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Flying with the Dragon: Estimating Developing Countries' Gains from China's Imports

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Abstract

As a large trading nation, China competes with importing countries' domestic and third-country markets but also creates growth opportunities for exporters. Most studies on China trade shocks or "China shocks" focuse on the impacts of import competition on developed economies. The present paper complements research on China shocks by exploring the other side of the trade exposure to China – China as the largest importer, rather than as an exporter. We analyze the effects of export expansion into China on the local labor markets of the exporting developing countries for the years 1992 to 2018. Using detailed export and employment data, we estimate employment pattern variations in manufacturing industries with exports from other developing countries as instruments for export exposure. We find that the increase in trade exposure to China in the world economy has caused extensive job gains in manufacturing industries in developing countries that were exporters. On average, our estimations show that this trade exposure created approximately 1.5 million additional jobs from 1992 to 2018, which made an important contribution to manufacturing industries in developing countries. Our empirical analysis also shows that trade had stabilizing effects on employment in the countries in our sample generally.

Key words: China shocks, developing countries, export exposure, gains from trade, manufacturing employment

JEL codes: F14, F16, J23, O10

I. Introduction

China's increasing role in international trade has been a major force for globalization in recent decades. The significant trade volume between developed countries and China,

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and the impact of import competition on their local labor markets have generated a growing body of literature. Autor et al. (2013) concluded that increasing imports from China initiated an increase in unemployment and reduced wages in US local labor markets that hosted import-competing manufacturing industries. Many other researchers employed a similar methodology to study the import competition effect in Germany (Dauth et al., 2014, 2018), Spain (Donoso et al., 2015), Portugal (Pereira, 2016), France (Malgouyres, 2017) and the Organisation for Economic Co-operation and Development (OECD) countries (Thewissen and van Vliet, 2019), and reached similar conclusions. More recently, Liu et al. (2018) argued that different quality variety had to be considered when investigating whether China's exports crowded out those from other countries. Feenstra et al. (2019) revisited the labor market effects of Chinese import competition and argued that they were mainly offset by the global expansion of US exports through supply-chain linkage. Although China's impact on developing economies is beginning to be appreciated (Devlin et al., 2006; Eichengreen and Tong, 2007; Lopez et al., 2008), the gains by developing countries from China's imports are still under-researched.

The term "China shocks" in the trade literature usually refers to import competition from China, which is a supply-side shock from China. However, trade involves both imports and exports. Besides China supply shocks, China demand shocks, driven by its growing purchasing power, also deserve attention from economists. China's imports have increased from US$80.59 billion in 1992 to US$2.134 trillion in 2018 – an increase of 2,549 percent. During the same period, China's imports from our selected group of developing countries exhibited an unprecedented rise from a tiny amount of US$4.35 billion in 1992 to US$27.12 billion in 2001 and then US$345.15 billion in 2018.[1] In this paper, we study the demand-side effects of China shocks by analyzing the impacts of the expansion of exports from developing economies into China. Manufacturing employment patterns vary at the country level. Countries are exposed in different ways to export opportunities that arise from China demand shocks. We conduct empirical analyses to discuss changes in local labor markets and consider how they can be used to measure export exposure.

The mainstream literature concentrates on the effects of trade supply shocks from China on developed countries (Chiquiar, 2008; Kovak, 2011; Autor et al., 2013). Their

[1]This is the authors' own calculation for a selected group of developing countries based on data from the World Integrated Trade Solution (WITS). It is a group of 38 developing countries including Armenia, Azerbaijan, Bangladesh, Barbados, Bhutan, Fiji, Gabon, Georgia, India, Indonesia, Islamic Republic of Iran, Iraq, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Malaysia, Maldives, Mauritius, Mongolia, Myanmar, Nepal, Oman, Pakistan, Philippines, Saint Lucia, South Africa, Sri Lanka, Tajikistan, Thailand, Tonga, Trinidad and Tobago, Turkmenistan, United Arab Emirates, Uzbekistan, Vanuatu, Venezuela, and Yemen. These 38 countries are used as sample group countries in the present paper.

findings show that regions that are highly susceptible to China's import competition have experienced severe adverse effects on their labor markets, such as a reduced level of manufacturing employment, increasing unemployment, and lower labor force contribution to economic growth. The present paper takes a different perspective from recent mainstream literature. Our findings suggest that the increasing role of China in trade has had a much greater effect on manufacturing employment in developing countries. To be more specific, we found that labor markets responded more positively where exports to China climbed more rapidly. Moreover, this seems to be determined by the composition of China's imports from these countries. Export-oriented developing countries experienced significant manufacturing employment gains from China demand shocks during the period from 1992 to 2018. Studying this side of trade exposure provides a complementary perspective to the mainstream trade literature. Being a large trader, China does not just create competition for importing countries' domestic and third-country markets but it also opens doors to more growth possibilities for exporters. It leads to an entirely different picture of the ways in which globalization has affected labor markets in developing economies.

The structure of this paper is as follows. Section II presents a brief overview of the related literature. We then summarize some basic facts about China's imports from developing countries in Section III. Section IV is devoted to the empirical approach and data. We discuss our findings in Section V and then conclude the major propositions derived from our study in Section VI. Although our work is limited to only a selected group of developing countries, it will contribute to a general understanding of the ways in which developing countries gain from China shocks.

II. Literature review

The literature describing the impacts of China trade shocks on developing countries is relatively small but growing. With regard to the research analyzing the effects of China's growth on exports from other Asian countries, Yang and Vines (2000) found positive direct effects on exports to China and negative indirect effects on export competition in third-country markets. However, these negative impacts can be offset by the complementary demand effects as they are insignificant. Ianchovichina and Walmsley (2003) stated that East Asian developing countries may suffer minor declines in real GDP and welfare, largely because China will become a tougher competitor in apparel and textiles – areas in which these countries have a comparative advantage. The growing opportunities for exporting to China after its WTO accession are obvious. This pushes up export volumes and prices. However, with regard to third-country markets,

more Chinese competition shrinks a partner country's export returns by reducing its export volumes and prices (Yang, 2006). Yang also found that developing countries could expand industrial exports to China substantially, although gains were uneven across countries. Furthermore, a slowdown of the Chinese economy would have a very large impact on Southeast Asian countries because China has become a major trading partner for these countries (Pangestu, 2019). Lemoine and Unal–Kesenci (2008) summarized the impacts of China supply shocks on Indian industries. Chakraborty and Henry (2019) investigated the impact of import competition from China on the product variety of Indian manufacturing firms and found that increasing imports from China forced Indian manufacturing firms to drop their peripheral products while concentrating on the core ones. Beside Asian countries, Brenton and Walkenhorst (2010) found that the rise of China presented increasing competition in home and foreign export markets but also provided new opportunities for African countries. The export of Chinese manufacturing products increased import competition for products from developing countries in Latin American, such as Peru, Mexico, and Brazil, in their domestic markets and in third-country markets like the US (Schott, 2003; Utar and Ruiz, 2013; Costa et al., 2016; Medina, 2017).

When it comes to the effects of China shocks on labor markets in developing countries, Mendez (2015) estimated that there were negative direct and indirect impacts of Chinese competition on Mexican labor markets. Costa et al. (2016) investigated the impact of China in the context of the Brazilian labor market. They analyzed traditional import competition effects but also the impact of the growing Chinese demand for commodities. They observed faster wage growth in locations benefiting from increasing demand from China during the period from 2000 to 2010. Choi and Xu (2019) evaluated the direct impact of China trade shocks on the South Korean labor market following the approach of Acemoglu et al. (2016). They found that positive impacts, such as a net employment effect of half a million jobs created by China shocks in the manufacturing sector, were mostly driven by China's increasing demand for intermediate inputs and capital from South Korea to support its export expansion on the global market.

