Import Competition and Outsourcing*

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June 2019

Abstract

A new and growing literature shows significant evidence of fragmentation of production as a result of increased product market competition. Using a novel dataset on outsourcing of manufacturing jobs by Indian firms and exploiting rising imports from China, we explore the relationship between import competition and firm outsourcing. We find that greater import competition is associated with (i) a significant increase in outsourcing activity by Indian firms. A 10 percentage point increase in the import penetration ratio leads to a 0.24-0.50 percentage point increase in the share of outsourcing expenses in total expenses; (ii) a corresponding increase in the likelihood of sub-contracting among firms in the informal sector; and (iii) a larger increase in outsourcing in states with inflexible labour laws. Additionally, outsourcing increases in firms across the size distribution, belonging to the final goods sector, domestic non-exporters, multi-product firms and single-product firms that export and are in the final goods sector. Overall, our study highlights international trade as a determinant of firm organization and a role for rigid labour market regulation in magnifying the relationship between import competition and the fragmentation of production.

JEL classifications: F1, F12, F14, F16, J46

Keywords: Chinese Import Competition, Outsourcing of Manufacturing Jobs, States with Inflexible Labour Laws, Firm Organization

*We thank Maurizio Zanardi for his detailed comments on a earlier version of the draft.

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1 Introduction

The fragmentation of production activity has received extensive attention in the literature in recent years. Studies have examined trade (Fennestra, 1998; Grossman and Helpman, 2005), contractibility (Alfaro et al., Forthcoming), the potential for holdup problems (Grossman and Helpman, 2002) as determinants of vertical integration by firms. More recently, Fort (2017) shows that a firm's investment in communication technology is associated with greater fragmentation of production and more domestic relative to foreign outsourcing by U.S. firms.

In this study, we focus on international trade and particularly, import competition from China as a determinant of the outsourcing of production activity outside the firm's boundary. Additionally, we explore whether labour market regulation plays a crucial role in determining the relationship between import competition and outsourcing. We find strong and robust evidence of Chinese competition in the domestic market of India inducing firms to engage in more outsourcing activities related to manufacturing jobs. A 10 percentage point change in Chinese import penetration ratio raises about 0.24–0.50 percentage point change in outsourcing share of total expenses. For firms located in states with flexible labour regulation, there is an additional 0.16–0.22 percentage point increase.

China's export performance post-1990, and more so since 2001 (with entry to the WTO), has been spectacular. Its exports grew from US$ 62 billion to US$ 1.2 trillion between 1990 and 20071; an average of around 20% per year (Iacovone et al., 2013). In the same period, China's share of GDP more than doubled, from 15.9 to 34.9%. On the back of this very strong export performance, China became the world's largest exporter in 2009, and the second largest economy in 2010 (Iacovone et al., 2013). Naturally, this meteoric rise of China to the status of a global exporting giant, particularly in terms of manufactured goods, has induced economists to understand the effects of import competition from low-wage countries, specifically China, on various firm- and industry-level outcomes of developed countries (Bernard et al., 2006; Liu, 2010; Autor et al., 2013; Mion and Zhu, 2013; Martin and Meajean, 2014; Bloom et al., 2016), and to a far lesser extent for developing countries (see for example, Iacavone et al., 2013 and Utar and Ruiz, 2013 for Mexico and Medina, 2017 for Peru).

Our primary motivation to study the effects of Chinese import competition on the outsourcing activities of Indian (manufacturing) firms comes primarily from the following reason: a recently released research document from the Office of the Economic Advisor, Ministry of Commerce and Industry, Government of India highlights a significant surge in the growth in the share of imports from China, especially in the post-WTO membership (of China) period. The study uses 268 items

for the period of 2004-05 to 2010-11 to find that while the import index (for these 268 items) from all countries grew by 1773.1%, in case of imports from China, the index increased by 4618.4% over the same period. Additionally, the share of imports of these 268 items from China in total imports jumped to 41.3% in 2010-11 from 25.3% in 2005-06 (Singh, 2012).

Figure 1 plots Indian imports from China between 1995 and 2007. The share of manufacturing imports from China as a share of total manufacturing imports skyrocketed from less than 5 percent in 1995 to almost 25 percent in 2007 - an increase of 400 percent. The figure demonstrates a particularly steep acceleration after China's accession to the WTO in the end of 2001. A similar pattern is observed for the import penetration ratio, which increased from less than 0.01 to almost 0.08 in the same time period (a 700 percent increase).[1]

Table 1 compares India's trade with China and other large trading partners at three different points in time: 1992, 2001 and 2007. It shows that China accounted for the largest increase in India's imports relative to the other countries and major regions of the world. India's share of Chinese imports grew by around 9000% between 1992 and 2007.[2] In comparison, imports from ASEAN (one of the biggest trading partners of India), the US and EU increased by 888%, 230% and 132%, respectively. Compared to Mexico[3], where the Chinese share of manufacturing imports increased by a factor of 8, in the case of India it increased by a factor greater than 90 over the same time period (1992–2007).[4]

With respect to India's exports to China, there has also been a significant increase but the rate of increase is far lower than the increase in import flows from China; the increase in exports is close to one-third to that of imports. In the process, China became the largest trading partner of India with a total trade of US$ 84.44 billion in 2014-15. India's trade deficit with China also ballooned ninefold over the past decade to US$ 52.7 billion in 2015-16 (Export-Import Bank of India, 2016).6 Following Iacovone et al. (2013), where the authors argue about the immediate effect of the rise of China on middle-income countries, the effect on the performance of Indian manufacturing firms seems to be of the first order importance. This brings us to our second motivation.

Figure 2 presents the percentage of firms that report outsourcing over our sample period in

[1] The Chinese import penetration ratio is calculated as the share of Chinese imports in an industry in total domestic production, including imports and exports. See **Appendix A** for a definition of key variables.

[2] Note that the percentage increase in Chinese imports in case of India is almost 9 times higher when compared to the US during the same time period; the percentage increase for the US was 1156 during 1991–2007 (Autor et al., 2013).

[3] A large number of studies exploring the impact of Chinese import competition on developing countries is focused on Mexico (Iacovone et al., 2013; Utar and Torres-Ruiz, 2013).

[4] We present Chinese imports by India as a share of Indian imports from the world across manufacturing industries in **Table 17** (**Appendix B**). Imports from China are largest in labor-intensive industries like textiles and wood and in machinery and transport equipment.

the left panel. We follow the definition of Grossman and Helpman (2002) for outsourcing. To us, outsourcing variable indicates that a firm has establish a bilateral relationship(s) and having the partner undertake relationship-specific investments so that it becomes able to produce goods or services that the fit the firm's particular needs.[5] For example, firms may subcontract a range of activities, from product design to production. In particular, any kind of activity which involves tasks related to manufacturing jobs.

We see a steady and significant increase in the percentage of firms outsourcing manufacturing jobs over the period 1995 through 2007. In 1995, the percentage of firms involved in outsourcing was around 3 percent, which increased to 28 percent in 2007; a jump of 9 times. The right panel plots the same but by dividing firms according to their state of operation. We divide the states of India into states with flexible and inflexible labour laws according to Besley and Burgess (2004), Gupta et al. (2008). The lines in the right panel show us that the percentage of firms involved in outsourcing differs substantially across firms in states with inflexible versus flexible labour regulation, with firms in states with inflexible labor regulation reporting more outsourcing activity. More than 30 percent (less than 25 percent) of firms in states with inflexible (flexible) labour regulation report outsourcing manufacturing jobs in 2007.

Given this as our background, China being currently the biggest trading partner of India and evidence of significant and differential increase of outsourcing activities by Indian firms, esepcially after 2001, we are interested to know whether Chinese import competition is partially responsible for the increase in outsourcing activities of the Indian manufacturing firms. Whereas trade theory identifies low-wage countries as a likely source of disruption to high-wage countries' manufacturing firms, Krugman (2008) points out that free trade with countries of any income level may affect the dynamics of the domestic market. On the other hand, a large body of empirical evidence demonstrates that import competition, especially from China, significantly affects dynamics of manufacturing firms; the lion's share (of these studies) concentrating on developed countries. Our focus is slightly different in the sense that we investigate the effect (of the rise in Chinese imports) on outsourcing activities of Indian firms. In other words, what happens to outsourcing expenditure of manufacturing firms, when there is a significant rise in South-South trade? Do we get same kind of evidence? For example, did the increase in competition from China cause Indian firms to outsource more tasks in order to compete? Or they just cave in? This is the first contribution of our paper.[6]

[5] Our definition of outsourcing is more than just the purchase of raw materials and intermediate goods.

[6] Another motivation is: whether the technological similarity between China and India would yield different results compared to other cases where this is not so. Giovanni et al. (2014) on examining the global welfare impact of China's trade integration and technological change ranks ten developing countries in terms of technological similarity

We conceptualize a framework where a monopolistically competitive firm producing a differentiated product can produce its inputs in-house using labour at an exogenous wage or incur the fixed cost of outsourcing the production of its inputs at a lower marginal cost. Increased competition has two effects. First, it increases the elasticity of demand for individual varieties as more substitutes are now available to the consumer. Second, it may increase or decrease demand. The first effect induces the firm to lower its price and expand output, which increases its gains from lowering the marginal cost by outsourcing input production. The second effect may work in the same or opposite direction, depending on whether demand rises or falls, leading to increased (decreased) outsourcing with increased (decreased) demand.

Hence, the impact of greater import competition is a priori ambiguous and we seek to resolve this ambiguity in our empirical analysis. We further posit that the gain to firms from outsourcing are particularly large when rigid labour laws act as a tax on employing labour in-house in the formal sector. Greater import competition is therefore associated with more outsourcing in regimes with rigid labour laws relative to more flexible labour regimes. Focusing on a federal democracy like India as a case also allows us to delve into the role played by labour regulation in determining the relationship between trade and outsourcing. We are able to exploit the variation in labour regimes that yields differential labour costs across Indian states, while keeping other institutional factors constant (Besley and Burgess, 2004).

Next, our aim is to establish a causal link between increase in imports from China and outsourcing activities of Indian firms. To understand such, we follow the literature on the rise of Chinese imports and its effect on labour markets in developed countries (Autor et al., 2013), and use one of the most important episodes of world trade in the last two decades: China's membership to the WTO in 2001 as a suitable quasi-natural experiment to investigate how does China's unilateral trade liberalization policies cause Indian firms to change their outsourcing behaviour.[7] The growth in Chinese exports to India as a result of accession to the WTO that we examine is a result of China's internal reforms to a market-oriented economy. This transition to a market (from central planning) economy resulted in significant productivity growth for Chinese firms, which got further bolstered due to reduction in trade costs as a result of its accession to the WTO. We treat this as a unilateral trade shock and not a mutual trade expansion.

However, this approach also requires the fact that the import demand shocks in India, especially after 2001 are not the primary cause of China's export surge. While it seems plausible that China's

to China. Among this group of countries, India is ranked as the country with the closest technological proximity to China; India's technological similarity index being 0.928 to that of China.

[7] There is precedence in the literature to treat the sharp rise in China's share in total imports of countries (both developed and developing) because of its accession to the WTO in 2001 as a quasi-natural experiment (see, Lu and Yu, 2015; Bloom et al., 2016).

export growth to India during the 2000s is a result of China's internal supply shocks, however we use import from China by other developing countries (Brazil, Mexico, Indonesia and Malaysia) as an instrument for Chinese imports to India. All approaches yield similar results.

Lastly, India and China are two of the more economically successful BRICS (Brazil, Russia, India, China and South Africa) countries and their interactions in the sphere of international trade and the outcomes are, in our view, worthy of an enquiry. To the best of our knowledge, there only a handful number of studies investigating the effects of import competition on firm performance in relation to two BRICS countries.

Our empirical analysis utilizes novel data on outsourcing activity by Indian manufacturing firms from PROWESS (by CMIE). We exploit data on expenditure incurred by firms towards outsourcing of manufacturing and professional jobs. To our knowledge, ours is the first study to use such a direct measure of firm outsourcing activity domestically in the context of a developing country. Previous studies analyzing the organization of firms capture vertical integration using industry-level input-output tables to calculate the proportion of inputs into production produced within the firm. Such industry level information is subject to caveats. First, the international trade literature has documented substantial heterogeneity across firms within industries on the composition and quality of inputs used in production that industry-level input-output tables fail to capture (DeLoecker et al., 2016). Second, firms may both produce and outsource input production, as noted by Bernard et al. (2018). We argue that our measure of outsourcing activity overcomes these concerns by directly exploiting data on manufacturing outsourcing expenditure by firms.

We analyze the relationship between import competition from China and outsourcing of manufacturing jobs by Indian firms. We find that increase in Chinese import penetration significantly increased the extent of outsourcing activities of Indian manufacturing firms. This is consistent with the idea that import competition, by increasing the elasticity of demand that firms face, induces them to lower price and expand output, thereby increasing the gains from reducing marginal cost by outsourcing. This increase is mitigated in Indian states with flexible (pro-employer) labour laws, suggesting that import competition increases outsourcing relatively more in states with rigid labour regulation. Our finding is consistent with the idea that inflexible labour laws magnify the positive relationship between import competition and outsourcing activity by acting as a tax on labour use in the formal sector. We find no evidence for a moderating role of labour laws in determining the relationship between import competition and outsourcing of professional jobs, where labour laws are not relevant.

