant, and the full set of controls. Standard errors are clustered at the 4-digit sector level and reported in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Import competition from China and labor mobility (2SLS estimates)

	Non-tradables	Non Knowledge intensive	Knowledge intensive
	(1)	(2)	(3)
Panel (a) : Months with positive earnings			
$\Delta IP^{ITA}_{2007-1991}$	0.195***	0.192***	0.002
	(0.028)	(0.035)	(0.011)
Panel (b) : Cumulative earnings			
$\Delta IP^{ITA}_{2007-1991}$	0.024***	0.024***	0.000
	(0.003)	(0.004)	(0.001)
Panel (c) :Earnings per effective year			
$\Delta IP^{ITA}_{2007-1991}$	0.091***	0.100***	0.050**
	(0.013)	(0.012)	(0.021)
Full controls	YES	YES	YES
K-P F-stat.	458.054	458.054	458.054

Notes: The table presents 2SLS regressions of individual labour market outcomes against changes in Chinese import penetration in Italy. In panel (a) the dependent variable is the cumulative number of months with positive earnings in the private non-farm sector over the 1991-2007 period. In panel (b) the dependent variable is the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings. In panel (c) the dependent variable is 100× the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings, divided by $(m_i/12)$, where m_i is the dependent variable in panel (a). The latter measure can be interpreted as cumulative earnings per 12 months worked, normalized by average initial earnings. All regressions include a constant, and the full set of controls. Standard errors are clustered at the 4-digit sector level and reported in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Import competition from China and labor mobility (2SLS estimates)

	Other firm	Same LLM	Other LLM
	(1)	(2)	(3)
Panel (a) : Months with positive earnings			
$\Delta IP^{ITA}_{2007-1991}$	0.082**	-0.028**	0.110***
	(0.032)	(0.013)	(0.030)
Panel (b) : Cumulative earnings			
$\Delta IP^{ITA}_{2007-1991}$	0.011***	-0.004**	0.015***
	(0.003)	(0.002)	(0.003)
Panel (c) :Earnings per effective year			
$\Delta IP^{ITA}_{2007-1991}$	0.033**	0.006	0.068***
	(0.013)	(0.016)	(0.016)
Full controls	YES	YES	YES
K-P F-stat.	458.054	458.054	458.054

Notes: The table presents 2SLS regressions of individual labour market outcomes against changes in Chinese import penetration in Italy. In panel (a) the dependent variable is the cumulative number of months with positive earnings in the private non-farm sector over the 1991-2007 period. In panel (b) the dependent variable is the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings. In panel (c) the dependent variable is $100\times$ the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings, divided by $(m_i/12)$, where m_i is the dependent variable in panel (a). The latter measure can be interpreted as cumulative earnings per 12 months worked, normalized by average initial earnings. All regressions include a constant, and the full set of controls. Standard errors are clustered at the 4-digit sector level and reported in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Import competition from China and labor mobility (2SLS estimates)

	Other LLM	Same region	Other region
	(1)	(2)	(3)
Panel (a) : Months with positive earnings			
$\Delta IP^{ITA}_{2007-1991}$	0.110***	-0.017***	0.127***
	(0.030)	(0.006)	(0.031)
Panel (b) : Cumulative earnings			
$\Delta IP^{ITA}_{2007-1991}$	0.015***	-0.002***	0.017***
	(0.003)	(0.001)	(0.004)
Panel (c) :Earnings per effective year			
$\Delta IP^{ITA}_{2007-1991}$	0.068***	0.028	0.101***
	(0.016)	(0.025)	(0.020)
Full controls	YES	YES	YES
K-P F-stat.	458.054	458.054	458.054

Notes: The table presents 2SLS regressions of individual labour market outcomes against changes in Chinese import penetration in Italy. In panel (a) the dependent variable is the cumulative number of months with positive earnings in the private non-farm sector over the 1991-2007 period. In panel (b) the dependent variable is the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings. In panel (c) the dependent variable is 100× the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings, divided by $(m_i/12)$, where m_i is the dependent variable in panel (a). The latter measure can be interpreted as cumulative earnings per 12 months worked, normalized by average initial earnings. All regressions include a constant, and the full set of controls. Standard errors are clustered at the 4-digit sector level and reported in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A Additional Tables and Figures