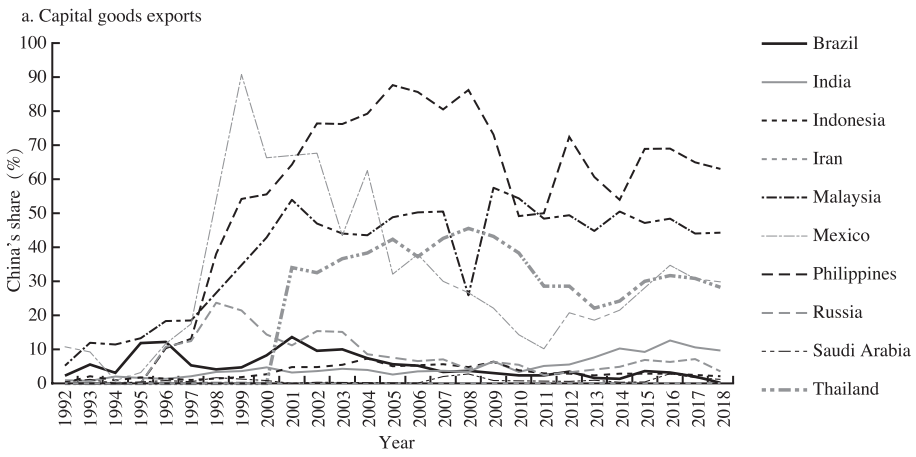
To summarize, existing studies on China shocks pertain to the distributive effects of international trade in developed economies like the US and Germany and little attention has been devoted to developing countries. If China has been the source of significant supply shocks, it must also have been the source of huge demand shocks when imports from and exports to China both boomed. Our paper contributes to the study of China's rising share of world trade by focusing on the exports to China of a group of developing countries and their effects on manufacturing employment in these countries. First, we test empirically whether increased China demand shocks are associated with

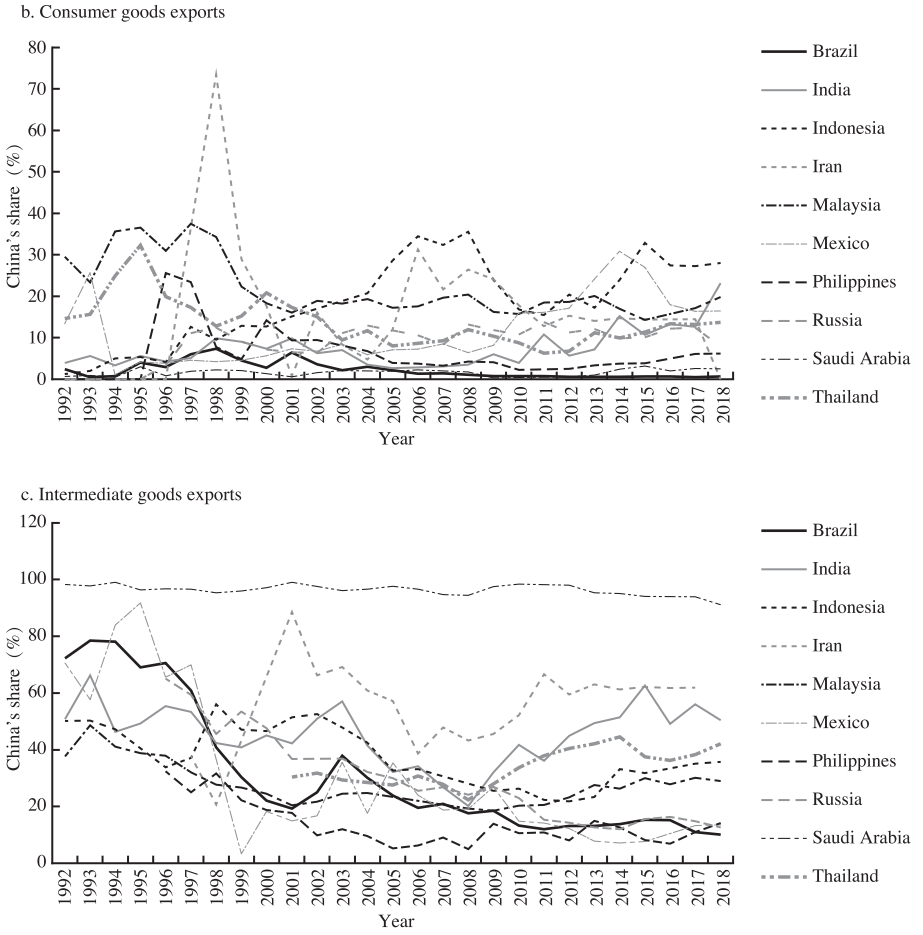
employment gains in developing countries. Second, we extend this analysis of the effects of exposure to exports by taking into account jobs that require different levels of skills. Third, we explore the roles of industry and country heterogeneity in influencing the effects of international trade exposure on the labor market.

III. The basic facts: China's imports from developing countries

China's rapid growth has influenced the domestic economies and foreign trade of developing countries while its domestic growth amplified demand and attracted international trade from numerous developing countries (Hanson, 2012; Cai, 2018). China imports various products from the developing economies. Figure 1 illustrates the quantity of China's top 10 developing trading partners' capital goods, consumer goods and intermediate products shipped to China from 1992 to 2018. In 1996, 10 percent of the Philippines's capital goods exports went to China; this share became 88 percent in 2005 and remained stable in the next four years and then decreased to 62.9 percent in 2018. Malaysia exported 5 percent of its capital goods to China in 1992, 57 percent in 2009, and 44.7 percent in 2018. In 2018, 28.25 percent of Thailand's capital goods exports went to China. Indonesia has gradually increased China's share in its exports of consumer goods; this was initially 1.2 percent in 1992, then it increased to 16 percent in 2002, 35 percent in 2008 and it decreased to 28 percent in 2018. Saudi Arabia's intermediate goods exports to China started from a share of 98 percent in 1992 and remained above 90 percent for 27 years. Brazil showed a decreasing trend of exporting intermediate goods to China; the share changed from 72 percent in 1992 to 10 percent in 2018.

Figure 1. China's share in total exports of its top 10 developing trade partners, 1992–2018

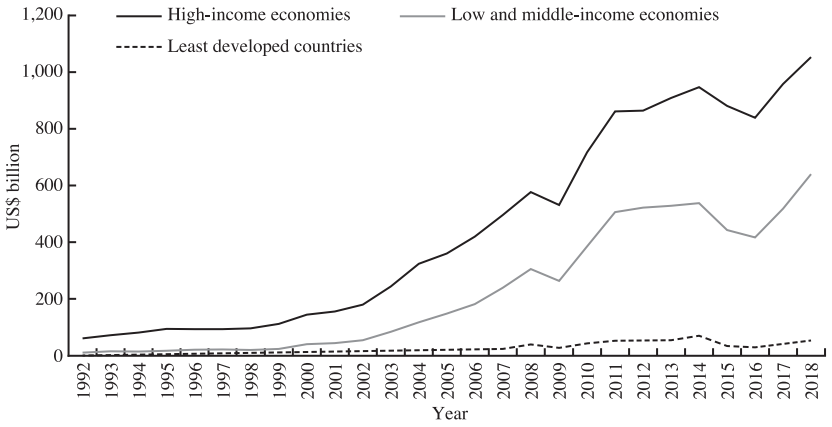




Source: United Nations, United Nations Statistical Division Commodity Trade (UN Comtrade) database.

Developing countries are more dependent on international trade than in the past. This can be confirmed by the share of exports or imports in their GDP (Hanson, 2012). Martin and Ianchovichina (2001) state that less-developed economies are more internationally integrated now than they were in the early 1980s. They have strongly increased their dependence on manufacturing exports. As shown in Figure 2, China's imports started to increase quickly after its accession to the WTO in 2001. Its imports from low- and middle-income economies reached US$518 billion in 2017, a 24 percent growth from 2016 from only US$10 billion in 1992. The annual growth was about 124 percent during 2007–2014. In 2017, its imports from high-income economies also grew 14 percent in comparison with 2016. However, China's imports from the least-developed countries were still less than US$42 billion in 2017.

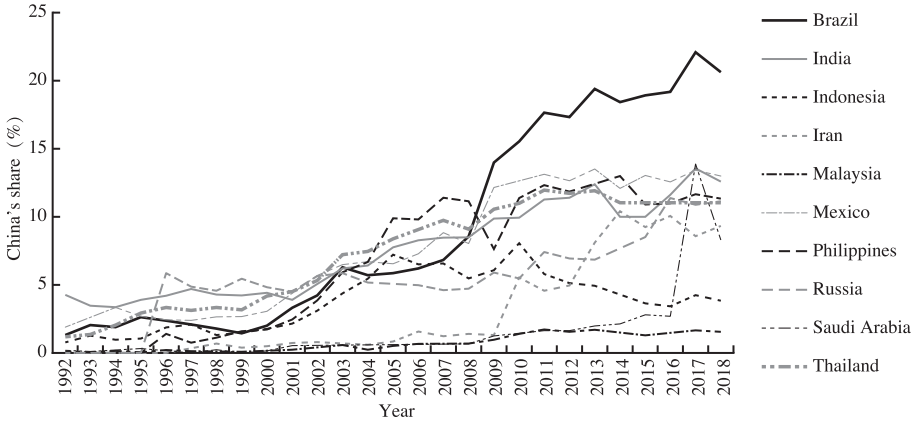
Figure 2. China's imports by country group, 1992–2018



Source: United Nations, United Nations Statistical Division Commodity Trade (UN Comtrade) database.