We also employ data on outsourcing activity by manufacturing enterprises in the Indian informal sector. Like many developing economies, India has a large informal sector consisting of enterprises

employing less than ten workers. Firms in the informal sector face lower labour costs because labour laws are not enforced. We find that greater import competition is associated with an increase in the likelihood of informal enterprises selling their final output to other enterprises directly or through a contractor. This finding is consistent with formal manufacturing firms outsourcing production activity to informal firms to cut marginal production costs in response to greater import competition. As expected, we find that the relationship between import competition and outsourcing activity among informal enterprises is mitigated in states with relatively flexible labour regulation.

Our results are robust to controlling for a battery of firm characteristics, industry import tariffs, availability of cheaper intermediate inputs from China and an instrumental variable estimation strategy to account for the endogeneity of import competition. In an extension of our empirical analysis, we explore heterogeneous effects of import competition on outsourcing. We find that the relationship between import competition and outsourcing is stronger for firms in industries producing final as opposed to intermediate goods, non-exporters relative to exporters and domestic firms relative to foreign multinationals. A potential explanation for heterogeneous effects across firms with a domestic relative to international orientation is that the latter have to conform to international norms and standards related to technique of production, scale and adherence to labor standards (Sundaram et al., 2017). Lastly, we find that the relationship between import competition and outsourcing exists mainly for multi-product firms.

Our study makes several contributions. First, we provide evidence on trade as a determinant of outsourcing activity by firms using new and unique data on outsourcing activity (McLaren, 2000; Buehler and Burghardt, 2015; Stiebale and Vencappa, 2018). We hence highlight the role of international trade in shaping the organization of firms. Second, our study relates to the literature on the role played by labour market rigidity in spurring firms to outsource production activity in response to trade liberalization (Goldberg and Pavcnik, 2003). Rigid labour laws, by increasing the cost to firms of employing workers in a formal setting in the face of greater foreign competition, may incentivize firms to outsource activity to the informal sector where labour laws are harder to enforce. By studying the role of labour regulation in this context, we highlight the labour market implications of international trade and the fragmentation of production (Hummels et al., 2014).

The rest of our paper is organized as follows. Section 2 outlines a conceptual framework to study the relationship between import competition and outsourcing. Section 3 details our empirical specification and identification strategy. Section 4 presents the data, Section 5 discusses results and Section 6 concludes.

2 Conceptual framework

In this section, we provide a conceptual framework to examine the impact of import competition on outsourcing following Lommerud et al. (2009). Consider a firm i operating in a monopolistically competitive environment producing a variety of a differentiated good, which it produces by using a continuum of inputs indexed by $j \in [0,1]$. One unit of the final good requires γ_i^{-1} units of each input for firm i. Each input can either be produced in-house or outsourced. In-house, the firm can produce one unit of j using one unit of labor at an exogenous wage rate w. Alternative, the firm can outsource production at the cost of c per unit of input, where we assume $w > c$ to capture the idea that the wage rate is higher than the marginal cost of outsourcing to smaller firms. Outsourcing incurs fixed costs which depend on the input j. Ordering the inputs on $[0,1]$ so that $g(j) < g(l)$ for $j < l$, the cost of outsourcing k inputs is given by

$$G(k) = \int_0^k g(j)dj \tag{1}$$

Assume that $G'(k) > 0$ and $G''(k) > 0, G'(0) = 0$ and $G'(1) \to \infty$, where the last assumption means that it is not economical to outsource all production. Demand for the final good is given by $y_i = \Gamma p_i^{-\sigma}$, where p_i is the price of variety i and $\Gamma > 0, \sigma > 1$. Suppose that the firm outsource the production of k_i inputs, its profits are given by

$$\pi_i = [(p_i - \gamma_i^{-1}(k_i c + (1-k_i)w)]y_i - G(k_i) \tag{2}$$

Substituting for output, we get

$$\pi_i = [(p_i - \gamma_i^{-1}(k_i c + (1-k_i)w)]\Gamma p_i^{-\sigma} - G(k_i) \tag{3}$$

The first order condition with respect to price is given by

$$\frac{\delta \pi_i}{\delta p_i} = \Gamma[(1-\sigma)p_i^{-\sigma} + \sigma\gamma_i^{-1}(k_i c + (1-k_i)w)p_i^{-\sigma-1}] = 0 \tag{4}$$

$$p_i^* = \frac{\sigma}{\sigma - 1}\gamma_i^{-1}(k_i c + (1-k_i)w) \tag{5}$$

The first order condition with respect to outsourcing at optimal p_i^* is given by

$$\frac{\delta \pi_i}{\delta k_i} = -\Gamma p_i^{*-\sigma}\gamma_i^{-1}(c-w) - G'(k_i) = 0 \tag{6}$$

and the second order condition at the optimal outsourcing intensity k_i^* by

$$\frac{\delta^2 \pi_i}{\delta k_i^2} = \sigma \Gamma p_i^{*-\sigma-1} \gamma_i^{-1} (c-w) \frac{\delta p_i^*}{\delta k_i^*} - G^{"}(k_i^*) < 0 \tag{7}$$

We would like to examine the impact of increased competition on optimal outsourcing intensity k_i^*. Note that an increase in σ has two effects. In addition to an increase in demand elasticity (the demand elasticity effect), it also increases or reduces demand (demand effect) depending on whether p is below or above unity.

Proposition 1 $\frac{\delta k_i^*}{\delta \sigma} > 0$ *if* $p_i^* \leq 1$. *Else,* $\frac{\delta k_i^*}{\delta \sigma}$ *has an ambiguous sign and depends on the relative strengths of the demand elasticity and demand effects.*

A proof of this proposition is presented in Appendix C. In the next section, we examine this proposition empirically, using data on Indian manufacturing firms between 1995 - 2007 and exploiting the surge in Chinese exports to India in the wake of China's accession to the WTO as a natural experiment.

Proof. 1 ■

Implicitly differentiating 6 at the optimal k_i^* with respect to σ

$$\Gamma \gamma_i^{-1} (c-w) p_i^{*-\sigma} \log(p_i^*) + \sigma \Gamma p_i^{*-\sigma-1} \gamma_i^{-1} (c-w) \frac{\delta p_i^*}{\delta \sigma} - G''(k_i^*) \frac{\delta k_i^*}{\delta \sigma} = 0 \tag{8}$$

From 5

$$\frac{\delta p_i^*}{\delta \sigma} = -\gamma_i^{-1} (k_i c + (1-k_i) w) \frac{1}{(\sigma-1)^2} + \frac{\delta p_i^*}{\delta k_i^*} \frac{\delta k_i^*}{\delta \sigma} \tag{9}$$

Substituting into 8 and utilizing 7

$$\Gamma \gamma_i^{-1} (c-w) p_i^{*-\sigma} \log(p_i^*) - \sigma \Gamma p_i^{*-\sigma-1} \gamma_i^{-1} (c-w) \gamma_i^{-1} (k_i c + (1-k_i) w) \frac{1}{(\sigma-1)^2} + \frac{\delta^2 \pi_i}{\delta k_i^2} \frac{\delta k_i^*}{\delta \sigma} = 0$$

$$\frac{\delta k_i^*}{\delta \sigma} = -\frac{\Gamma \gamma_i^{-1} (c-w) p_i^{*-\sigma} \log(p_i^*) - \sigma \Gamma p_i^{*-\sigma-1} \gamma_i^{-1} (c-w) \gamma_i^{-1} (k_i c + (1-k_i) w) \frac{1}{(\sigma-1)^2}}{\frac{\delta^2 \pi_i}{\delta k_i^2}}$$

3 Empirical Specification

Our goal is to study the impact of increased import competition from China on outsourcing intensity among Indian manufacturing firms. This section lays out the strategy we use to investigate the effect of China's rising share of exports in Indian domestic market and an export destination

on the expenditure related to outsourcing activities as a share in total expenses of Indian manufacturing firms. To establish causality between greater import competition (from China) and the outsourcing of Indian manufacturing firms, we use China's entry to the WTO on December 2001, as a quasinatural experiment, together with the differential competitive pressures faced by Indian firms due to this trade shock, as our identification strategy.

The accession to the WTO is significantly driven by China's movement towards a more market-oriented economy. This transition to a market-oriented economy is a result of the following internal factors: (a) significant rural-to-urban migration of workers, (b) firms/industries gaining access to foreign technologies, capital and intermediate goods, and (c) allowing multinationals to operate in the country Autor et al. (2013). These internal reforms had significant positive effects on China's trade, which eventually led to the country's accession to the WTO. In other words, we use China's accession to the WTO as an instrument for the internal reforms in China, which significantly boosted the productivity growth in various industries. We argue that membership to the WTO led to an increase in the import share of Chinese products and thus intensified the competition faced by Indian firms in their domestic market and one of its main export destination.

The economic reforms undertaken by China in the post-1990 period in anticipation of becoming a member of the WTO, and thus getting fully integrated into the global economy, provides an important element of our empirical strategy. Since China's membership to the WTO in 2001 was influenced by factors not related to the activities of Indian firms neither in their domestic nor export markets, therefore its accession to the WTO can be interpreted as an exogenous shock from the standpoint of India. Furthermore, there were no trade agreements between India and China in the period prior to accession, so there is a little probability that China's visibility in the world trade matrix (in terms of becoming a WTO member) could be confounded with other factors related to the activities of Indian manufacturing firms.

Notwithstanding the assumptions underlying our empirical strategy, there is one important concern that needs to be addressed before getting on to the estimation details: whether the demand for Chinese goods by India, especially after 2001, is due to a change in China's export-supply capability (due to a rise in average productivity) or import demand shocks across industries in India?[8] We treat the rise in export-supply capability of Chinese firms/industries as exogenous, as it is a function of changes in labour costs, trade costs, and the number of product varieties made in China. Failure to address this above concern may result in biased coefficient estimates and therefore likely to lead to incorrect inferences drawn from our findings. In order to control for this issue, we

[8] In case of the US (which we use as a proxy for export destination), Autor et al. (2013) show that the rise in Chinese share of the imports is not due to import demand shocks in the US, but because of an increase in comparative advantage of Chinese goods. Moreover, this increased significantly after 2001.

use an empirical strategy similar to Autor et al. (2013) among others. We estimate the following OLS fixed effects type of equation:

$$outsourcing_{ijt} = \beta_1 DComp^{China}_{IN,jt-1} + \beta_2 FComp^{China}_{IN,jt-1} + X_{jt-1} + firmcontrols_{t-1} + \mu_i + \gamma_t + \theta^t_j + \varepsilon_{ijt} \tag{10}$$

$outsourcing_{ijt}$ is expenditure on outsourcing as a share of total expenses by firm i in sector j at time t.[9] We define $DComp^{China}_{IN,jt-1}$ as a measure of Chinese competition that an Indian (IN) industry (j) faces in its domestic market because of the unilateral liberalization policies pursued by China ($China$). To create the $DComp^{China}_{IN,jt-1}$ index, we match the Indian firm-level data with the HS six-digit product-level destination-specific data (for China) on import flows to create a ratio that reflects the amount of competition faced by a firm i belonging to industry j. We create this index at the NIC 2004 4-digit level using the concordance table by Debroy and Santhanam (1993). It is defined as the share of Chinese imports by India in industry j at time t divided by total domestic production, imports and exports for industry j in 1994 for India. For example, let us consider the Automobile sector (j). Then, $DComp^{China}_{IN,jt-1}$ can be written as:

$$DComp^{China}_{IN,j=Automobile,t-1} = \frac{M^{China}_{IN,j=Automobile,t-1}}{(Y_{j=Automobile,95} + M_{j=Automobile,95} - X_{j=Automobile,95})} \tag{11}$$

Therefore, $DComp^{China}_{IN,j=Automobile,t-1}$ is the total amount of Automobile imports from China at any period, relative to the total production ($Y_{j=Automobile,95}$), total imports ($M_{j=Automobile,95}$), total exports ($X_{j=Automobile,95}$) of autombiles in the base year 1995. $FComp^{China}_{IN,jt-1}$ is a measure of import competition from China faced by Indian firms in an export destination, in our case the US.[10] We follow the same method as outlined above in constructing the index of competition that Indian firms face in the US from Chinese imports.[11] Our hypothesis is that $\beta_1 > 0$ if the competition induces firms to cut marginal cost by outsourcing, $\beta_1 < 0$ if the demand effect dominates and firms reduce output in response to increased import competition and $\beta_1 = 0$ if these effects cancel out.

[9] Given that our key dependent variable is fractional in nature with a large proportion of zeroes, we present results from (a) Poisson and fractional logit models, and (b) various other specifications.

[10] Autor et al. (2013) shows that Chinese imports in the US increased significantly after China became a member of the WTO. We also combine US, EU and ASEAN to construct a different version of the export market competition index.

[11] We use UN-COMTRADE for data on imports by the US industries from World and China at the 4-digit level. We then match the US industries along with Indian industries using the International Standard Industrial Classification (ISIC) of all economic activities by the UN.

$firmcontrols_{t-1}$ is a vector of variables that includes firm size, age, age squared, and a proxy for the extent of a firm's technology adoption. We use total sales of a firm as its size indicator. The extent of technology adoption is measured as the share of R&D expenditure plus royalty payments for technical know-how in gross value-added (GVA) of a firm. This variable captures technology differences between firms, which can potentially affect outsourcing activities of a firm. All the variables are used at $(t-1)$ period.