Table A.1: Import from China and change of manufacturing employment (OLS estimates)

	Δ manuf emp/work age pop (p.p.)					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel (a) : 1991-2007 stacked differences						
ΔImport penetration^{ITA}	-0.264***	-0.240***	-0.208***	-0.140***	-0.130***	-0.084**
	(0.0396)	(0.0433)	(0.0429)	(0.0403)	(0.0384)	(0.0355)
Observations	1568	1568	1568	1568	1568	1568
Region FE	NO	YES	YES	YES	NO	NO
Decade FE	YES	YES	YES	YES	NO	NO
Region × decade FE	NO	NO	NO	NO	YES	YES
LLM controls	NO	NO	YES	YES	YES	YES
Weights	YES	YES	YES	NO	YES	NO

Notes: The table presents OLS regressions of the change in manufacturing employment over working age (15-64) population against changes in the import penetration ratio. Region FE include 20 dummies. LLM controls include the female employment rate and the manufacturing share in total employment in 1991. The latter corresponds to the number of people employed in manufacturing industries over total private non-farm employment. Regressions in columns 1 to 3, and column 5 are weighted using beginning of period LLM working age population. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.2: Chinese import competition and individual labour market outcomes

	(1) OLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS	(6) 2SLS	(7) 2SLS
Panel (a): Months worked							
ΔImport penetration^{ITA}	-0.035	-0.028	-0.024	-0.009	-0.010	-0.002	0.013
	(0.033)	(0.034)	(0.038)	(0.017)	(0.015)	(0.014)	(0.011)
Panel (b): Weeks worked							
ΔImport penetration^{ITA}	-0.140	-0.095	-0.069	-0.009	-0.016	0.011	0.077*
	(0.149)	(0.150)	(0.161)	(0.074)	(0.062)	(0.059)	(0.045)
Panel (c): FTE Weeks worked							
ΔImport penetration^{ITA}	-0.159	-0.088	-0.054	0.016	-0.009	0.021	0.088*
	(0.167)	(0.162)	(0.176)	(0.082)	(0.065)	(0.061)	(0.045)
Panel (d): cumulative earnings							
ΔImport penetration^{ITA}	-0.001	0.003	0.002	0.003	0.001	0.000	0.003
	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
Panel (e): earnings per effective year							
ΔImport penetration^{ITA}	0.016	0.036**	0.029	0.030**	0.016	0.000	0.009
	(0.012)	(0.016)	(0.018)	(0.014)	(0.014)	(0.012)	(0.009)
Year of birth FE	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES
Industry Char.	NO	NO	YES	YES	YES	YES	YES
Industry PreTrend	NO	NO	NO	YES	YES	YES	YES
Individual Char.	NO	NO	NO	NO	YES	YES	YES
Firm Char.	NO	NO	NO	NO	NO	YES	YES
LLM FE	NO	NO	NO	NO	NO	NO	YES
K-P F-stat.		110.980	341.532	416.147	418.732	424.936	458.054

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table presents 2SLS regressions of individual labour market outcomes against changes in Chinese import penetration. All outcomes are totals over the 16-year period between 1991 and 2007. In panels (a)-(e) the dependent variable is the number of months/weeks/full-time-equivalent weeks with at least one day of positive earnings, respectively. For each spell, full-time equivalent weeks are constructed by multiplying the number of weeks worked by the part-time percentage of that contract. In panel (d) the dependent variable is the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings. In panel (e) the dependent variable is 100× the total of earnings accrued over the 1991-2007 period, in multiples of average yearly 1988-1991 earnings, divided by $(m_i/12)$, where m_i is the dependent variable in panel (a). The latter measure can be interpreted as cumulative earnings per 12 months worked, normalized by average initial earnings. All regressions include a constant, and the full set of controls from specification 6. Standard errors are clustered at the 4-digit sector level and reported in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$