Figure 3 shows China's portion of imports from the top developing trading partners. In 2017, 22 percent of Brazil's exports, 13 percent of Indonesia, Malaysia and Saudi Arabia's and 12 percent of the Philippines', 11 percent of Thailand's and 10 percent of the Russian Federation's total exports went to China. Thailand and Brazil started at 1.2 percent and 1.3 percent, respectively, in 1992. Similarly, Iran's and Saudi Arabia's total exports increased from 0.3 percent and 0.2 percent of their exports to China respectively in 1992 to 8 percent and 13 percent in 2017.

Figure 3. China's share in total exports of its top 10 developing trade partners, 1992–2018



Source: United Nations, United Nations Statistical Division Commodity Trade (UN Comtrade) database.

Table 1 and Figures 4 and 5 illustrate China's imports from the sample group of 38 countries tested in this study. Table 1 demonstrates China's rank as the export

destination for these countries in the years 2015–2017. In 2017, China was the largest importer to nine countries and was among the top five export destinations to 25 out of the 38 countries. Figure 4 shows that from 1992 to 2018, as a group, our 38 sample-group countries enjoyed a trade surplus in 18 years out of the 27 years.

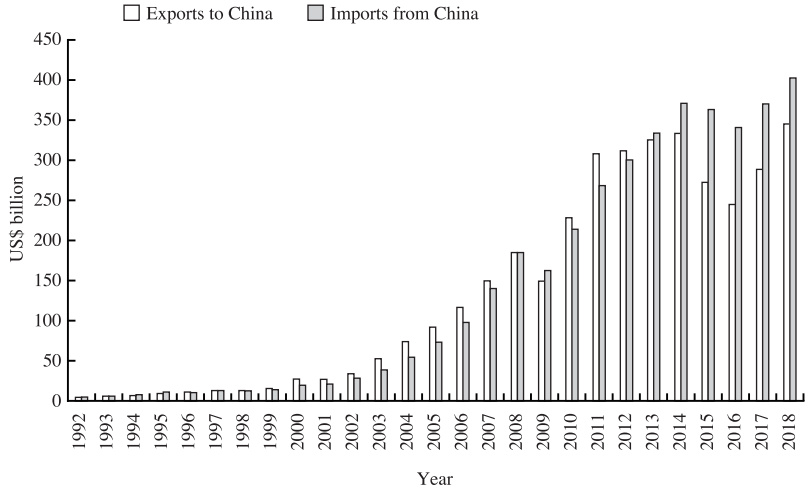
Table 1. China's rank as an export destination for selected developing countries, 2015–2017

Country	2015	2016	2017
Armenia	2	N/A	6
Azerbaijan	12	8	12
Bangladesh	11	13	10
Barbados	N/A	5	5
Bhutan	N/A	N/A	N/A
Fiji	7	6	5
Gabon	N/A	N/A	1
Georgia	6	3	5
India	4	4	4
Indonesia	3	1	1
Iran, Islamic Republic	N/A	3	4
Iraq	N/A	N/A	2
Kazakhstan	2	2	2
Kuwait	2	5	2
Kyrgyzstan	7	6	7
Lebanon	N/A	N/A	1
Malaysia	2	2	2
Maldives	N/A	N/A	N/A
Mauritius	N/A	N/A	N/A
Mongolia	1	1	1
Myanmar	1	1	1
Nepal	6	6	6
Oman	4	8	1
Pakistan	2	2	3
Philippines	3	4	4
Saint Lucia	N/A	N/A	N/A
South Africa	1	1	1
Sri Lanka	6	8	6
Tajikistan	7	7	2
Thailand	2	2	1
Tonga	N/A	N/A	N/A
Trinidad and Tobago	N/A	N/A	N/A
Turkmenistan	N/A	1	1
United Arab Emirates	N/A	N/A	4
Uzbekistan	N/A	N/A	3
Vanuatu	N/A	N/A	N/A
Venezuela	N/A	N/A	3
Yemen	12	N/A	2

Sources: Authors' calculation based on the United Nations Statistical Division Commodity Trade (UN Comtrade) database, CIA World Fact Book, and the Observatory of Economic Complexity (OEC).

Note: N/A, not applicable.

Figure 4. Sample developing countries' exports to and imports from China, 1992–2018



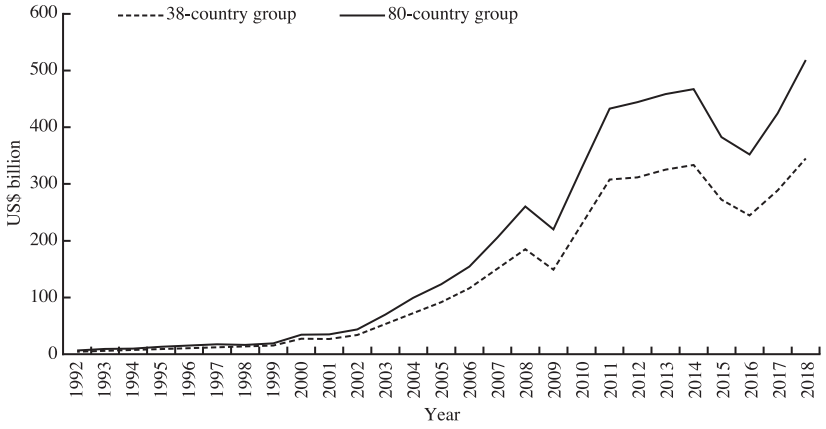
Source: Authors' calculation based on the United Nations Statistical Division Commodity Trade (UN Comtrade) database.

Figure 5 shows China's imports from the 38-country sample group mentioned above and an 80-country group[2] also examined in this study. It took 27 years for China's imports to grow 7,404 percent from US$6.91 billion in 1992 to US$518.56 billion in 2018. China's imports from these developing countries were fairly stable during the 1990s, but after China joined the WTO they increased to US$260.54 billion in 2008. Although these imports decreased slightly in 2009, they recovered in just one year and reached a peak in 2012. Rapidly growing demand from China thus provides an opportunity for developing economies to strengthen their international trade. In 2013, President Xi Jinping launched the Belt and Road Initiative (BRI)[3] to link China with its neighboring countries and more than 60 countries in Asia, Africa, Europe and beyond (Kennedy and Parker, 2015). The baseline regressions of the 38-country sample group and the 80-country group show a very similar trend.

[2]This 80-country group contains all the developing countries tested in this paper, which includes a 38-country sample group, a 38-country instrument group, and another four developing countries used to swap randomly with four countries from the instrument group in our robustness checks.

[3]"One Belt and One Road" refers to the Silk Road Economic Belt and the 21st Century Maritime Silk Road.

Figure 5. China's imports from sample developing countries, 1992–2018



Source: Authors' calculation from the United Nations Statistical Division Commodity Trade (UN Comtrade) database.

IV. Empirical strategy

1. Exposure to exports across local labor markets

In recent decades, one of the major structural changes in the global economy has been China's integration into world trade. Two trade-flow surges could be observed – in the early 1990s and in 2001 when China joined the WTO – after which China's fast-growing market power started to create challenges for most developed economies. The time period we examine in the present paper for the gains from the China demand shocks is 1992–2018, which covers China's boom in imports from developing economies. Our empirical approach exploits the variations in the manufacturing industry across local labor markets at the onset of the economic rise of developing economies along with China. Dauth et al. (2014) used the "ADH" approach to test import exposure, an index pioneered by Autor, Dorn, and Hanson (2013), to measure local labor market exposure to import competition. We construct Equation (1) following Dauth et al. (2014) to estimate the export exposure (*EE*) of developing economies to China:

$$\Delta(EE)_{i,t}^{C} = \sum_{j} \frac{E_{i,j,t}}{E_{j,t}} \frac{\Delta Exp_{j,t}^{DC \to C}}{E_{i,t}}. \quad (1)$$

Here, $\Delta Exp_{j,t}^{DC \to C}$ is the total change in exports from our selected group of 80 developing countries (*DC*) to China (*C*), observed between time period t and $t + 1$ in industry j. $E_{i,j,t}/E_{j,t}$ represents country i's share of domestic employment in industry j at time t and $E_{i,t}$ is the total manufacturing employment in country i. Equation (1)

captures the potential increase in export exposure of country *i*, given its initial industry employment patterns, as it benefits from rising demand from China for manufacturing products.