X_{jt-1} is a set of control variables at the industry-level to account for industry specific factors that are related to Chinese import competition and outsourcing intensity jointly. In various specifications, these include the import tariff on the final good produced in sector j, the import tariff on inputs used in sector j, captured by a weighted average of the output tariffs across sectors that supply inputs to j with input shares as weights, and the share of Indian imports from other low-wage countries. μ_i, γ_t are firm and year fixed effects that account for unobserved firm specific time-invariant and year shocks. θ_j^t are either the interactions between industry fixed effects and year trends or indsutry-year fixed effects. These would take care of other potential unobserved factors, such as any policy changes by the Govt. that may affect outsourcing activities. Standard errors are clustered at the industry level.

4 Data and Preliminary Analysis

4.1 Firm level Data

The sample of firms is drawn from the PROWESS database, constructed by the Centre for Monitoring the Indian Economy (CMIE), a private agency. The database contains information on approximately 27,400 publicly listed companies, all within the organized sector, of which almost 9000+ are in the manufacturing sector. We use data for around 5,500+ firms, for which there is consolidated data on outsourcing activities. The dataset is classified according to 5-digit 2008 National Industrial Classification (NIC) level. I re-classify it to 4-digit NIC 2004 to facilitate matching with other important industry-level variables; hence, all the categorization made throughout the paper are based on the 2004 NIC classification. The dataset spans across 108 (4-digit 2004 NIC) disaggregated manufacturing industries that belong to 22 (2-digit 2004 NIC) larger ones.

The data is captured from annual income statements and balance sheets of all the publicly listed companies. Majority of the firms in the data set are either private Indian firms or affiliated to some private business groups, whereas a small percentage of firms are either government or foreign-owned. The database covers large companies, companies listed on the major stock exchanges and many small enterprises. Data for big companies are worked out from balance sheets while CMIE

periodically surveys smaller companies for their data. However, the database does not cover the unorganized sector. The dataset accounts for more than 70% of the economic activity in the organized industrial sector, and 75% (95%) of corporate (excise duty) taxes collected by the Indian Government (Goldberg et al., 2010). We use data on all manufacturing firms from 1995 through 2007. Below, we outline the two most important features that are primarily needed for the paper.

(1) information on outsourcing activity of manufacturing jobs. The dataset reports total expenditure by a firm on account of outsourcing of manufacturing jobs. These are the expenses incurred by the firms for getting their manufacturing requirements done from outside parties. It includes labour charges, fabrication charges, processing charges, machining charges, fettling charges, conversion charges, contracted production and sub-contracted production. This is direct information on outsourcing activity by firms at the most disaggregated level.

(2) information on outsourcing activity of professional jobs. These are the expenses incurred by firms for engaging external professional services. The services include: (i) Software development fees, (ii) IT enabled services charges, (iii) Cost audit fees, (iv) Legal charges, (v) Miscellaneous professional services, (vi) Auditors fees, and (vii) Consultancy fees. We use this measure as a placebo to our main variable of interest.

To our knowledge, our study is the first to utilize such direct information on outsourcing activity by firms at such a disaggregated level. Without such information, existing studies rely on industry-level input-output tables to develop indirect measures of vertical integration and outsourcing. Such indirect measures not only ignore heterogeneity across firms but may also fail to account for firms simultaneously outsourcing and producing their own inputs or outsourcing a part of their production process across the range of products they produce. Detailed information on variables used in our analysis is presented in **Appendix A**.

In addition to this, the dataset rolls out information on a vast array of firm-level characteristics regarding the total sales, imports, cost, compensation (wages plus incentives), production factors employed, other kinds of expenditures, gross value added, assets and other important firm and industry characteristics. The variables are measured in Indian Rupees (INR) million, deflated to 2005 using the industry-specific Wholesale Price Index. CMIE uses an internal product classification that is based on the HS (Harmonized System) and NIC schedules. Around 20% of the firms in the data set belong to the chemical industries followed by food products and beverages (12.81%), textiles (10.81%) and basic metals (10.46%).

4.2 Stylized Facts: Outsourcing of Manufacturing Activity

In this section, we present a few crucial stylized facts about the outsourcing activities on account of manufacturing jobs by the Indian firms. First, we look at how outsourcing activities on acocunt of manufacturing jobs has changed over time. In **Figure 3**, we plot two measures of outsourcing activity for the period 1995 and 2007. The panel on the left (right) plots outsourcing expenditure in rupee millions (outsourcing expenditure as a share of total expenses). Both of them rise steadily over time, reinforcing patterns in **Figure 2**. An average Indian manufacturing firm spends more than four times on outsourcing of manufacturing jobs in 2007 when compared to 1995. On the other hand, as a share of total expenses, outsourcing on account of manufacturing jobs jumps from 0.1 percent in 1995 to 1% in 2007; a ten fold increase in a decade.

Table 2 shows key firm characteristics by outsourcing status. We compare summary statistics on sales, total assets, gross value added, total factor productivity, export and import volume, R&D intensity of firms involved in outsourcing of manufacturing jobs with firms not involved in outsourcing. Firm involved in outsourcing earn significantly more from sales, are bigger, have larger value-addition, do more trade, adopt more technology, employ more capital and managerial or skilled workers.

Next, in **Table 3**, we present total outsourcing expenditure, share of outsourcing expenditure and percentage of firms involved in outsourcing by industries at NIC 2-digit level. The table shows substantial heterogeneity in outsourcing activity across industries. Total expenditure on outsourcing in column (1) shows that the expenditure is highest for the automobile industry and lowest for office, accounting and computing machinery. In column (2), we focus on share of outsourcing expense in total expenses by a firm; share of outsourcing expenditure is highest in case of labour-intensive, such as apparel and tobacco products where it is over 1 percent, while accounting and computing machinery shows the lowest at 0.02 percent. Broadly, more labour-intensive industries show a larger share of outsourcing as a share of total expenses. Lastly, in column (3), the percentage of firms outsourcing ranges from 21 and 20 percent of firms in fabricated metal products and machinery and equipment to a mere 3 percent in office, accounting and computing machinery.

Table 4 presents outsourcing expenditure, its share in total expenses and percentage of firms outsourcing, both in the aggregate and split by state group based on flexibility of labor laws averaged over the time period. The findings echo that outsourcing activity is more prominent in states with less flexible labor regulation.

Table 5 looks at outsourcing expenditure, share in total expenses and the percentage of firms outsourcing by type of industry (final good versus intermediate good) and state group. The table suggests that outsourcing activity is more prevalent in the case of final good-producing industries

relative to intermediate good-producing industries, particularly in states with relatively inflexible labor regulation [12].

Finally, **Table 6** demonstrates the change in distribution of mean outsourcing share in total expenditure in industries between 1992 - 2001 and 2002 - 2007, before and after Chinese accession to the WTO. Relative to 1992 - 2007, a far greater number of Indian manufacturing industries have firms reporting outsourcing shares greater than 0.5 percent on average in 2002 - 2007, confirming the increase in outsourcing activity in Indian manufacturing post 2002. Overall, our findings in this section support the idea that increased Chinese import competition is associated with greater outsourcing activity in Indian manufacturing firms. We examine this relationship more rigorously in our empirical analysis.

5 Results: Import Competition and Outsourcing

5.1 Baseline

Table 7 presents our baseline results by estimating equation 10 using industry-year trends, 2-digit industry by year fixed effects, 3-digit industry by year fixed effects and state by year fixed effects. Columns (1) - (6) use outsourcing expenditure as a share of total expenses as the dependent variable. Column (1) regresses lagged import penetration ratio from China controlling for firm age, age squared, size, technology adoption of a firm and interaction of industry fixed effects and year trends. Both size and technology adoption are also at $(t-1)$ period and in real terms. Our coefficient of interest is positive and significant; a 10 percentage point increase in import competition from China increases 1.7 percentage point increase in outsourcing share of account of manufacturing jobs in total expenses. Columns (2) - (6) include input and output tariffs to account for trade liberalization program undertaken by India in 1990s, Chinese import competition faced by Indian firms in a third country (the US) ($FComp^{China}_{IN,jt-1}$)and import competition from other low-wage countries.[13]

The impact of Chinese import competition continues to be robust even after controlling for import tariffs (both input and output tariffs), suggesting that import competition from a similar low-wage, labour-abundant country like China dominates potential import competition effects from any unilateral decrease in import tariffs. Our coefficient of interest remains stable - a 10 percent-

[12] Table 18 of Appendix B shows a more detailed breakdown of outsourcing activity across industries producing basic goods, intermediates, capital goods, consumer durables and non-durables. Outsourcing activity is greatest for consumer durables and non-durables.

[13] In **Table 19** (**Appendix B**), we regress input and output tariffs on share of outsourcing expenditure for different periods of time. We do not find any effect of either input or output tariffs on outsourcing expenditure by Indian manufacturing firms. These results nullify the hypothesis that the effect of Chinese import competition is not a spillover effect from the trade reforms of the 1990s undertaken as a result of a balance-of-payments shock.

age point increase in import competition from China increases around 0.07-0.17 percentage point increase in outsourcing share. We do not find any effect of foreign competition faced by Indian firms affecting the outsourcing activity.

Column (7) restricts the sample to years 1995 - 2001, i.e., before Chinese accession to the WTO. We do this to show that the effect of Chinese import competition on outsourcing comes entirely from the significant outbreak of Chinese imports that India witnessed after China joined WTO in 2001.[14] In other words, we should not find any effect of Chinese import competition on the outsourcing share of manufacturing jobs for Indian firms in the 1990s as the competition did not intensify by then. Our conjecture turns out to be true; our coefficient of interest does not turn out to be significant.

We now use alternate measures of outsourcing activity in columns (8) through (10) to show that our estimate on Chinese import penetration is robust to different measures of outcome variable of interest. Column (8) substitutes our dependent variable by outsourcing expenditure as a share of gross value-added. Our point estimate shows that a 10 percentage point increase in import competition from China increases 0.82 percentage point increase in outsourcing share of manufacturing jobs in gross value-added of an average manufacturing firm in India.

One problem that might affect our estimates is the way the expenses on outsourcing activities is calculated, i.e., there could likely be some measurement issues with the data. We replace our dependent variable with a binary variable as an outsourcing indicator:

$$outsourcing_{ijt} = \begin{Bmatrix} 1 \\ 0 \end{Bmatrix}$$

Such a binary variable might be less vulnerable to measurement error compared to the ones that we use. The change of dependent variable does not alter our benchmark finding. Column (9) takes a value 1 if the share of outsourcing expenditure in total expenses is greater than zero, while column (10) does the same when the share of outsourcing expenditure in gross value-added is greater than zero. Our coefficient of interest remains the same: 1% increase in import penetration ratio from China increases the likelihood of outsourcing by 0.13%. Put together, our results show a strong positive relationship between Chinese import competition and outsourcing of manufacturing activity by Indian manufacturing firms. This is consistent with our argument that import competition, by incentivizing firms to expand while reducing their markup raises the return to decreasing marginal costs by outsourcing.

[14] The growth in Chinese exports to India as a result of accession to the WTO that we examine is a result of China's internal reforms to a market-oriented economy. This transition to a market (from central planning) economy resulted in significant productivity growth for Chinese firms, which got further bolstered due to reduction in trade costs as a result of its accession to the WTO.

We also ran other types of checks, for example, controlling for lagged value of outsourcing expenditure, using first difference, long difference (between 1995 and 2007), substituting the foreign competition variable with a different indicator, using other measures for import competition, changing the method of estimation, etc. to check for the robustness of our benchmark findings in **Table 20** (**Appendix B**). Column (1) uses a one-year lag value of the dependent variable, outsourcing share of manufacturing jobs. Our variable of interest continues to be positive and significant. In column (2) we run a first-differenced equation; the outcome remains the same. Another issue that might also affect our results is that there is a lot of correlation over time for a given firm. We counter this by running a long difference specification in column (3). We use 1995 as the base year and compare the outcome with 2007. We find significant positive effect of Chinese import competition in the domestic market on the outsourcing activity of Indian manufacturing firms with no effect for export market competition. In other words, a rise in Chinese import competition in the Indian domestic market significantly induces Indian firms to outsource more jobs related to manufacturing activities in 2007 compared to what they were outsourcing in 1995.

Looking only at Chinese imports by the US as a proxy for export market competition may not reveal the true competitive effects faced by Indian firms face in export market(s). To address this possible shortcoming, we construct an index that aggregates the shares of Chinese imports in two other primary export markets for India firms, namely the EU and ASEAN, with that of the US. We then substitute the original foreign competition index with the composite index based on these three export market destinations (where Indian firms might face challenge from Chinese products) in column (4). In other words,

$$FComp^{China}_{IN,jt-1} = \frac{M^{China}_{US,jt-1} + M^{China}_{EU,jt-1} + M^{China}_{ASEAN,jt-1}}{(M^{World}_{US,jt-1} + M^{World}_{EU,jt-1} + M^{World}_{ASEAN,jt-1})}$$

As the coefficients demonstrate, our benchmark results remain the same - we do find strong evidence of outsourcing activities in response to Chinese competition in the domestic market. We also find one additional result – weak evidence of competitive effects from export market on outsourcing of Indian firms. In column (5), we change our independent variable following Liu and Rosell (2013). Our variable of interest now becomes:

$$DComp^{China}_{IN,jt-1} = \sum_j s_{ijt} \frac{M^{China}_{IN,jt-1}}{(Y_{j,95} + M_{j,95} - X_{j,95})}$$

s_{ijt} is the share of firm i's sales share in industry j at time t. $Y_{j,95}$, $M_{j,95}$, and $X_{j,95}$ continues to be the same as defined before. Multiplying the import penetration ratio with the sales share of an individual firm transforms the ratio at the firm-level. As the estimate of interest demonstrates, changing the independent variable does not induce any change in our finding. We continue to find strong effects of import competition from China. Since our dependent variable is a ratio, estimating zero-valued variables with OLS may produce biased estimates. So, we use Poisson Pseudo-Maximum Likelihood (PPML) (Silva and Tenreyro, 2006) and fractional logit in columns (6) and (7) to control for such. Both the methods estimate the coefficients in terms of percentage changes and the dependent variable does not need to follow a Poisson distribution or be integer-valued (it can be continuous).[15] As the point estimates demonstrate, Chinese import penetration ratio continues to significantly increase the share of outsourcing activities on account of manufacturing jobs in total expenses.