2. Identification strategy

Under our framework, increasing export exposure to China benefits manufacturing employment in developing countries. To explore this correlation empirically, we conducted the regression analysis described in Equation (2):

$$\Delta Y_{i,t} = \beta_0 + \beta_1 \Delta(EE)_{i,t}^{DC \to C} + \beta_2 X'_{i,t} + \varepsilon_{i,t}. \quad (2)$$

Here the dependent variable $\Delta Y_{i,t}$ measures a country *i*'s change in manufacturing employment (*ME*) as a share of the working age population (*WP*) between *t* and *t* + 1; that is, $Y_{i,t} = ME_{i,t}/WP_{i,t}$. If the dependent variable is positive, this suggests that country *i*'s manufacturing employment improves. Our explanatory variable $\Delta(EE)_{i,t}^{DC \to C}$ captures the change in country *i*'s export exposure to China during the same period.

Controlling variable $X'_{i,t}$ also denotes a vector of variables that contribute to the change in country *i*'s manufacturing employment. Following the approach taken in the existing literature and Dauth et al. (2014), we control these variables to avoid biases due to female employment, highly skilled labor and routine occupations. The monopsony model (Madden, 1973) argues that, to a large extent, men control the labor market and have enough power to manipulate it to accomplish their own objectives as labor union officials and employers. Sexual segregation exists, especially in the educational and occupational choices available. Similarly, human capital theorists claim that women accumulate less human capital than men as women spend most of the time looking after the family. Thus, women are less productive, earn lower incomes, and experience fewer occupational choices (Polachek, 1981; Mincer and Ofek, 1982). Thus, as females play an increasingly important role in the labor market, manufacturing employment patterns change. The existing literature on skills advances a model of skill-biased globalization and proposes a reason why exporting may require varying skill levels. Firms exporting to high-income countries hire more skilled workers and pay higher wages than those that either sell locally or export to middle- or low-income countries. This heterogeneity across firms is due to efficiency differences caused by the use of workers with different levels of skills (Matsuyama, 2007; Grossman and Rossi-Hansberg, 2008; Verhoogen, 2008). According to Brambilla et al. (2012), the production of goods involves the combination of activities such as various manufacturing tasks, distribution, marketing, exporting services, and trade activities. These different tasks require different skills. Export destinations also affect the required skill intensity. Thus, exporting could be

skill intensive even when the related manufacturing task is not skill intensive. Inspired by the literature on job offshoring (Grossman and Rossi-Hansberg, 2008), we include routine / intensive occupations represented by simple activities in the taxonomy of Blossfeld (1987). Dauth et al. (2014) also takes this approach. As in developed countries, import competition from China may lead to some direct impacts (import competition on domestic market) and indirect impacts (third-country market competition) on manufacturing employment in our sample countries. We therefore added these direct and indirect impacts of China supply shocks as controlling variables in our empirical analysis. Autor et al. (2014) and Cabral et al. (2018) used the import penetration ratio to construct indexes measuring direct and indirect import competition from China. Instead of the import penetration ratio, we use China's share of each country's imports and China's share compared to total world exports to test the direct and indirect impacts, respectively.

$$DImpacts_{i,t} = \frac{EX_{i,j,t}^{C \to DC}}{IM_{i,j,t}^{DC}}, \tag{3}$$

$$IDImpacts_{i,t} = \frac{EX_{j,t}^{C \to W}}{EX_{j,t}^{W} - EX_{i,j,t}^{C \to DC}}. \tag{4}$$

Equations (3) and (4) illustrate the direct and indirect impacts of China's exports on employment in developing countries. Here $EX_{i,j,t}^{C \to DC}$ represents the exports of China's industry *j* to country *i* during period *t* and $IM_{i,j,t}^{DC}$ represents the total imports of industry *j* in country *i* during the period *t*. $DImpacts_{i,t}$ illustrates China's relative market power in industry *j* in country *i*. $EX_{j,t}^{C \to W}$ shows China's industry *j* exports. $EX_{j,t}^{W} - EX_{i,j,t}^{C \to DC}$ are the exports of world industry *j,* excluding China's exports to country *i*. $IDImpacts_{i,t}$ examines the competition between China and country *i* on third-country markets in industry *j*. To make our measure of the impacts of import competition more comparable with the existing literature, we then estimate the direct ($\Delta Direct\ Impacts_{i,j,t}$) and indirect ($\Delta Indirect\ Impacts_{i,j,t}$) impacts of industry *j* from country *i* using Equations (5) and (6), which are in line with Autor et al. (2014) and Cabral et al. (2018):

$$\Delta Direct\ Impacts_{i,j,t} = \frac{\Delta IM_{i,j,t}^{C \to DC}}{Q_{j,92} + IM_{i,j,92} - EX_{i,j,92}}, \tag{5}$$

$$\Delta Indirect\ Impact_{i,j,t} = \frac{\omega_{i,j,92}^{DC} IM_{i,j,t}^{C \to W}}{Q_{j,92} + IM_{i,j,92} - EX_{i,j,92}}, \text{ with } \omega_{j,1992}^{DC} = \frac{IM_{j,1992}^{DC \to W}}{IM_{j,1992}^{\to W}}, \tag{6}$$

where $\Delta IM_{i,j,t}^{C \to DC}$ is the change in country *i*'s imports of industry *j* from China during time period *t* (1992–2018). Following Autor et al. (2014), the initial industry absorption

is measured as $Q_{j,1992}$ (industry shipments of industry j), plus $IM_{j,1992}$ (industry j import), minus $EX_{j,1992}$ (industry j export). $\omega_{j,1992}^{DC}$ is the share of each developing country in total imports of the world in industry j in 1992. $IM_{j,1992}^{DC\to W}$ represents imports from developing countries by the world in industry j (i.e. exports to the world by industry j from developing countries) in 1992 and $IM_{j,1992}^{\to W}$ is total import by the world in industry j in 1992. This weight is then multiplied by the change in the absolute value of world imports from China for the period 1992–2018. The measure is normalized by the initial industry absorption of industry j in 1992 for developing countries, as in Equation (5). Equation (6) is a measure of competition caused by imports from China in the world market. As a result of data availability difficulties, this is not computed as a weighted average of the change in Chinese exports to each third country, unlike the approach taken by Cabral et al. (2018).

The main challenge for this exercise is to identify the endogeneity of trade exposure. Change in export exposure to China could be due either to demand shocks in its imports or to unobserved domestic shocks in the exporting countries. The latter component may affect the exports and employment of exporting countries simultaneously, and may therefore contaminate trade flows. We use an instrumental variables approach, which is similar to the strategy used by Dauth et al. (2014), to address this concern about Equation (1):

$$\Delta(EE_{Inst.})_{i,t}^{C} = \sum_{j} \frac{E_{i,j,t\text{-}1}}{E_{j,t\text{-}1}} \frac{\Delta Exp_{j,t}^{ODC\to C}}{E_{i,t\text{-}1}}. \tag{7}$$

Here, $\Delta Exp_{j,t}^{ODC\to C}$ is the change in exports from other developing countries (ODC) to China (C) in industry j during the period t from the selected group of countries. The logic behind this is that the increasing role of China in world trade encourages similar demand shocks for all developing countries instead of just the sample group countries. We also expect correlations in supply and demand shocks between the two groups to be strong, without which the instrument would still be biased. Using the export flows of other developing countries as an instrument for local export exposure in sample countries identifies the exogenous part of the rising role of China. Taking these expectations into account, we decided that the instrument group countries whose trade flows are used to construct Equation (7) should have an income level similar to the selected sample group countries and they cannot be neighbors. This is because demand and supply shocks in such countries are likely to be too similar. Our instrument country group includes Algeria, Albania, Argentina, Belarus, Belize, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Chile, Colombia, Congo Republic, Costa Rica, Croatia, Cuba, Dominican Republic, Ecuador, Egypt, El Salvador, Guyana, Honduras,

Jamaica, Jordan, Kenya, Latvia, Lithuania, Liberia, Libya, Mexico, Moldova, Panama, Paraguay, Peru, Romania, Senegal, Uganda, Ukraine, and Uruguay. For Equation (1), using Equation (7) as an instrument removes the effects of unobservable shocks and thus identifies the causal effects of the increasing export opportunities in China on developing countries' local labor markets.

3. Data

Multiple data sources were used in this research. Manufacturing employment data were taken from the database of the International Labor Organization (ILO). This is our primary dataset for analysis. Other labor market indicators such as the working-age population, total employment, female employment, skill-level employment, GDP and GCF (gross capital formation) come from two different databases: the ILO and the World Development Indicators (WDI) for the 1992–2018 period. Regarding labor skill levels, "high skilled" refers to employees with skill levels 3 and 4; "low-skilled" or routine occupations are those where employees are in basic unskilled manual and administrative occupations, representing skill level 1 in the ILO annual country-level data.

International trade data for our sample developing countries are from the World Integrated Trade Solution (WITS) database for the period 1992–2018. This database reports annual trade volume statistics from more than 170 countries, along with the details of their partner countries and commodities traded. Industries related to mining, agriculture, and fuel products, etc., are excluded from our empirical analysis because it emphasizes only manufacturing industries. Ma et al. (2019) state that there are no perfect definitions of developed and developing countries. The United Nations Development Program has compiled the Human Development Index (HDI) to indicate the development status of countries. We therefore used the HDI for the year 1992 for the selection of countries for the developing countries sample group. We first picked all countries with HDI scores between 0.35 to 0.75.[4] Then those whose trade with China is of little significance were excluded from the group. Finally, 80 developing trading partners with China were selected as our sample countries, based on data availability.

4. Descriptive overview

Table 2 summarizes the mean values and standard deviations of our main variables of interest, including manufacturing employment, export exposure to China, female employment, high-skilled labor, routine occupations, and direct and indirect impacts of import competition from China in all 38 sample-group countries for the period of 1992–

[4]Countries with an HDI lower than 0.35 are considered as the least developed countries.

2018. We have 1,026 observations altogether. Increased export exposure to China has led to overall employment stabilization for almost all types of employees. To explore the roles of country heterogeneity and industry heterogeneity in the effects of export exposure on the local labor market, we include two dummy variables: *BRI* and *K/L*. For country heterogeneity, considering that Belt and Road countries are more motivated to expand trade with China due to the Belt and Road Initiative, we introduce the dummy variable *BRI* to identify Belt and Road countries in the sample group to address country heterogeneity, with the BRI countries taking the value 1 and the non-BRI countries the value 0. For industry heterogeneity, we use a *K/L* ratio, which defines capital intensity as gross capital formation per employee (Adrjan, 2018). According to our calculation, for the period 1992–2018, the average capital intensity (*K/L*) on a yearly basis for 38 sample developing countries is 0.41, which mostly shows little fluctuation. This average of 0.41 is used as a standard for capital intensity. Those whose capital intensity is higher than 0.41 are considered more capital-intensive industries and are given a value of 1, otherwise they are given a value of 0. Along with the primary variables, we also include $BRI \times \Delta EE$ and $K/L \times \Delta EE$ interactions.

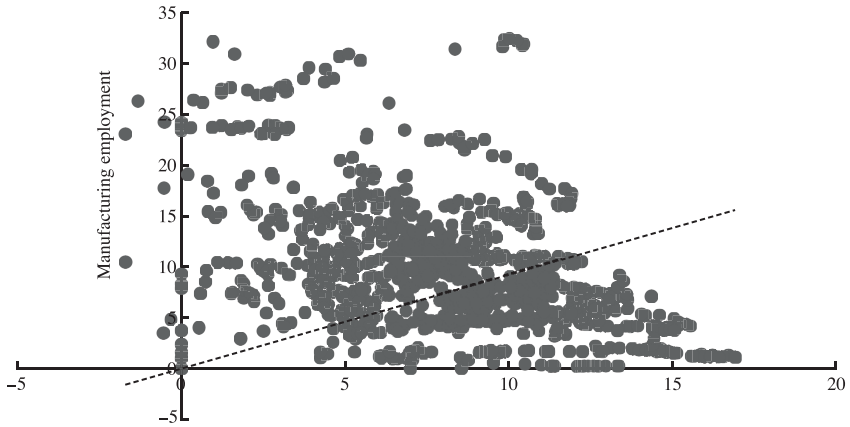
Table 2. Descriptive statistics

Variable	Observations	Mean	Standard deviation	Min	Max
$\Delta Y_{i,t}$	1,026	1.97802	0.89129	–1.56302	3.47963
ΔEE	1,026	7.62810	3.76540	–1.71486	16.9178
FE	1,026	11.2026	2.47938	5.96357	16.3348
HS	1,026	13.09468	2.03539	8.47156	18.0986
RO	1,026	13.68732	2.32397	9.21034	19.4283
$BRI \times \Delta EE$	1,026	2.05401	4.27932	–1.71486	16.9179
$K/L \times \Delta EE$	1,026	3.92431	4.70451	–1.71486	16.9180
$DImpacts_{C.Shocks}$	1,026	0.61812	0.72078	0	5.12922
$IDImpacts_{C.Shocks}$	1,026	0.06923	0.03328	0.03023	0.12614

Notes: The sample includes 1,026 observations of 38 sample countries in 27 years of 1992 to 2008. Dependent variable $\Delta Y_{i,t}$ is the change in manufacturing employment as a share of the working age population. The variable ΔEE is the export exposure to China defined in Equation (1). The control variable *FE* represents female employment; *HS* refers to the high-skilled employees of skill levels 3 and 4; *RO* (routine occupation) refers to the employees in basic unskilled manual and administrative occupations representing skill level 1. The dummy variable *BRI* identifies countries covered by the Belt and Road Initiative. The dummy variable *K/L* is the capital to labor ratio that defines capital intensity as gross capital formation per employee. The variable $DImpacts_{C.Shocks}$ refers to direct impacts of China shocks defined in Equation (3), and the variable $IDImpacts_{C.Shocks}$ is the measure of indirect impacts of China shocks defined in Equation (4).

The relationship between manufacturing employment and the export exposure to China of the developing countries is illustrated by the scatter diagram in Figure 6. There is an overall positive correlation between manufacturing employment and export exposure in these countries. This is consistent with previous descriptions and the result of the relationship between our variables of interest shown in Table 2.

Figure 6. Scatter diagram of export exposure and manufacturing employment



V. Results

Next, we turn to econometric analysis, where we estimate Equation (2) and use Equation (7) as an instrumental variable for the main variable *EE*. By doing so, we estimate how local labor markets are affected (gain or lose) by the China demand shocks.

1. Export exposure and manufacturing employment

Column (1) of Table 3 describes the baseline. We have added control variables for the composition of local workforces (including high-skilled employees, female employees, and workers with routine occupations), and import competition from China supply shocks (direct and indirect impacts of China shocks). In the lowest part of Table 3, the first-stage results indicate the validity of the instrumental variable, which is supported by an F-test statistic (234.8) and R^2 (0.646) well above the recommended threshold levels. The second-stage results indicate that export exposure has a positive effect on manufacturing employment growth with a coefficient of 0.0457, which is significant at the 1 percent level. Our analysis indicates that a higher initial share of female employees is positively and significantly associated with manufacturing employment growth. It

shows that this group of workers benefits the most from export opportunities. High-skilled employees have a negative coefficient of –0.204, which is significant at the 1 percent level. Routine occupations, corresponding to simple activities in the taxonomy of Blossfeld (1987), experience a significantly negative impact. The burden of the China shocks falls mostly on low-skilled workers. This effect is significant at the 1 percent level, with a negative coefficient of –0.385.

Column (1) of Table 3 shows that the direct impacts of China supply shocks on manufacturing employment in developing countries are positive and significant at the 1 percent level, meaning that China's exports to developing countries are beneficial for manufacturing employment in those countries. Consistent with Cabral et al. (2018), the indirect impact of China shocks is negative, showing that Chinese competition has become more critical for developing countries as third-country markets as China's exports have become more competitive, diversified, and sophisticated. The results for our primary variables are unaffected by the inclusion of the controls of high-skilled employees, female employees, and workers with routine occupations. In addition to these controls, we then add dummy variables for the time periods and countries. The coefficients for export exposure and other control variables remain stable.

In column (2), we introduce the fixed effects of country and time period interaction (*C* × *T interaction*) instead of separate dummies for time and country. This is the most demanding specification because it is only identified by within-time and country variation. Our results remain stable and the first-stage results remain highly significant throughout ($R^2 = 0.723$).

Next, in column (3), to address industry heterogeneity, we include the dummy variable *K/L* ratio, defined as gross capital formation per employee. It is used to measure the capital intensity of the industry per employee. We found that it has a significant positive relationship with manufacturing employment. Furthermore, our main results for *EE* remain robust. Along with the *K/L* ratio, we considered the $K/L \times \ln\Delta EE$ interaction. The results show that the combined effect of the two predictors was less than the individual effects. Here we used the *C* × *T interaction* as a dummy to capture the unobservable predictors across the country and time. We explore the effects of time and country dummies separately in column (4) of Table 3, but our primary variable of interest, *EE*, remains stable.