5.2 IV Analysis

The main measure for Chinese import competition is the import penetration ratio for an industry j at time t and is computed as:

$$DComp^{China}_{IN,jt-1} = \frac{M^{China}_{IN,jt-1}}{(Y_{j,95} + M_{j,95} - X_{j,95})} \tag{12}$$

While in principle it is useful to use a lagged value of the import penetration ratio as a proxy for the contemporaneous import competition index, but this could still be endogenous. For example, consider a scenario where there is an increase in the demand for particular kinds of products in India after China joined the WTO in 2001, which triggers a disproportionate increase in Chinese imports in those categories, such as labour-intensive products, then it is likely to have the same effect on Indian firms in those categories. This could be also true for some unobserved technology shocks, say innovations on labour cost saving technology, which is common to both the countries (Utar and Torres-Ruiz, 2013). Our estimates will then be capturing the effect of this technology shock and would erroneously attribute it to Chinese import competition. These types of biases or unobservable shocks can make the effect of Chinese competition on outsourcing activity of Indian firms endogenous. To overcome the possible endogeneity concern(s), we follow Autor et al. (2013),

[15] We estimate the standard errors using Eicker-White robust covariance matrix estimator.

Autor et al. (2014), and Acemoglu et al. (2016) in instrumenting for Chinese imports in India by Chinese imports to other similar developing countries. The instrument for (10) is computed as:

$$IVDComp_{IN,jt-1}^{China} = \frac{M_{jt-1}^{IC,Others}}{(Y_{j,95} + M_{j,95} - X_{j,95})} \tag{13}$$

where $M_{jt-1}^{IC,Others}$ is the lagged value of Chinese imports to an industry in Brazil, Indonesia, Malaysia and Mexico. This approach assumes that the rise in Chinese manufacturing exports to other developing countries was primarily driven by internal supply shocks and reduced trade costs but not by unobserved import demand shocks in developing countries (Autor et al., 2013). The Chinese share of imports by Brazil, Indonesia, Malaysia and Mexico must be exogenous from the perspective of Indian firms as it is expected to be driven by China itself. In other words, Chinese exports to these countries is likely to be correlated with Chinese exports to India but not with Indian conditions driving Indian imports.

We use a simple lagged ratio, i.e., we regress one year lagged value of the Chinese share of imports by Brazil, Indonesia, Malaysia and Mexico on share of outsourcing expenses of Indian firms. Results from IV estimations along with their first-stages are presented in **Table 8**. Our IV results qualitatively mirror results in **Table 7**, though the magnitudes of the coefficient of interest across columns are larger. This is possible if unobserved factors driving outsourcing activity by Indian firms and imports from China simultaneously lead to inconsistent estimates of the impact of Chinese import penetration on outsourcing. Columns (1) through (4) and columns (6) through (9) present results for outsourcing as a share of total expenses and value added respectively, with columns (5) and (10) presenting results for the time period 1995-2001. Overall, our IV results estimate that a 10 percentage point increase in Chinese import penetration ratio increases 0.24-0.50 percentage point increase in share of outsourcing in total expenses and 1.4-1.6 percentage point increase in gross value-added.

5.3 Robustness

Controlling for Competitive Pressures from Other Regions Even though all of our estimations use foreign market competition as an additional control, we do not per se establish that the outsourcing activities on Indian manufacturing firms is due to import competition from China in the domestic market and not import competition in general or from other destinations. The effect from China could very well pick up the effects from general competitive effects or effects from other similar countries. In order to potentially show such is not the case and the effect is

specific to competitive pressures from China, we calculate a general import competition index – World and for all the possible regions – high-income countries ($High - Income$), North America (NA), European Union (EU), Latin American countries (LA), least-developed countries (LDC), Middle-east and North African countries ($MENA$), and South Asian countries (SA). Results are presented in **Table 9**. We start by using a general import competition index - $DComp^{World}_{IN,jt-1}$ along with $DComp^{China}_{IN,,jt-1}$ in column (2). The coefficient on Chinese import penetration is statistically significant and positive, suggesting that it is not the general import competition, but China which is associated with more outsourcing of manufacturing jobs by Indian firms.

Across columns (2) through (5), we show that this positive and significant relationship is robust to controlling for import competition from $High - Income$ (column (2)), NA and EU (column (3)), LA, LDC, $MENA$, and SA (column (4)) countries and all of these put together (column (5)). In column (6), we replicate column (5) with an alternate measure of outsourcing using outsourcing expenditure as a share of gross value added. We find that the positive relationship between Chinese import competition and outsourcing endures.

Controlling for Industry- and Firm-level Channels **Table 10** introduces control variables for industry- and firm-level measures that may be correlated with outsourcing expenditure of a firm. For instance, it is likely that higher number of skilled labour or opening up of new factories might increase/decrease outsourcing activities. Column (1) use skill-intensity as an additional control at the industry-level. We define skill-intensity as the ratio of the number of non-production workers to total employees of an industry. We do not find any evidence of correlation between skill-intensity and outsourcing activities of firms. We use number of factories at the industry-level as a control in column (2). We find no effect of this additional control. Our coefficient of interest remains robustly significantly.

Column (3) checks whether high-productive firms outsource more. We calculate total factor productivity of a firm using the Levinshon-Petrin (2003) methodology. Our estimate shows our conjecture to be true – productivity of a firm is strongly correlated with outsourcing activities of a firm. This is consistent with Grossman and Helpman (2004). Columns (5) - (9) tests another proposition put forward by Grossman and Helpman (2004) - managerial incentives is positively correlated with outsourcing activities. In the age of rapid globalization, when firms want to expand their activities as a result of competitive pressures, they tend to outsource various production and assembly activities by vertically integrating with other firms. Managers who oversee these production and assembly activities are offered high-powered incentives in order facilitate outsourcing in an efficient manner.

We start by looking at managerial compensation in column (5). Compensation is defined wages plus incentives. We do not find any evidence of outsourcing activity being correlated with managerial compensation. Column (6) looks at the former component of compensation - wages; managerial wages does not seem to be correlated with outsourcing activities. In column (7), we use managerial incentives as one of the control variable. Our estimate shows a positive relationship between managerial incentives and outsourcing. Lastly, we divide the managerial incentives into two management levels - top management (executives) and middle (directors).[16] We find only the incentives of executives to be positively correlated with outsourcing share of firms. Across all columns, our key variable of interest, Chinese import competition is robust in sign, significance and magnitude.

The Case of Intermediate Inputs One other factor that might be affecting our findings is the way we look at total imports: use imports of intermediate inputs by Indian firms (Iacovone et al., 2013). For example, imported intermediate inputs may be cheaper and of higher quality than locally sourced inputs thus lowering the production costs of the firms and making it possible to outsource more. To account for this possibility, we generate a measure of the share of imported inputs from China by Indian firms using Indian input-output (I-O) tables in column (7).[17] We weight the I–O coefficient of each sector (at NIC 4-digit level) as an input by its import share, and then by the Chinese share in imports for that sector. By summing these measures, we arrive at a measure, $InpDComp$, that gives the average weighted sum of intermediate goods imported from China at a sectoral level, where the weights are given by the coefficients of the I-O table.

Table 11 reports the results where we control for imported intermediate goods from China. If Chinese import competition in upstream industries is correlated with import penetration in the final goods sector, then our coefficient of interest might be inconsistently estimated. Estimates from columns (1) – (5) show that our main result remains robust to the addition of this control variable. We do not find any effect of imported intermediate goods, $InpDComp$, from China. It is the product market competition that induces firms' to outsource a part of their manufacturing activities in order to compete with Chinese products.

5.4 The Role of Labor Market Regulation

In this paper, we argue that greater import competition induces firms to lower marginal production cost. A large set of literature emphasizes the role played by rigid labour markets and stringent

[16] The former set of managers have executive powers in a firm.

[17] We use the 1999 I-O table to choose input coefficients for each of the 2004 NIC 4-digit sector. We additionally test for the robustness by substituting with 1993 I-O table, but the results remain the same.

labor market regulation in pushing up implicit labour costs in developing countries (Besley and Burgess, 2004), particularly in the formal sector, where labour laws are enforced. To explore the role of labour market regulation in incentivizing firms to outsource manufacturing jobs, we use the following equation:

$$\begin{aligned} outsourcing_{ijt} &= \beta_1 DComp^{China}_{IN,jt-1} + \beta_2 (DComp^{China}_{IN,jt-1} * LMktR_s) \\ &\quad + X_{jt-1} + \beta_4 (X_{jt-1} * LMktR_s) + Z_{ijt-1} + \mu_i + \gamma_t + \varepsilon_{ijt} \end{aligned} \tag{14}$$

$LMktR_s$ is a dummy variable that equals one if labour laws in a state in which firms' are registered are flexible (pro-employer). $LMktR_s = 1$, when s = Andhra Pradesh, Karnataka, Rajastha, Tamil Nadu, and Uttar Pradesh. On the other hand, $LMktR_s = 0$, when s = Assam, Bihar, Gujarat, Haryana, Kerela, Madhya Pradesh, Maharastra, Orissa, Punjab, and West Bengal.

The interaction between $LMktR_s$ and $DComp^{China}_{IN,jt-1}$ captures the differential effect of Chinese import competition on firms in states with more flexible labor laws relative to other states. We employ the labour law classification in Gupta et al. (2008). β_2 will estimate the differential effect of Chinese import competition on outsourcing activity in firms in states with inflexible labour regulation relative to firms in other states. We hypothesize that $\beta_2 < 0$, i.e., greater import competition from China is associated with less outsourcing in states with more flexible labour laws that impose a much lower tax on employing labour in-house by formal manufacturing firms. In other words, if costs imposed by labour regulation spur firms to outsource manufacturing activity, we expect the interaction term between Chinese import penetration and the indicator for states with flexible labour regulation to be negative.

Table 12 presents our results. Columns (1) – (8) show that it is indeed the case. While Chinese import competition is associated with greater outsourcing, this relationship is attenuated in states with relatively flexible labor regulation. This is supportive of our proposition that rigid labour laws, by increasing the cost of employing labour, may increase firm incentives to cut marginal costs by outsourcing more activities with increased import competition. A 10 percentage point change in import penetration ratio increases an additional 0.16-0.22 percentage points of outsourcing share in total expenses by firms located in states with inflexible labour regulation. Our estimates confirm that this result is robust to the addition of control variables (tariffs, export market competition, import competition from low-wage countries, etc.) and their interaction with labour regulation indicator, $LMktR_s$, and to employing the alternate measure of outsourcing given by outsourcing

expenditure as a share of gross value added (columns (8) and (9)). To bolster our results, we undertake the following two estimations.

Placebo First, we estimate a placebo regression following 14 for outsourcing of professional jobs. Note that labour laws under the Indian Factories Act do not apply to professional workers, who perform skilled tasks. If the mechanism we have in mind explains the differential relationship between import competition and outsourcing in states with more flexible labour regulation, we would not expect to find it for outsourcing of professional jobs[18].

Indeed, results in **Table 13**, which focuses on outsourcing of professional jobs, show that there is no differential relationship between Chinese import competition and outsourcing of professional jobs in states with relatively flexible labour regulation. These results provide further support to our idea that greater import competition is associated with greater outsourcing, particularly under stringer labour enforcement regimes that drive up the relative cost of operating in the formal sector in developing countries.

Unorganized Sector Second, we incorporate a new dataset that contains information on unorganized (informal) sector manufacturing enterprises from the National Sample Survey Organization (NSSO), India. Note that formal sector firms in our data are most likely to outsource manufacturing tasks to firms in the informal sector if their primary motivation is to cut marginal labour cost. If this is true, we should see a corresponding increase in informal firms selling their output to formal firms with greater Chinese import competition.

Our data come from two rounds of a nationally representative survey of informal enterprises that employ fewer than ten workers for the years 2000 and 2005. The survey asks these enterprises two relevant questions. First, if they are mainly on contract to sell their product to another enterprise or to a middleman/contractor. Second, the destination of their final product. We construct three alternate indicators of outsourcing activity among informal sector firms. The first is an indicator variable that equals one for enterprises that are mainly on contract to sell their product to another firm or a middleman/contractor. The second indicator variable equals one for enterprises that report selling most of their output to other enterprises or middlemen (as opposed to the government or private households). The third indicator is a combination of the first two and equals one if either the first or second indicator equals one. We use the third as our preferred indicator and examine its relationship to Chinese import competition.

[18] **Table 21 (Appendix B)** present results for estimation of our baseline equation 10 on outsourcing of professional jobs. We do not find any relationship between import competition and outsourcing of professional jobs by Indian manufacturing firms

Table 14 presents our results for a probit model exploring this relationship. Columns (1) and (2) show that there is a strong, statistically significant and positive relationship between Chinese import competition and the likelihood of outsourcing to informal firms. Exactly like in the case of the formal sector, results in columns (3) through (5) show that the relationship between import competition and outsourcing is mitigated in states with relative flexible labour regulation, consistent with our hypothesis that costs imposed by stringent labour regulation may induce formal sector firms to outsource manufacturing tasks to the informal sector. Columns (6) and (7) show that this result is robust to measuring outsourcing using alternate indicators available in the data. To summarize, our results offer considerable support for the role played by rigid labour regulation in increasing outsourcing of manufacturing activity between the formal and informal sectors in response to increased import competition from China.