To address the distinct role of the *BRI*, in column (5), we add a dummy for country heterogeneity and an interaction for $BRI \times \ln\Delta EE$. The *BRI* as a dummy has an insignificant positive relationship with *EE* and the interaction of *BRI* with *EE* shows an even less significant adverse impact. $R^2 = 0.651$ is strong enough to support our findings. Our findings for the primary variables remain unaffected, with a positive coefficient of

Table 3. Manufacturing employment and exposure of exports in sample developing countries

Dependent variable: manufacturing employment / working age population (27 years)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variable	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	OLS	2SLS
lnΔEE	0.0457***	0.0381***	0.0728***	0.0621***	0.0401***	0.0490***	0.0367***	0.0601***
	(0.0116)	(0.0127)	(0.0174)	(0.0129)	(0.0135)	(0.0124)	(0.00749)	(0.0131)
lnHS	–0.204***	–0.187***	–0.201***	–0.223***	–0.186***	–0.203***	–0.390***	–0.238***
	(0.0372)	(0.0388)	(0.0397)	(0.0379)	(0.0387)	(0.0373)	(0.0614)	(0.0380)
lnFE	0.655***	0.640***	0.637***	0.665***	0.637***	0.652***	0.753***	0.675***
	(0.0269)	(0.0287)	(0.0281)	(0.0273)	(0.0281)	(0.0266)	(0.0290)	(0.0277)
lnRO	–0.385***	–0.383***	–0.371***	–0.378***	–0.381***	–0.382***	–0.252***	–0.369***
	(0.0232)	(0.0230)	(0.0230)	(0.0233)	(0.0231)	(0.0233)	(0.0508)	(0.0235)
$DImpacts_{C.Shocks}$	0.116***	0.121***	0.136***	0.126***	0.121***	0.115***	0.00438	0.0147
	(0.0298)	(0.0298)	(0.0296)	(0.0298)	(0.0300)	(0.0300)	(0.0284)	(0.0312)
$IDImpactst_{C.Shocks}$	–0.0255**	–0.0270***	–0.0222**	–0.0253**	–0.0243*	–0.0225*	–0.0843***	–0.0823***
	(0.0105)	(0.00988)	(0.00987)	(0.0106)	(0.0130)	(0.0131)	(0.00876)	(0.0285)
$K/L \times \ln\Delta EE$	–	–	–0.0714***	–0.0288***	–	–	0.00755	–
			(0.0126)	(0.00563)			(0.00689)	
K/L ratio	–	–	0.458***	0.0611	–	–	–0.0873	–
			(0.106)	(0.0467)			(0.0598)	
$BRI \times \ln\Delta EE$	–	–	–	–	–0.0154	–0.0196	–0.00456	–
					(0.0135)	(0.0134)	(0.00914)	
BRI	–	–	–	–	0.132	0.169	0.0871	–
					(0.145)	(0.145)	(0.101)	
C × T Interaction	–	–0.0259	–0.0356	–	–0.0307	–	–	–
		(0.0225)	(0.0227)		(0.0249)			
$Time_D$	–0.0499	–	–	–0.0150	–	–0.0540	0.612***	–0.0672
	(0.0602)			(0.0605)		(0.0606)	(0.0320)	(0.0478)
$Country_D$	–0.0306	–	–	–0.0626	–	–0.0416	–0.343***	–0.0525
	(0.0646)			(0.0651)		(0.0683)	(0.0439)	(0.0666)
Constant	2.542***	2.444***	2.250***	2.457***	2.410***	2.509***	1.168***	2.418***
	(0.144)	(0.123)	(0.120)	(0.144)	(0.125)	(0.146)	(0.421)	(0.147)
Observations	988	988	988	988	988	988	1026	988
R^2	0.646	0.652	0.653	0.644	0.651	0.643	0.601	0.628
F-test	234.8	272.8	216.1	189.8	211.0	186.3	–	221.3
First stage results; Dependent variable: lnΔEE								
	2SLS (1)	2SLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS (6)	OLS (7)	2SLS (8)
ln$\Delta EE(ODC)$	0.0626*	0.1149***	0.0682***	0.0538*	0.1071***	0.0588*	–	0.0690**
	(0.0334)	(0.0349)	(0.0297)	(0.0328)	(0.0339)	(.0327)		(0.0349)
R^2	0.752	0.723	0.801	0.762	0.738	0.763		0.728
First stage F-test	296.1	283.8	357.3	260.4	250.1	260.9		262.3

Notes: ***, **, and * represent 1, 5, and 10 percent significance levels, respectively. The variable ΔEE is the export exposure to China defined in Equation (1). The control variable *HS* refers to the high-skilled employees of skill levels 3 and 4; *FE* represents female employment; *RO* (routine occupation) refers to the employees in basic unskilled manual and administrative occupations representing skill level 1. The dummy variable *BRI* identifies countries covered by the Belt and Road Initiative. The dummy variable *K/L* is the capital to labor ratio that defines capital intensity as gross capital formation per employee. The variable $DImpacts_{C.Shocks}$ refers to direct impacts of China shocks defined in Equation (3) for columns (1)–(7). The variable $IDImpacts_{C.Shocks}$ is the measure of indirect impacts of China shocks defined in Equation (4) for columns (1)–(7). The variables $DImpacts_{C.Shocks}$ and $IDImpacts_{C.Shocks}$ are defined by Equations (5) and (6) respectively in column (8). 2SLS, two-stage least square. ODC, other developing countries. OLS, ordinary least square.

0.0401 at the 1 percent significance level and the first-stage results remain highly significant throughout. The estimated results in column (6) for the *EE*, high-skilled employees, female employees and routine occupations are significant; however, the time and country dummies capture the unobservable predictors. The negative sign before the country dummy measures the differences between countries, and the time dummy measures the changes over time across these countries.

In column (7) of Table 3, the results of a simple ordinary least squares (OLS) regression are reported. Compared with the two-stage least squares (2SLS) coefficients from column (2), the OLS estimate for export exposure in column (7) shows two effects that cancel each other: a downward bias due to measurement error and an upward bias as a result of the impact of unobserved supply shocks. An upward bias appears to be slightly more important, but the OLS estimation is similar to the 2SLS coefficients.

Column (8) shows the results of the baseline when direct and indirect impact indexes are replaced by Equations (5) and (6). Despite the findings in the existing literature that show negative impacts of imports from China on labor markets in developed countries, our findings present some interesting results. When using indexes more in line with the literature on trade, the direct supply shocks from Chinese imports are positive but not significant and the indirect impact is negative, which confirms that imports from China are beneficial for the local markets of developing countries but do increase competition in third-country markets. Our findings indicate that, compared with the developed economies considered so far in the literature on China supply shocks, such shocks did not have any adverse effects upon the developing countries' labor markets during the time period tested. With regard to the indirect impact of China supply shocks, we found evidence of a strong negative coefficient at the 1 percent significance level. This means that the indirect effects from increased competition had a considerable negative impact on manufacturing employment in the developing countries. This may be because Chinese exports are substitutes for the products of developing countries. China's emergence in global trade drives intensified competition in third-country markets, leading to trade diversion. This creates significant adverse effects on labor markets in developing countries, consistent with the findings of Cabral et al. (2018).

In summary, the results suggest that China demand shocks have affected labor markets in developing countries significantly. Our evidence also suggests that our instrumental approach seems appropriate to suggest causal effects in the perspective of China demand shocks. However, we cannot rule out the possibility that some of the growing trade with China might be due to developing countries' own growth, including

unobservable shocks and changes in productivity. Our findings suggest that at least a part of the observed increase in *EE* stems mainly from the exogenous rise of trade with China.

2. Robustness checks

Countries subject to greater trade shocks may also be exposed to other independent factors that are correlated with export growth/export exposure. We firstly considered a different group of instrumental variable countries. To address the possible independent direct effects of shocks, we randomly dropped Argentina, Brazil, Mexico, and Romania, most of which are major developing trading partners for China. We replaced them with countries with a lower volume of trade with China – Burundi, Nigeria, Tunisia, and the Syrian Arab Republic. The new estimation results in columns (1)–(3) of Table 4 show that this change hardly affects our results.

Second, we employed the generalized method of moments (GMM) estimation rather than the 2SLS model used in our baseline regression. The results, shown in columns (4)–(6), remain unchanged. Overall, the results in Table 4 suggest that our results are robust and confirm the validity of our instrumental variable approach.