5.5 Extensions

In this section, we extend our analysis by delving into the relationship between import competition and outsourcing further. **Table 15** introduces more lags of the import competition variable with a view to unpacking the dynamics of the relationship. From columns (1) through (4), we see that the coefficients on import penetration are larger when the variable is lagged two or three years. In other words, the impact of import competition on outsourcing is stronger two and three years in the future. Results in columns (5) through (7) echo these findings using the alternate way of measuring outsourcing as a share of gross value added. Put together, results in this table point to a lagged effect of import competition on outsourcing.

Finally, in **Table 16**, we explore heterogeneous effects of import competition on outsourcing across firm types. We interact our main Chinese import penetration variable with indicator variables for four size categories in Column (1), whether the firm is in a final good or intermediate good industry in column (2), if the firm is an exporter or not in column (3), whether the firm is a foreign or domestic firm in column (4). In columns (5) and (6) we present results for single-product firms. Columns (7) and (8) present results for multi-product firms.

From column (1), we find strong evidence of the impact of import competition on outsourcing across the size distribution of firms. However, the effect is about 30% higher for big firms. In addition, we find that the impact of import competition on outsourcing is concentrated among firms in final good industries, firms who are non-exporters and domestic firms. This is likely to be the case if firms that are oriented internationally have to conform to international norms and standards in their technique of production (capital-labour ratios), scale or have to demonstrate adherence to labour standards and are subject to more labour inspections from state officials (Sundaram et al.,

2017). Lastly, we find that the relationship between import competition and outsourcing exists primarily for multi-product firms [19].

6 Conclusion

In this study, we explore the relationship between import competition and outsourcing. Employing unique data from India and exploiting China's accession to the WTO in 2001 as a natural experiment, we show that greater import competition is associated with more outsourcing of manufacturing activity by Indian firms, particularly in the presence of stringent labour regulation regimes that increases the cost of employing labour for firms. We thereby highlight international trade as an important driver of the organization of firms and fragmentation of production. We also propose that labour market institutions moderate the relationship between import competition and outsourcing to the informal sector, where labour laws are not enforced, particularly in developing countries.

[19] **Table 22 (Appendix B)** presents heterogeneous effects as in **Table 16** separately for single-product (columns (1) through (4)) and multi-product firms (columns (5) through (8)). For single-product firms, the table shows a significant, positive relationship between import competition and outsourcing for firms in industries producing final goods and for exporting firms.

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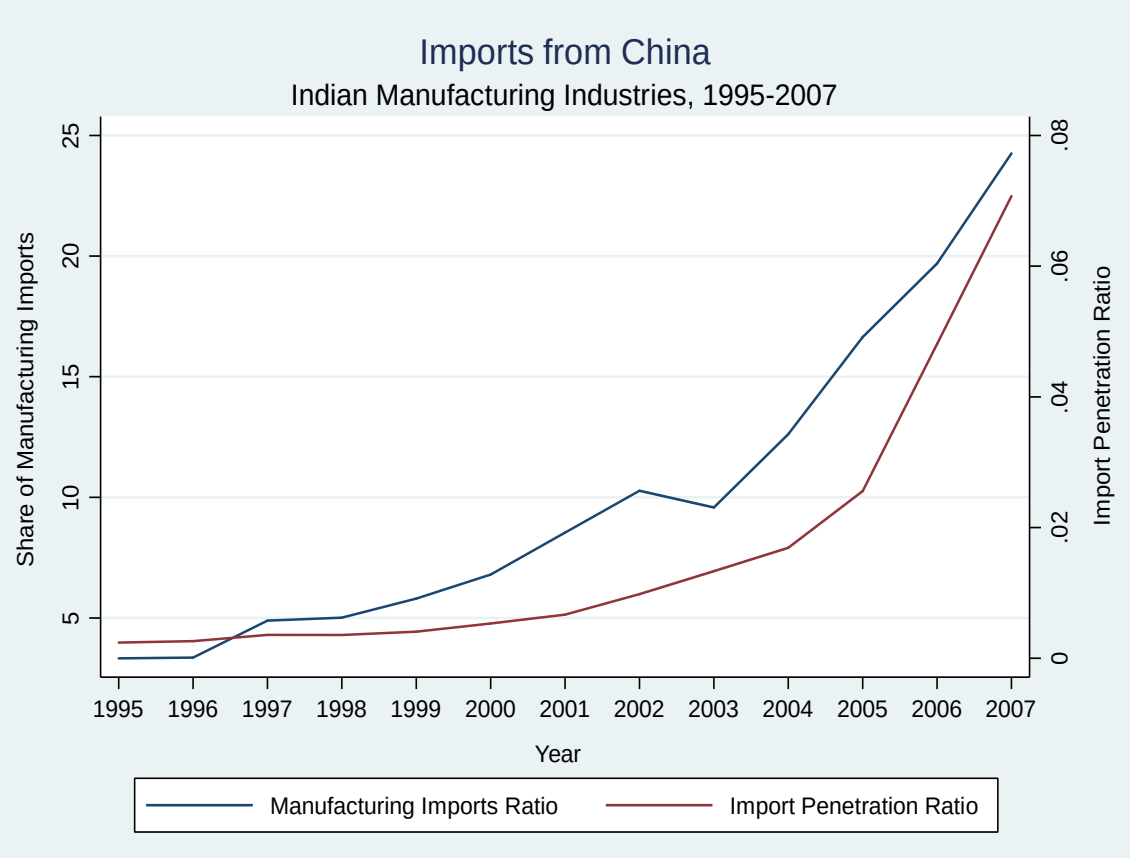

Figure 1: Share of Manufacturing Imports and Import Penetration Ratio for India from China, Indian Manufacturing Industries, 1995-2007

Notes: The line to the left represents the average manufacturing imports from China as a share of total manufacturing imports. The line to the right represents the average of the import penetration ratio.

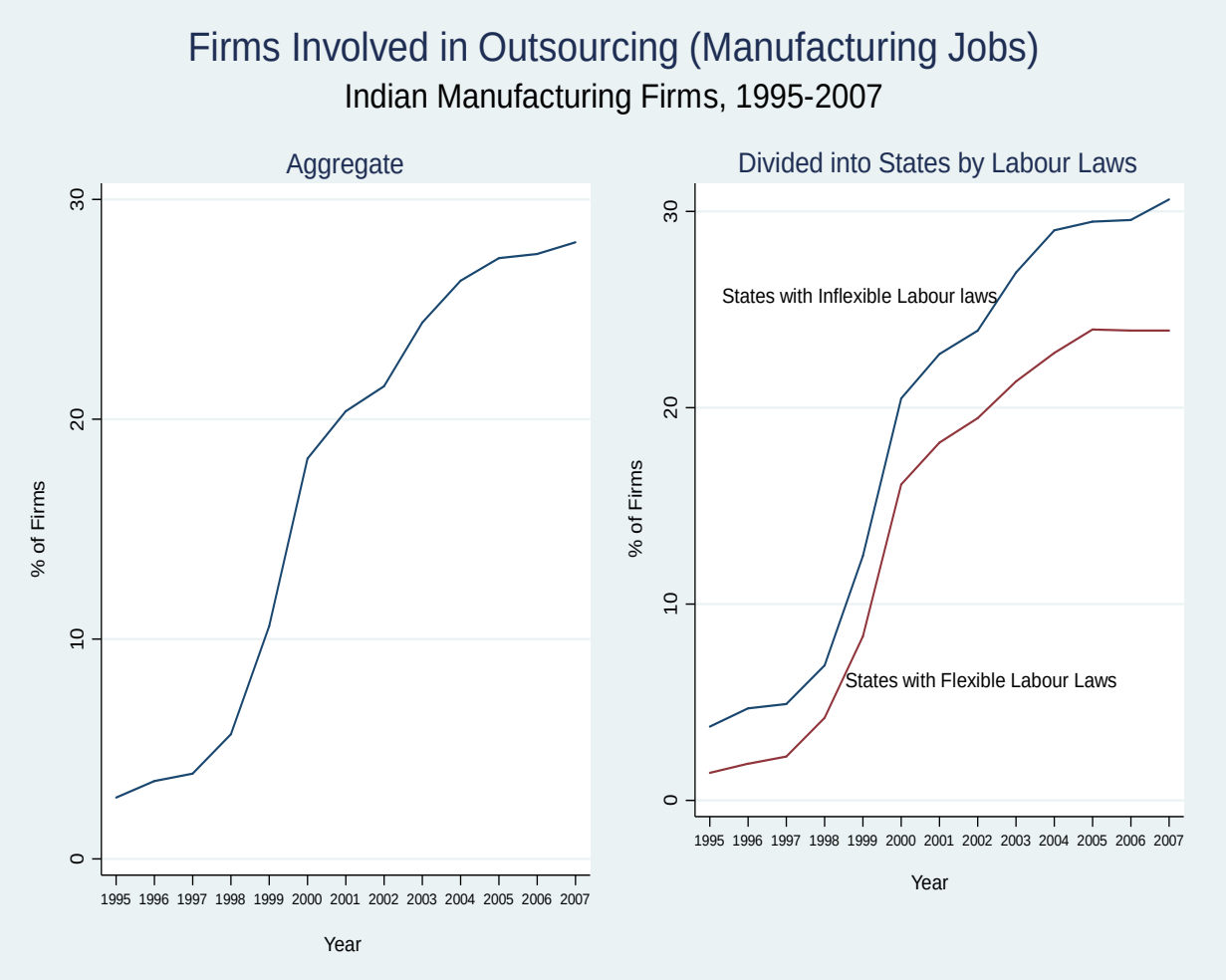

Figure 2: Percentage of Firms Involved in Outsourcing – Aggregate and Divided into States by Labour Laws (Inflexible and Flexible): Indian Manufacturing Firms, 1995-2007

Notes: In Panel B, Blue Line represents the percentage of firms outsourcing in states with 'Inflexible Labour Laws'; Red Line represents the percentage of firms outsourcing in states with 'Flexible Labour Laws'. States with Flexbile Labour Laws' are: Andhra Pradesh, Karnataka, Rajasthan, Tamil Nadu and Uttar Pradesh. 'States with Inflexible Labour Laws' are: Assam, Bihar, Gujarat, Haryana, Kerela, Madhya Pradesh, Maharastra, Orissa, Punjab, and West Bengal..

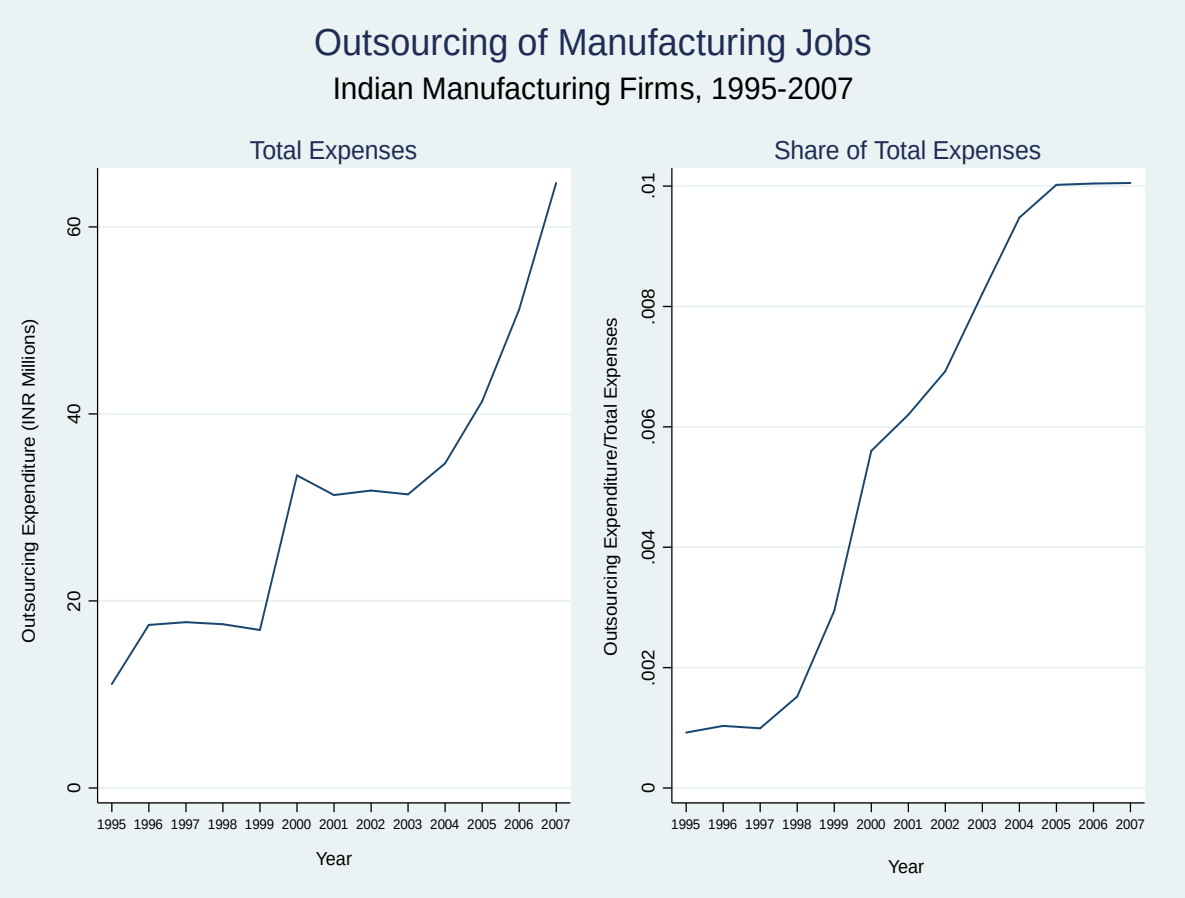

Figure 3: Outsourcing Expenditure of Manufacturing Jobs – Aggregate and Share: Indian Manufacturing Firms, 1995-2007

Notes: Figure presents the average outsourcing expenditure for an average manufacturing firm in India, 1995-2007

Table 1: India's Trade with China and Others

	Trade with China		Imports from Other Countries			
	Imports from China	Exports to China	ASEAN excluding China	US	EU27	World
1992	2.32	2.60	18.95	38.27	124.42	402.50
2001	20.51	10.35	48.88	36.21	116.11	568.70
2007	218.80	84.51	187.24	126.48	288.42	1946.65
Growth (1992-2007)	9339.34%	3150.38%	888.07%	230.49%	131.81%	383.64%

Notes: Real trade values (deflated using Wholesale Price Index of the entire manufacturing sector in India). Source: Chakraborty and Henry (2019)

Table 2: Firms Reporting Outsourcing of Manufacturing Jobs Vs. Firms Not Reporting Outsourcing of Manufacturing Jobs

	Outsourcing Manufacturing Jobs				
	Mean	Median	Std. Dev.	Min	Max
Panel A: Firms with Reported Outsourcing Expenditure					
Sales	2624.44	257.8	34441.31	0.1	2000000
Assets	2569.80	309.65	24727.86	0.2	1200000
GVA	1404.75	121.6	20711.66	0	1200000
Productivity	0.557	0.496	0.355	0.0001	5.50
Exports	406.27	4.9	5828.86	0	585313
Imports	700.46	7.3	15583.72	0	972704
R&D Intensity	0.013	0.009	0.724	0	89.86
Capital Employed/GVA	7.08	1.73	121.48	0	16789
MCom/TComp	0.062	0.032	0.085	0	1
MIncentives/TIncentives	0.049	0	0.192	0	1
Panel B: Firms with No Reported Outsourcing Expenditure					
Sales	1640.03	321.9	14519.2	0	1000000
Assets	1616.59	224	9104.12	0.1	347562
GVA	314.55	0	5671.78	0	591644
Productivity	0.533	0.475	0.348	0.0001	4.52
Exports	59.47	0	903.33	0	119211
Imports	117.48	0	3115.78	0	391216
R&D Intensity	0.002	0	0.089	0	18.73
Capital Employed/GVA	3.40	0	81.34	0	10688
MCom/TComp	0.020	0	0.080	0	1
MIncentives/TIncentives	0.010	0	0.085	0	1

Notes: Panel A (B) covers firms that reported positive (zero) expenditure on outsourcing of manufacturing jobs. 'Sales' is the total sales (exports plus domestic sales) of a firm. 'Assets' is the total assets of a firm. 'GVA' is the gross value-added defined as total sales minus total raw material expenditure. 'Productivity' is measured through Levinshon-Petrin (2003) methodology. 'Exports', 'Imports' are the total exports, imports of a firm, respectively. 'R&D intensity' is the GVA share of R&D expenditure. 'Capital Employed' is the amount of capital employed. 'MComp/TComp' is the share of managerial compensation. 'MIncentives/TIncentives' is the share of managerial incentives. For further information on variables see data **Appendix A**.

Table 3: Outsourcing of Manufacturing Jobs - Total Expenditure, Share of Expenses, Percentage of Firms: At Industry-level (NIC 2-digit)

Industry Code	Industry Name	Outsourcing Manufacturing Jobs		
NIC 2004 2-digit		Total	Share	% of Firms
15	Foods Products and Beverages	35.50	0.17	7.30
16	Tobacco Products	77.36	1.33	18.01
17	Textiles	29.70	0.73	17.91
18	Wearing Apparel	66.54	1.41	16.17
19	Leather	25.15	1.02	15.19
20	Wood and Wood Products	3.27	0.08	7.20
21	Paper and Paper Products	9.68	0.20	9.33
22	Recorded Media	10.43	1.00	6.74
23	Coke, Refined Petroleum, Nuclear Fuel	257.13	0.15	8.06
24	Chemical and Chemical Products	26.71	0.25	12.88
25	Rubber and Plastics	16.66	0.44	17.37
26	Non-metallic Mineral Products	17.28	0.25	6.68
27	Basic Metals	59.02	0.37	14.63
28	Fabricated Metal Products	35.58	0.88	21.08
29	Machinery and Equipment	35.34	0.82	19.67
30	Office, Accounting & Computing Machinery	1.84	0.02	3.12
31	Electrical Machinery and Apparatus	20.14	0.40	13.33
32	Communication Equipment	6.24	0.25	12.06
33	Medical, Precision and Optical Instruments	10.15	0.53	14.67
34	Motor vehicles, Trailers and Semi-Trailers	1370.55	0.09	6.53
35	Other transport equipment	44.76	0.94	19.54
36	Furniture; Manufacturing n.e.c	64.69	0.72	18.07

Notes: Column (1) calculates the mean outsourcing expenditure by an Indian manufacturing firm. It is expressed in INR Million. Column (2) represents the mean share of outsourcing expenditure in total expenditure of a firm multiplied by 100. Column (3) represents mean percentage of firms involved in outsourcing of manufacturing jobs.

Table 4: Outsourcing of Manufacturing Jobs - Total Expenditure, Share of Expenses, Percentage of Firms

	Outsourcing Manufacturing Jobs		
	Total	Share	% of Firms
Panel A			
Aggregate	37.00	0.47	13.86
Panel B: Dividing into States by Labour Laws			
States with Flexible Labour Laws	32.46	0.43	11.80
States with Infexible Labour Laws	41.02	0.57	15.47

Notes: Column (1) calculates the mean outsourcing expenditure by an Indian manufacturing firm. It is expressed in INR Million. Column (2) represents the mean share of outsourcing expenditure in total expenditure of a firm multiplied by 100. Column (3) represents mean percentage of firms involved in outsourcing of manufacturing jobs. 'States with Flexbile Labour Laws' are: Andhra Pradesh, Karnataka, Rajasthan, Tamil Nadu and Uttar Pradesh. 'States with Inflexible Labour Laws' are: Assam, Bihar, Gujarat, Haryana, Kerela, Madhya Pradesh, Maharastra, Orissa, Punjab, and West Bengal.

Table 5: Outsourcing Expenditure and Intensity of Manufacturing Jobs: By User-based Industries and Labour Laws

Industry Name	Outsourcing Manufacturing Jobs					
	Total		Share		% of Firms	
	States with Flexible Labour Laws	States with Inflexible Labour Laws	States with Flexible Labour Laws	States with Inflexible Labour Laws	States with Flexible Labour Laws	States with Inflexible Labour Laws
	(1)	(2)	(3)	(4)	(5)	(6)
Final Goods	31.99	42.57	0.51	0.60	12.69	15.22
Intermediate Goods	33.06	39.93	0.35	0.44	10.83	15.65

Notes: Numbers represent average across manufacturing firms belonging to each user-based industries. Final Goods include Consumer Durables and Consumer Non-Durables, whereas, Intermediate Goods include Basic, Intermediate and Capital goods. Columns (1) and (2) calculate the mean outsourcing expenditure by an Indian manufacturing firm. It is expressed in INR Million. Columns (3) and (4) represents the mean share of outsourcing expenditure in total expenditure of a firm multiplied by 100. Columns (5) and (6) represent mean percentage of firms involved in outsourcing of manufacturing jobs.

Table 6: Distribution of Industries by Outsourcing Share of Manufacturing Jobs

	Outsourcing Share	Manufacturing Jobs No of Industries
	(1)	(2)
$1992-2001$	0–0.25	67
	0.26–0.5	22
	0.6–1	7
	$\rangle$ 1	4
$2002-2007$	0–0.25	22
	0.26–0.5	21
	0.6–1	19
	$\rangle$ 1	39

Notes: Column (1) represents the mean outsourcing share of an industry at NIC 4-digit level. Outsourcing Share is defined as the share of outsourcing expenditure in total expenses multiplied by 100. Column (2) count the number of industries within those ranges of outsourcing share.

Table 7: Chinese Import Competition and Outsourcing of Manufacturing Jobs: Benchmark Results

	Outsourcing Exp/ Total Expenses							Outsourcing Exp/ GVA	Outsourcing Intensity	
	Year 1995−2007						Year 1995−2001	Year 1995−2007	Year 1995−2007	Year 1995−200
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$DComp^{China}_{IN,jt-1}$	0.017^{a} (0.005)	0.013^{b} (0.005)	0.007^{b} (0.003)	0.010^{a} (0.002)	0.007^{a} (0.002)	0.017^{a} (0.005)	0.041 (0.051)	0.082^{b} (0.038)	0.136^{b} (0.063)	0.130^{b} (0.056)
$InpTariff_{jt-1}$		−0.005 (0.003)	−0.003 (0.002)	0.0003 (0.002)	−0.002 (0.003)	−0.004 (0.003)	−0.007 (0.006)	-0.019^{b} (0.009)	-0.091^{c} (0.049)	−0.123 (0.048)
$OutTariff_{jt-1}$		0.002 (0.002)	0.003 (0.003)	0.002 (0.002)	0.002 (0.003)	0.001 (0.002)	0.004 (0.003)	0.008 (0.009)	−0.009 (0.033)	0.021 (0.038)
$FComp^{China}_{IN,jt-1}$		0.0002^{b} (0.0001)	0.00004 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.002)	0.0003 (0.0003)	0.0005 (0.0004)	0.003 (0.002)	0.002 (0.002)
$DComp^{Other\ LWC}_{IN,jt-1}$						−0.003 (0.002)				
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.56	0.56	0.56	0.60	0.62	0.55	0.55	0.35	0.61	0.55
N	41,821	41,515	41,515	41,515	41,515	39,466	18,136	34,950	41,515	41,515
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes
Industry FE (2-digit)*Year FE	No	No	Yes	No	Yes	No	No	No	No	No
Industry FE (3-digit)*Year FE	No	No	No	Yes	No	No	No	No	No	No
State FE*Year FE	No	No	No	No	Yes	No	No	No	No	No

Notes: Columns (1) – (7) and column (8) uses expenditure on outsourcing (OutExp) as a share of total expenses (Total Expenses) and outsourcing expenditure as a share of GVA (gross value-added) as the dependent variable, respectively. Columns (9) and (10) use outsourcing intensity (OutIntensity) as the dependent variable. Column (9) takes a value 1 if the share of outsourcing expenditure (OutExp) as a share of total expenses (Total Expenses) $\rangle$ 0, whereas column (10) takes a value 1 if the share of outsourcing expenditure (OutExp) as a share of GVA $\rangle$ 0. All the measures focus on manufacturing jobs. '$DComp^{China}_{IN,jt-1}$' is an index of Chinese import pentration ratio in the domestic market of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. '$FComp^{China}_{IN,jt-1}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US). '$DComp^{Other\ LWC}_{IN,jt-1}$' is the share of imports from all other low-wage countries. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. ^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 8: Chinese Import Competition and Outsourcing of Manufacturing Jobs: IV Results

	Outsourcing Exp/ Total Expenses					Outsourcing Exp/ GVA				
	Year 1995−2007				Year 1995−2001	Year 1995−2007				Year 1995−2001
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$DComp^{China}_{IN,jt-1}$	0.024^{a} (0.006)	0.050^{b} (0.007)	0.026^{a} (0.007)	0.027^{a} (0.006)	0.371 (0.408)	0.137^{a} (0.022)	0.140^{a} (0.019)	0.143^{a} (0.022)	0.164^{a} (0.022)	0.685 (1.485)
$FComp^{China}_{IN,jt-1}$	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.00004 (0.0003)	0.0006^{c} (0.0003)	−0.0003 (0.0003)	0.0005 (0.0003)	0.0007 (0.0004)	0.0004 (0.001)
$InpTariff_{jt-1}$			-0.005^{c} (0.003)	−0.004 (0.003)	−0.010 (0.007)			-0.022^{b} (0.010)	-0.017^{c} (0.010)	−0.040 (0.025)
$OutTariff_{jt-1}$			0.002 (0.002)	0.001 (0.002)	0.006 (0.004)			0.006 (0.008)	0.003 (0.007)	0.021 (0.014)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.04	0.06	0.04	0.05	0.04	0.02	0.04	0.02	0.03	0.02
N	37,844	37,844	37,844	32,375	16,529	31,890	31,890	31,890	27,313	14,365
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry FE (3-digit)*Year FE	No	Yes	No	No	No	No	Yes	No	No	No
State FE*Year FE	No	No	No	Yes	No	No	No	No	Yes	No
1st Stage										
	$DComp^{China}_{IN,,jt-1}$									
$DComp^{China}_{BIMM,jt-1}$	0.150^{a} (0.014)	0.192^{a} (0.041)	0.151^{a} (0.014)	0.151^{a} (0.013)	0.048^{a} (0.016)	0.149^{a} (0.015)	0.199^{a} (0.048)	0.151^{a} (0.015)	0.150^{a} (0.014)	0.047^{a} (0.016)
F-Stat	155.06		192.77		10.49	142.07		185.92		12.64