Changes in export exposure and manufacturing employment in the sample countries may be driven simultaneously by a common long-term trend. Employment in some manufacturing industries could have been increasing before China demand shocks and their industries could have boomed even before the 1990s. If that were the case, export exposure and China demand shocks could hardly serve as a source of their manufacturing employment gains. Following Dauth et al. (2014), which is based on the ADH approach in Autor et al. (2013), as our final robustness check, we conducted a falsification test by regressing past employment changes (1992–2000) on future changes in exports exposure (2001–2018), using 2SLS in columns (7)–(9). In this process, we included all the control variables from the baseline specification model. It showed that our results were not driven by any pre-existing trends in these countries. High-skilled employees were receiving more benefits after the China demand shocks according to the falsification exercise. As a control variable, therefore, high-skilled employees had a negative association with the primary variable. Routine occupations/low-skilled workers maintained a negative coefficient of –0.0161 in column (8), as in our baseline regression. However, the female employee variable had the same positive and significant relationship but lower coefficient values of 0.160, 0.138, and 0.122 respectively, in columns (7)–(9), compared with the baseline regression. The falsification test supports the assertion that the benefit that developing countries derived from export exposure was not driven by pre-existing trends.

Table 4. Robustness checks

Dependent variable: manufacturing employment / working age population (27 years)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Variables	2SLS	2SLS	2SLS	GMM	GMM	GMM	Falsification 2SLS		
lnΔEE	0.0455*** (0.0115)	0.0617*** (0.0128)	0.0488*** (0.0123)	0.0441*** (0.0119)	0.0625*** (0.0141)	0.0473*** (0.0131)	0.0689 (0.0463)	0.0704 (0.0468)	0.0491 (0.0503)
lnHS	–0.203*** (0.0371)	–0.222*** (0.0378)	–0.203*** (0.0372)	–0.201*** (0.0390)	–0.226*** (0.0403)	–0.201*** (0.0391)	–0.231** (0.0899)	–0.211** (0.0851)	–0.192** (0.0861)
lnFE	0.655*** (0.0268)	0.664*** (0.0271)	0.651*** (0.0265)	0.648*** (0.0368)	0.663*** (0.0373)	0.645*** (0.0364)	0.160* (0.0844)	0.138* (0.0784)	0.122 (0.0757)
lnRO	–0.385*** (0.0232)	–0.378*** (0.0233)	–0.382*** (0.0233)	–0.380*** (0.0256)	–0.373*** (0.0257)	–0.377*** (0.0253)	–0.0161 (0.0305)	–0.0136 (0.0295)	–0.00967 (0.0284)
$DImpacts_{C.Shocks}$	0.116*** (0.0297)	0.127*** (0.0298)	0.115*** (0.0300)	0.111*** (0.0303)	0.121*** (0.0291)	0.110*** (0.0302)	–0.0128 (0.0412)	–0.000944 (0.0379)	0.000723 (0.0410)
$IdImpacts_{C.Shocks}$	–0.0254** (0.0105)	–0.0252** (0.0106)	–0.0225* (0.0131)	–0.0245** (0.0108)	–0.0241** (0.0107)	–0.0215* (0.0124)	–0.247*** (0.0292)	–0.260*** (0.0286)	–0.252*** (0.0300)
K/L × lnΔEE	–	–0.0287*** (0.00562)	–	–	–0.0286*** (0.00611)	–	–	–0.0251*** (0.00895)	–
K/L ratio	–	0.0606 (0.0466)	–	–	0.0615 (0.0434)	–	–	0.236*** (0.0682)	–
BRI × lnΔEE	–	–	–0.0195 (0.0134)	–	–	–0.0179 (0.0152)	–	–	–0.00299 (0.0294)
BRI	–	–	0.168 (0.145)	–	–	0.156 (0.139)	–	–	–0.0180 (0.275)
$Time_D$	–0.0498 (0.0602)	–0.0149 (0.0605)	–0.0539 (0.0606)	–0.0471 (0.0565)	–0.0161 (0.0583)	–0.0515 (0.0573)	0.115*** (0.0159)	0.122*** (0.0151)	0.122*** (0.0161)
$Country_D$	–0.0305 (0.0646)	–0.0624 (0.0651)	–0.0416 (0.0683)	–0.0308 (0.0611)	–0.0628 (0.0624)	–0.0411 (0.0636)	–0.144 (0.0897)	–0.142 (0.0882)	–0.166* (0.0888)
Constant	2.541*** (0.144)	2.456*** (0.144)	2.508*** (0.146)	2.523*** (0.151)	2.450*** (0.148)	2.492*** (0.149)	2.091*** (0.0268)	2.045*** (0.0294)	2.090*** (0.0264)
Observations	988	988	988	988	988	988	986	986	986
R^2	0.646	0.645	0.643	0.647	0.644	0.645	0.810	0.817	0.815
F-test/ Wald χ^2	234.9	190.1	186.4	1016.4	1137.5	1019.5	525.6	437.4	432.6
First stage results: Dependent variable: lnΔEE									
	2SLS (1)	2SLS (2)	2SLS (3)	–	–	–	2SLS (7)	2SLS (8)	2SLS (9)
ln$\Delta EE(ODC)$	0.1079*** (0.0342)	0.0994*** (0.0335)	0.0982*** (0.0336)				–0.0917* (0.0479)	–0.0812* (0.0456)	–0.0088*** (0.00165)
R^2	0.753	0.764	0.764				0.866	0.879	0.886
First stage F-test	298.5	262.5	262.8				706.1	647.1	694.1

Notes: ***, **, and * represent 1, 5, and 10 percent significance levels, respectively. Dependent variable is the change in manufacturing employment as a share of the working age population. The variable ΔEE is the export exposure to China defined in Equation (1). The control variable *HS* refers to the high-skilled employees of skill levels 3 and 4; *FE* represents female employment; *RO* (routine occupation) are the employees in basic unskilled manual and administrative occupations representing skill level 1. The dummy variable *BRI* identifies countries covered by the Belt and Road Initiative. The dummy variable *K/L* is the capital to labor ratio that defines capital intensity as gross capital formation per employee. The variable $DImpacts_{C.Shocks}$ refers direct impacts of China shocks defined in Equation (3), and $IDImpacts_{C.Shocks}$ is the measure of indirect impacts of China shocks defined in Equation (4). 2SLS, two-stage least square. GMM, generalized method of moments. ODC, other developing countries.

VI. Conclusion

For the past few decades, globalization has led to a tremendous growth in international trade due to drastic reductions in transport costs, deregulation, and the abolition of trade barriers. The world economy has witnessed increasing integration. In this process, China's rise to the second-largest economy and the largest trader has been accompanied by concerns about the changes in the patterns of gain distribution induced by trade. To complement studies exploring how import competition created by China supply shocks has influenced developed countries' labor markets and industries, this paper focused on China's trade integration with developing countries. It is crucial, both from the political and economic points of view, to understand the other side of the story and understand how the local labor markets of developing economies have been changed by China's import growth.

We probed the underlying impact of China's imports on manufacturing employment in a selected group of developing countries during the 1992–2018 period, using the instrumental variable strategy described by Dauth et al. (2014), which was pioneered by Autor et al. (2013). The most important argument in this paper and its primary contribution is that, overall, increasing trade exposure to China has led to significant employment gains in the developing economies. In the aggregate, there are additional jobs created in these economies due to adjustments to the industrial structure that have been accelerated by increasing export to China. As we have illustrated, trade exposure has generated more stable employment opportunities by reducing the threat of job termination.

Our findings for developing economies differ quite noticeably from those for developed economies. They show that, although China trade shocks may have led to some adverse effects in developed labor markets, they also deliver jobs to less developed economies. China is now the largest trade partner for more than 120 countries. However, we tested a very limited group of countries in our research. For future research, it is important to investigate whether other countries share a similar experience with our selected group or whether they respond in different ways when they have an increasing trade exposure to China.

References

Acemoglu, D., D. Autor, D. Dorn, G. H. Hanson and B. Price, 2016, "Import competition and the great US employment sag of the 2000s," *Journal of Labor Economics*, Vol. 34, No. 1, pp. 141–98.

Adrjan, P., 2018, "The mightier, the stingier: Firms' market power, capital intensity, and the labor share of income," *Munich Personal RePEc Archive* (*MPRA*), No. 83925, Munich.

Autor, D. H., D. Dorn and G. H. Hanson, 2013, "The China syndrome: Local labor market effects of import competition in the United States," *American Economic Review*, Vol. 103, No. 6, pp. 2121–68.

Autor, D. H., D. Dorn, G. H. Hanson and J. Song, 2014, "Trade adjustment: Worker level evidence," *The Quarterly Journal of Economics*, Vol. 129, No. 4, pp. 1799–860.