Notes: Columns (1) - (5) use expenditure on outsourcing (OutExp) as a share of total expenses (Total Expenses) as the dependent variable. Columns (6) - (10) use outsourcing expenditure as a share of GVA (gross value-added) as the dependent variable. '$DComp^{China}_{IN,jt-1}$' is the Chinese import pentration ratio in the domestic market of India. We use '$DComp^{China}_{BIMM,jt-1}$' as the instrument for '$DComp^{China}_{IN,jt-1}$'. We measure '$DComp^{China}_{BIMM,jt-1}$' using imports from other developing countries such as Brazil (B), Indonesia (I), Malaysia (M) and Mexico (M). '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. '$FComp^{China}_{IN,jt-1}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US). 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported.^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 9: Chinese Import Competition and Outsourcing of Manufacturing Jobs: Controlling for Import Competition from Other Regions

	Outsourcing Exp/ Total Expenses					Outsourcing Exp/ GVA
	(1)	(2)	(3)	(4)	(5)	(6)
$DComp^{World}_{IN,jt-1}$	−0.0007					
	(0.001)					
$DComp^{China}_{IN,jt-1}$	0.013[a]	0.011[a]	0.010[a]	0.008[a]	0.009[a]	0.041[a]
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.014)
$DComp^{High-Income}_{IN,jt-1}$		−0.0003				
		(0.001)				
$DComp^{NA}_{IN,jt-1}$			−0.041[b]		−0.040[b]	0.098
			(0.016)		(0.018)	(0.097)
$DComp^{EU}_{IN,jt-1}$			0.014		0.010	−0.027
			(0.008)		(0.019)	(0.036)
$DComp^{LA}_{IN,jt-1}$				−0.010	−0.005	−0.105
				(0.022)	(0.023)	(0.127)
$DComp^{LDC}_{IN,jt-1}$				−0.009	−0.00002	−0.216
				(0.033)	(0.040)	(0.153)
$DComp^{MENA}_{IN,jt-1}$				−0.008*	−0.005	0.027
				(0.005)	(0.005)	(0.025)
$DComp^{SA}_{IN,jt-1}$				0.032	0.033	0.199
				(0.038)	(0.033)	(0.158)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.56	0.56	0.56	0.56	0.56	0.34
N	38,625	38,625	38,625	38,625	38,852	32,760
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (2-digit)*Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Columns (1) – (5) and column (6) uses expenditure on outsourcing (Outsourcing Exp) as a share of total expenses (Total Expenses) and outsourcing expenditure as a share of GVA (gross value-added) as the dependent variable, respectively. '$DComp^{China}_{IN,jt-1}$' is an index of Chinese import pentration ratio in the domestic market of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$DComp^{World}_{IN,jt-1}$', '$DComp^{High-Income}_{IN,jt-1}$', '$DComp^{NA}_{IN,jt-1}$', '$DComp^{EU}_{IN,jt-1}$', '$DComp^{LA}_{IN,jt-1}$', '$DComp^{LDC}_{IN,jt-1}$', '$DComp^{MENA}_{IN,jt-1}$', '$DComp^{SA}_{IN,jt-1}$' are import penetration indices in case of World ($World$), High-Income countries (OECD plus non-OECD) ($High-Income$), North America (NA), European Union (EU), Latin America (LA), Least Developed Countries (LDC), Middle East and North African countries ($MENA$), and South Asia (SA) respectively. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. [b],[a] denotes 5% and 1% level of significance, respectively.

Table 10: Chinese Import Competition and Outsourcing of Manufacturing Jobs: Controlling for Other Possible Channels (Firm and Industry level)

	Outsourcing Exp/ Total Expenses							
	Skill Intensity	Factories	Total Factor Productivity	Managerial Compensation	Managerial Wages	Managerial Incentives		
						Total	Executives	Directors
	(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)
$DComp^{China}_{IN,,jt-1}$	0.013^{a} (0.005)	0.013^{a} (0.005)	0.014^{a} (0.003)	0.013^{a} (0.005)	0.013^{a} (0.005)	0.013^{a} (0.005)	0.013^{a} (0.005)	0.013^{a} (0.005)
$FComp^{China}_{IN,jt}$	0.0002^{b} (0.0001)	0.0002^{b} (0.0001)	0.00003 (0.0001)	0.0002^{b} (0.0001)	0.0002^{b} (0.0001)	0.0002^{b} (0.0001)	0.0002^{b} (0.0001)	0.0002^{b} (0.0001)
$SkIntens_{t-1}$	0.001 (0.003)							
$Factories_{t-1}$		0.0001 (0.002)						
TFP_{t-1}			0.001^{a} (0.0001)					
$(MComp/TComp)_{it-1}$				0.002 (0.002)				
$(MWages/TWages)_{it-1}$					0.003 (0.002)			
$(MIncentives/TIncentives)_{it-1}$						0.002^{c} (0.001)	0.002^{c} (0.001)	-0.001 (0.002)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.56	0.56	0.72	0.56	0.56	0.56	0.56	0.56
N	41,515	41,515	23,511	41,515	41,515	41,515	41,515	41,515
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (2-digit)*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Columns (1) – (9) use expenditure on outsourcing on account of manufacturing jobs (Outsourcing Expenditure) as a share of total expenses (Total Expenses) as the dependent variable. '$DComp^{China}_{IN,,jt-1}$' is an index of Chinese import pentration ratio in case of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$FComp^{China}_{IN,jt}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US). '$SkIntens$' is a proxy for skill intensity at the industry-level. It is defined as the share of non-production workers to total employees at the NIC 3-digit level. '$Factories$' is the number of factories at 3-digit level NIC 2004. 'TFP' is total factor productivity at firm-level estimated using Levinshon and Petrin (2003). '$MComp/TComp$' is the share of managerial compensation in total labour compensation for firm i. '$MWages/TWages$' is the share of total manaegrial wages in total wages for firm i. '$MIncentives/TIncentives$' is the share of total managerial incentives in total incentives for firm i. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. ^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 11: Chinese Import Competition and Outsourcing of Manufacturing Jobs: The Intermediate Inputs Channel

	Outsourcing Exp/ Total Expenses				Outsourcing Exp/ GVA
	(1)	(2)	(3)	(4)	(5)
$DComp^{China}_{IN,jt-1}$	0.013^{a}	0.016^{a}	0.013^{a}	0.011^{b}	0.116^{b}
	(0.003)	(0.004)	(0.004)	(0.004)	(0.051)
$InpDComp^{China}_{IN,jt-1}$	0.004	-0.003	0.004	0.003	-0.023
	(0.005)	(0.005)	(0.005)	(0.005)	(0.053)
$InpTariff_{jt-1}$			-0.005^{c}	-0.006^{c}	-0.022^{b}
			(0.003)	(0.003)	(0.011)
$OutTariff_{jt-1}$			0.002	0.002	0.007
			(0.002)	(0.002)	(0.008)
$FComp^{China}_{IN,jt-1}$				0.0001	0.0007^{b}
				(0.0001)	(0.0003)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes
R-Square	0.59	0.59	0.59	0.59	0.51
N	38,131	38,131	38,131	37,844	31,890
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	No	No	No	No
Industry FE (2-digit)*Year FE	No	Yes	Yes	Yes	Yes

Notes: Columns (1) – (5) focus on manufacturing jobs. Columns (1) - (4) and (6) - (9) use expenditure on outsourcing (OutExp) as a share of total expenses (Total Expenses) as the dependent variable. Columns (5) and (10) use outsourcing expenditure as a share of GVA (gross value-added) as the dependent variable. '$DComp^{China}_{IN,jt-1}$' is the Chinese import pentration ratio in the domestic market of India. '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. '$FComp^{China}_{IN,jt-1}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US). 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported.^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 12: Chinese Import Competition and Outsourcing of Manufacturing Jobs: Labour Market Regulations

	Outsourcing Exp/ Total Expenses							Outsourcing Exp/ GVA	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$DComp^{China}_{IN,,jt-1}$	0.020^{a} (0.003)	0.015^{a} (0.003)	0.025^{a} (0.005)	0.019^{a} (0.003)	0.018^{a} (0.004)	0.020^{a} (0.004)	0.018^{a} (0.004)	0.116^{a} (0.015)	0.095^{a} (0.017)
$DComp^{China}_{IN,,jt-1} \times LMktR_s$	-0.017^{a} (0.007)	-0.019^{a} (0.005)	-0.024^{a} (0.007)	-0.018^{a} (0.006)	-0.022^{b} (0.008)	-0.016^{a} (0.006)	-0.021^{b} (0.008)	-0.103^{a} (0.023)	-0.068^{b} (0.029)
$InpTariff_{jt-1}$				-0.005 (0.003)	-0.006^{c} (0.003)	-0.004 (0.003)	-0.004 (0.003)	-0.021^{c} (0.013)	-0.018 (0.013)
$InpTariff_{jt-1} \times LMktR_s$				-0.0002 (0.002)	0.0003 (0.003)	-0.0003 (0.003)	0.0003 (0.003)	-0.004 (0.016)	-0.009 (0.016)
$OutTariff_{jt-1}$				0.002 (0.002)	0.002 (0.003)	0.001 (0.002)	0.001 (0.002)	0.004 (0.009)	0.003 (0.010)
$OutTariff_{jt-1} \times LMktR_s$				-0.0001 (0.002)	-0.00003 (0.002)	0.0002 (0.002)	0.0003 (0.003)	0.007 (0.013)	0.008 (0.014)
$FComp^{China}_{IN,jt-1}$					0.0001 (0.0001)		0.0001 (0.0001)		0.001^{b} (0.0004)
$FComp^{China}_{IN,jt-1} \times LMktR_s$					0.0001 (0.0001)		0.0001 (0.0001)		-0.001^{c} (0.0004)
$DComp^{Other\ LWC}_{IN,jt-1}$						-0.004 (0.003)	-0.004 (0.003)		-0.005 (0.015)
$DComp^{Other\ LWC}_{IN,jt-1} \times LMktR_s$						0.004 (0.003)	0.004 (0.003)		0.013 (0.017)
Firm Controls$_{t-1}$	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.59	0.59	0.62	0.59	0.59	0.58	0.58	0.51	0.51
N	38,131	38,131	38,131	38,131	37,844	36,135	36,135	32,148	30,442
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	No	No	No	No	No	No	No	No
Industry FE (2-digit)*Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE*Year Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Columns (1) – (7) and columns (8) - (9) uses expenditure on outsourcing (OutExp) as a share of total expenses (Total Expenses) and outsourcing expenditure as a share of GVA (gross value-added) as the dependent variable, respectively. All the measures focus on manufacturing jobs. '$DComp^{China}_{IN,jt-1}$' is the Chinese import pentration ratio in the domestic market of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. '$FComp^{China}_{IN,jt-1}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US). '$DComp^{Other\ LWC}_{IN,jt-1}$', is the share of imports from all other low-wage countries. '$LMktR_s$' is an indicator for labour market regulation. It takes a value 1 if a state has flexible labour market laws and 0 otherwise. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. ^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 13: Chinese Import Competition and Outsourcing of Professional Jobs: Labour Market Regulations - Placebo Effect

	Outsourcing Exp/ Total Expenses						Outsourcing Exp/ GVA	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$DComp^{China}_{IN,,jt-1}$	−0.0004	−0.002	−0.001	−0.003	−0.001	−0.003	0.021[a]	0.014
	(0.005)	(0.010)	(0.005)	(0.008)	(0.005)	(0.008)	(0.008)	(0.010)
$DComp^{China}_{IN,,jt-1} \times LMktR_s$	−0.020	−0.019	−0.013	−0.008	−0.011	−0.007	−0.002	0.012
	(0.013)	(0.012)	(0.011)	(0.013)	(0.010)	(0.013)	(0.019)	(0.021)
$InpTariff_{jt-1}$			0.005	0.005	0.004	0.004	0.001	0.0001
			(0.011)	(0.011)	(0.012)	(0.012)	(0.006)	(0.006)
$InpTariff_{jt-1} \times LMktR_s$			−0.003	−0.004	−0.001	−0.001	0.001	0.001
			(0.011)	(0.014)	(0.015)	(0.015)	(0.009)	(0.010)
$OutTariff_{jt-1}$			−0.001	−0.001	−0.001	−0.001	−0.001	0.001
			(0.010)	(0.010)	(0.011)	(0.011)	(0.006)	(0.006)
$OutTariff_{jt-1} \times LMktR_s$			0.005	0.005	0.004	0.004	0.003	0.002
			(0.013)	(0.013)	(0.013)	(0.013)	(0.008)	(0.009)
$FComp^{China}_{IN,jt-1}$				0.0001		0.0001		0.0002
				(0.0003)		(0.0003)		(0.0003)
$FComp^{China}_{IN,jt-1} \times LMktR_s$				−0.0001		−0.0001		−0.0003[c]
				(0.0003)		(0.0003)		(0.0002)
$DComp^{Other\ LWC}_{IN,jt-1}$					0.006	0.006		0.001
					(0.012)	(0.012)		(0.009)
$DComp^{Other\ LWC}_{IN,jt-1} \times LMktR_s$					−0.007	−0.007		−0.001
					(0.014)	(0.014)		(0.011)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.35	0.35	0.35	0.35	0.34	0.34	0.44	0.45
N	31,824	31,824	31,824	31,577	30,228	30,228	32,148	30,442
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (2-digit)*Year FE	No	Yes	No	No	No	No	No	No

Notes: Columns (1) – (6) and columns (7) - (8) uses expenditure on outsourcing (OutExp) as a share of total expenses (Total Expenses) and outsourcing expenditure as a share of GVA (gross value-added) as the dependent variable, respectively. All the measures focus on professional jobs. '$DComp^{China}_{IN,jt-1}$' is the Chinese import pentration ratio in the domestic market of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. '$FComp^{China}_{IN,jt-1}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US). '$DComp^{Other\ LWC}_{IN,jt-1}$' is the share of imports from all other low-wage countries. '$LMktR_s$' is an indicator for labour market regulation. It takes a value 1 if a state has flexible labour market laws and 0 otherwise. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. [c], [a] denotes 10% and 1% level of significance, respectively.