Blossfeld, H., 1987, "Labor-market entry and the sexual segregation of careers in the Federal Republic of Germany," *American Journal of Sociology*, Vol. 93, No. 1, pp. 89–118.

Brambilla, I., D. Lederman and G. Porto, 2012, "Exports, export destinations, and skills," *American Economic Review*, Vol. 102, No. 7, pp. 3406–38.

Brenton, P. and P. Walkenhorst, 2010, "Impacts of the rise of China on developing country trade: Evidence from North Africa," *African Development Review*, Vol. 22, No. s1, pp. 577–86.

Cabral, S., P. S. Martins, J. Pereira dos Santos and M. Tavares, 2018, "Collateral damage? Labour market effects of competing with China – at home and abroad," *IZA Discussion Papers* No. 11790, Institute for the Study of Labor (IZA), Bonn.

Cai, Fang, 2018, "Perceiving truth and ceasing doubts: What can we learn from 40 years of China's reform and opening up?" *China & World Economy*, Vol. 26, No. 2, pp. 1–22.

Chakraborty, P. and M. Henry, 2019, "Chinese competition and product variety of Indian firms," *Journal of Comparative Economics*, Vol. 47, No. 2, pp. 367–95.

Chiquiar, D., 2008, "Globalization, regional wage differentials and the Stolper–Samuelson Theorem: Evidence from Mexico," *Journal of International Economics*, Vol. 74, No. 1, pp. 70–93.

Choi, J. and M. Xu, 2019, "The labor market effects of the China Syndrome: Evidence from South Korean manufacturing," *Working Paper Series of New Structural Economics* No. E2019007, Institute of New Structural Economics, Peking University, Beijing.

Costa, F., J. Garred and J. P. Pessoa, 2016, "Winners and losers from a commodities-for-manufactures trade boom," *Journal of International Economics*, Vol. 102, No. C, pp. 50–69.

Dauth, W., S. Findeisen and J. Suedekum, 2014, "The rise of the east and the far east: German labor markets and trade integration," *Journal of the European Economic Association*, Vol. 12, No. 6, pp. 1643–75.

Dauth, W., S. Findeisen and J. Suedekum, 2018, "Adjusting to globalization in Germany," *IZA Discussion Papers* No. 11299, Institute for the Study of Labor (IZA), Bonn.

Devlin, R., A. Estevadeordal and A. Rodríguez-Clare, 2006, *The Emergence of China: Opportunities and Challenges for Latin America and the Caribbean*, Inter-American Development Bank [online; cited May 2020]. Available from: https://publications.iadb.org/publications/english/document/The-Emergence-of-China-Opportunities-and-Challenges-for-

Latin-America-and-the-Caribbean.pdf.

Donoso, V., V. Martín and A. Minondo, 2015, "Do differences in the exposure to Chinese imports lead to differences in local labour market outcomes? An analysis for Spanish provinces," *Regional Studies*, Vol. 49, No. 10, pp. 1746–64.

Eichengreen, B. and H. Tong, 2007, "Is China's FDI coming at the expense of other countries?" *Journal of the Japanese and International Economies*, Vol. 21, No. 2, pp. 153–72.

Feenstra, R. C., H. Ma and Y. Xu, 2019, "US exports and employment," *Journal of International Economics*, Vol. 120, No. C, pp. 46–58.

Grossman, G. M. and E. Rossi-Hansberg, 2008, "Trading tasks: A simple theory of offshoring," *American Economic Review*, Vol. 98, No. 5, pp. 1978–97.

Hanson, G. H., 2012, "The rise of middle kingdoms: Emerging economies in global trade," *Journal of Economic Perspectives*, Vol. 26, No. 2, pp. 41–64.

Ianchovichina, E. and T. Walmsley, 2003, "The impact of China's WTO accession on East Asia," *The World Bank* [online; cited May 2020]. Available from: https://openknowledge.worldbank.org/bitstream/handle/10986/18127/multi0page.pdf?sequence=1 andisAllowed=y.

Kennedy, S. and D. A. Parker, 2015, "Building China's 'one belt, one road'," Center for Strategic and International Studies [online; cited May 2020]. Available from: https://www.csis.org/analysis/building-china%E2%80%99s-%E2%80%9Cone-belt-one-road%E2%80%9D.

Kovak, B. K., 2011, "Local labor market effects of trade policy: Evidence from Brazilian liberalization" [online; cited May 2020]. Available from: https://kilthub.cmu.edu/articles/Local_Labor_Market_Effects_of_Trade_Policy_Evidence_from_Brazilian_Liberalization/6471659.

Lemoine, F. and D. Unal–Kesenci, 2008, "Rise of China and India in international trade: From textiles to new technology," *China & World Economy*, Vol. 16, No. 5, pp. 16–34.

Liu, Y., X. Shi and J. Lawrenson, 2018, "Are China's exports crowding out or being crowded out? Evidence from Japan's imports," *China & World Economy*, Vol. 26, No. 4, pp. 1–23.

Lopez C, J. E., A. Micco and D. Molina, 2008, "How sensitive are Latin American exports to Chinese competition in the US market?" *Policy Research Working Paper* No. 4497, World Bank [online; cited May 2020]. Available from: https://pdfs.semanticscholar.org/e932/1051cc1b3b1a671fb40ad1d5091b8cfa20cc.pdf.

Ma, S., Y. Liang and H. Zhang, 2019, "The employment effects of global value chains," *Emerging Markets Finance and Trade*, Vol. 55, No. 10, pp. 2230–53.

Madden, J. F., 1973, *The Economics of Sex Discrimination*, Lexington, MA: DC Heath and Co.

Malgouyres, C., 2017, "The impacts of Chinese import competition on the local structure of employment and wages: Evidence from France," *Journal of Regional Science,* Vol. 57, No. 3, pp. 411–41.

Martin, W. and E. Ianchovichina, 2001, "Implications of China's accession to the World Trade

Organization for China and the WTO," *The World Economy*, Vol. 24, No. 9, pp. 1205–19.

Matsuyama, K., 2007, "Beyond icebergs: Towards a theory of biased globalization," *The Review of Economic Studies*, Vol. 74, No. 1, pp. 237–53.

Medina, P., 2017, "Import competition, quality upgrading and exporting: Evidence from the Peruvian apparel industry" [online; cited May 2020]. Available from: https://www8.gsb.columbia.edu/chazen/sites/chazen/files/que_pmedina_updv.pdf.

Mendez, O., 2015, "The effects of Chinese import competition on Mexican local labor markets," *The North American Journal of Economics and Finance*, Vol. 34, pp. 364–80.

Mincer, J. and H. Ofek, 1982, "Interrupted work careers: Depreciation and restoration of human capital," *Journal of Human Resources*, Vol. 17, No. 1, pp. 3–24.

Pangestu, M., 2019, "China–US trade war: An Indonesian perspective," *China Economic Journal*, Vol. 12, No. 2, pp. 208–30.

Pereira, T., 2016, "The effect of developing countries' competition on regional labour markets in Portugal," *GEE Papers* No. 58 [online; cited May 2020]. Available from: https://www.gee.gov.pt/RePEc/WorkingPapers/GEE_PAPERS_58.pdf.

Polachek, S. W., 1981, "Occupational self-selection: A human capital approach to sex differences in occupational structure," *The Review of Economics and Statistics*, Vol. 63, No. 1, pp. 60–9.

Schott, P. K., 2003, "A comparison of Latin American and Asian product exports to the United States, 1972 to 1999," *Latin American Journal of Economics*, Vol. 40, No. 121, pp. 414–22.

Thewissen, S. and O. van Vliet, 2019, "Competing with the dragon: Employment effects of Chinese trade competition in 17 sectors across 18 OECD countries," *Political Science Research and Methods*, Vol. 7, No. 2, pp. 215–32.

Utar, H. and L. B. T. Ruiz, 2013, "International competition and industrial evolution: Evidence from the impact of Chinese competition on Mexican maquiladoras," *Journal of Development Economics*, Vol. 105, No. C, pp. 267–87.

Verhoogen, E. A., 2008, "Trade, quality upgrading, and wage inequality in the Mexican manufacturing sector," *The Quarterly Journal of Economics*, Vol. 123, No. 2, pp. 489–530.

Yang, T. and D. Vines, 2000, "The fallacy of composition and the terms of trade of newly industrializing economies," Mimeo, Australian National University.

Yang, Y., 2006, "China's integration into the world economy: Implications for developing countries," *Asian-Pacific Economic Literature*, Vol. 20, No. 1, pp. 40–56.

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