Table 14: Chinese Import Competition and Outsourcing: Using Data from Unregistered Sector (NSSO)

	OutS = 1 a firm is on contract or sells its output to another firm or contractor						OutS = 1 firm sells to another firm	OutS = 1 a firm is on contract
		Probit	Logit		Urban	Rural		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$DComp^{China}_{IN,,jt}$	0.044^{b}	0.057^{a}	0.061^{a}	0.077^{a}	0.048^{b}	0.155^{a}	0.078^{a}	0.031^{b}
	(0.018)	(0.020)	(0.021)	(0.020)	(0.019)	(0.034)	(0.019)	(0.018)
$InpTariff_{jt}$	0.353^{b}	0.443^{b}	0.467^{b}	0.172	0.143	0.141	0.268^{c}	0.164
	(0.140)	(0.184)	(0.195)	(0.165)	(0.189)	(0.215)	(0.173)	(0.141)
$OutTariff_{jt}$	−0.083	−0.097	−0.106	0.074	0.109	0.025	0.028	−0.166
	(0.122)	(0.168)	(0.178)	(0.129)	(0.150)	(0.166)	(0.145)	(0.120)
$FComp^{China}_{IN,jt}$	−0.0005	−0.0008	−0.0009	−0.001	−0.0008	−0.001	−0.0008	-0.002^{c}
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)
$DComp^{China}_{IN,,jt} \times LMktR_s$				-0.076^{a}	-0.045^{a}	-0.156^{a}	-0.087^{a}	−0.013
				(0.018)	(0.013)	(0.037)	(0.019)	(0.019)
$InpTariff_{jt} \times LMktR_s$				0.371^{b}	0.429^{a}	0.473	0.292^{b}	−0.151
				(0.179)	(0.122)	(0.315)	(0.137)	(0.139)
$OutTariff_{jt} \times LMktR_s$				-0.316^{b}	-0.358^{a}	−0.361	-0.299^{b}	0.184
				(0.148)	(0.102)	(0.265)	(0.134)	(0.141)
$FComp^{China}_{IN,jt} \times LMktR_s$				0.002^{b}	0.001^{b}	0.004^{b}	0.002^{b}	0.001
				(0.001)	(0.0006)	(0.002)	(0.001)	(0.001)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.32	0.27	0.28	0.33	0.29	0.37	0.29	0.24
N	133,939	133,917	133,917	133,939	82,516	51,423	133,916	36,817
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Columns (1) – (6) use an outsourcing indicator variable which takes a value 1 if a firm sells or on contract to sell to another private enterprise or to a contractor/middleman as the dependent variable. Column (7) uses an outsourcing indicator variable which takes a value 1 when a firm sells most of its output to another firm. Column (8) uses an outsourcing indicator variable which takes a value 1 if a firm is on contract to sell to another firm or middlemen. '$DComp^{China}_{IN,jt}$' is the Chinese import pentration ratio in the domestic market of India. It is calculated using Chinese share of imports from other developing countries such as Brazil, Indonesia, Malaysia, and Mexico in industry j at time t divided by total domestic production, imports and exports for industry j in 1994 for India. '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. '$FComp^{China}_{IN,jt}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US). '$LMktR_s$' is an indicator for labour market regulation. It takes a value 1 if a state has flexible labour market laws and 0 otherwise. 'Firm Controls' include assets (size) and GVA in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. ^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 15: Chinese Import Competition and Outsourcing of Manufacturing Jobs: Short- vs. Long-term Effects

	Outsourcing Exp/ Total Expenses				Outsourcing Exp/ GVA			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$DComp^{China}_{IN,,jt}$	0.011^{a} (0.003)			-0.0007 (0.007)	0.069^{a} (0.011)			-0.020 (0.038)
$DComp^{China}_{IN,,jt-1}$				0.019^{b} (0.009)				0.176^{a} (0.066)
$DComp^{China}_{IN,,jt-2}$		0.026^{a} (0.008)		-0.016 (0.017)		0.149^{a} (0.032)		-0.105 (0.116)
$DComp^{China}_{IN,,jt-3}$			0.033^{c} (0.018)	0.003 (0.051)			0.207^{a} (0.061)	-0.031 (0.164)
$(Out\,Jobs/TE)_{it-1}$				0.234^{a} (0.057)				0.085 (0.058)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.56	0.58	0.60	0.63	0.51	0.53	0.54	0.52
N	41,821	38,966	36,064	36,056	32,148	29,297	27,017	26,344
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Columns (1) – (8) use expenditure on outsourcing (OutExp) as a share of total expenses (Total Expenses) as the dependent variable. Columns (1) - (4) focus on manufacturing jobs, whereas columns (5) - (8) exploits professional jobs, respectively. '$DComp^{China}_{IN,jt-1}$' is the Chinese import pentration ratio in the domestic market of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$Out\,Jobs/TE_{it-1}$' is the lagged dependent variable. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. ^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 16: Chinese Import Competition and Outsourcing of Manufacturing Jobs: Firm Characteristics

	Outsourcing Exp/ Total Expenses							
	Size	End Use	Export Orientation	Ownership	Single-Product Firms		Multi-Product Firms	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$DComp^{China}_{IN,,jt-1} \times Small\ Firm$	0.020^{b} (0.010)							
$DComp^{China}_{IN,,jt-1} \times Big\ Firm$	0.026^{b} (0.013)							
$DComp^{China}_{IN,,jt-1} \times Final$		0.020^{b} (0.010)						
$DComp^{China}_{IN,,jt-1} \times Intermediate$		0.008^{b} (0.003)						
$DComp^{China}_{IN,,jt-1} \times Exporter$			-0.003 (0.009)					
$DComp^{China}_{IN,,jt-1} \times Non-Exporter$			0.014^{b} (0.005)					
$DComp^{China}_{IN,,jt-1} \times Domestic$				0.014^{a} (0.005)				
$DComp^{China}_{IN,,jt-1} \times Foreign$				-0.006 (0.008)				
$DComp^{China}_{IN,,jt-1}$					0.005 (0.013)	0.004 (0.013)	0.014^{a} (0.005)	0.019^{a} (0.004)
$DComp^{China}_{IN,,jt-1} \times LMktR_s$						0.022 (0.064)		-0.024^{b} (0.010)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.56	0.56	0.56	0.56	0.69	0.69	0.63	0.63
N	41,515	41,515	41,515	41,515	3,519	3,519	37,996	37,996
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Columns (1) - (8) use expenditure on outsourcing on account of manufacturing jobs (Outsourcing Expenditure) as a share of total expenses (Total Expenses) as the dependent variable. '$DComp^{China}_{IN,,jt-1}$' is an index of Chinese import pentration ratio in case of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$LMktR_s$' is an indicator for labour market regulation. It takes a value 1 if a state has flexible labour market laws and 0 otherwise. $Small\ Firm$ contain firms belonging to 1st and 2nd quartiles. $Big\ Firm$ contain firms belonging to 3rd and 4th quartiles. Quartiles ($Qr_{i=1,2,3,4}$) are defined according to the total sales of a firm. A firm belongs to 1st quartile if the total assets of that firm is $\langle$ 25th percentile of the total sales of the corresponding industry and so on. '$Final$' is a dummy variable. It takes a value 1 if the industry produces consumer durable and non-durable products. '$Intermediate$' is a dummy variable which takes 1 if the industry produces basic, capital and intermediate goods. '$Exporter$' is a variable which takes a value 1 if a firm exports. '$Non-Exporter$' is a variable which assumes a value 1 if a firm's export flows is 0. '$Domestic$' is a variable which assumes a value 1 if firm's ownership is domestic. '$Foreign$' in case a firm has foreign ownership. All the regressions control for '$FComp^{China}_{IN,jt}$' and its interaction terms. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. ^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Appendix

A Data

We use an annual-based panel of Indian manufacturing firms that covers up around 9000+ firms, across 105 industries, over the period of 1995-2007. Data is used from the PROWESS database of the Centre for Monitoring Indian Economy (CMIE). All monetary-based variables measured in Millions of Indian Rupees (INR), deflated by 2005 industry-specific Wholesale Price Index (WPI). We use 2004 National Industrial Classification (NIC). We use import penetration data from the UN-COMTRADE.

Variable definitions

Expenditure on Outsourcing of Manufacturing Jobs: These are the expenses incurred by the firms for getting their manufacturing requirements done from outside parties. It is a normal practice followed by firms to outsource a part of their requirement. Also, certain firms which manufacture large products (like car manufacturers) outsource certain requirements to outside firms as it may not be feasible or economical for them to manufacture all the items necessary for manufacturing the entire product. Many firms outsource their entire manufacturing requirements and just add their brand name to the product. This variables reports any amount expended by a firm on outsourcing any manufacturing job. It includes labour charges, fabrication charges, processing charges, machining charges, fettling charges and the like. Other terms include - conversion charges, contracted production and sub-contracted production.

Expenditure on Outsourcing on Professional Jobs: These are the expenses incurred by firms for engaging external professional services. The services include: (i) Software development fees, (ii) IT enabled services charges, (iii) Cost audit fees, (iv) Legal charges, (v) Miscellaneous professional services, (vi) Auditors fees, and (vii) Consultancy fees. Such services exclude those relating to manufacturing jobs, selling and distribution and those related to financial intermediaries or financial services.

Outsourcing Indicator (NSSO): It takes a value 1 if a firm sells or is on contract to sell to another private enterprise or to a contractor/middleman. It can be divided into two parts – (1) takes a value 1 when a firm sells most of its output to another firm; and (2) takes a value 1 if a firm is on contract to sell to another firm or middlemen.

Chinese Competition at Domestic Market ($DComp^{China}_{IN,,jt}$): This is an index of Chinese import pentration ratio in the domestic market of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for

industry j in 1994 for India.

Imported Intermediate Inputs from China ($InpDComp^{China}_{IN,jt-1}$): This is an index of imported intermediate inputs from China. We weight the I–O coefficient of each sector (at NIC 4-digit level) as an input by its import share, and then by the Chinese share in imports for that sector. By summing these measures, we arrive at a measure that gives the average weighted sum of intermediate goods imported from China at a sectoral level, where the weights are given by the coefficients of the I-O table.

States with (In)Flexible Labour Laws ($LMktR_s$): This is an indicator for labour market regulation. It takes a value 1 if a state has flexible labour market laws and 0 otherwise. States with Flexbile Labour Laws' are: Andhra Pradesh, Karnataka, Rajasthan, Tamil Nadu and Uttar Pradesh. 'States with Inflexible Labour Laws' are: Assam, Bihar, Gujarat, Haryana, Kerela, Madhya Pradesh, Maharastra, Orissa, Punjab, and West Bengal. Source: Gupta, Hasan and Kumar (2009).

Chinese Competition at Export Market ($FComp^{China}_{IN,jt}$): This is an index of Chinese import ratio in one of the export markets of India, namely the US. We also use combined ratio of the US, EU and ASEAN. It is defined as the share of Chinese imports in total imports.

Import Penetration from Other Low-Wage Countries ($DComp^{Other\ LWC}_{IN,jt-1}$): This is an index of import penetration ratio in the domestic market of India from low-wage countries other than China.

Chinese Competition for Other Developing Countries ($DComp^{China}_{BIMM,jt-1}$): We use $DComp^{China}_{BIMM,jt-1}$ as an instrument for $DComp^{China}_{IN,jt-1}$. We measure $DComp^{China}_{BIMM,jt-1}$ using imports from other developing countries such as Brazil (B), Indonesia (I), Malaysia (M) and Mexico (M).

Import Penetration Ratio from World ($DComp^{World}_{IN,jt-1}$): This is an aggregate import penetration ratio.

Import Penetration Ratio from High-Income Countries ($DComp^{High-Income}_{IN,jt-1}$): This is an import penetration ratio of high-income countries. It includes both OCED and non-OECD countries.

Import Penetration Ratio from North America ($DComp^{NA}_{IN,jt-1}$): This is an import penetration ratio of North America (USA, Canada and Mexico).

Import Penetration Ratio from European Union ($DComp^{EU}_{IN,jt-1}$): This is an import penetration ratio of the 27 European Union countries.

Import Penetration Ratio from Latin America ($DComp^{LA}_{IN,jt-1}$): This is an import penetration ratio of South American countries.

Import Penetration Ratio from Least Developed Countries ($DComp^{LDC}_{IN,jt-1}$): This is an import penetration ratio of Least Developed countries.

Import Penetration Ratio from Middle East and North Africa ($DComp^{MENA}_{IN,jt-1}$): This is an

import penetration ratio of Middle East and North African countries.

Import Penetration Ratio from South Asia ($DComp^{SA}_{IN,jt-1}$): This is an import penetration ratio of South Asian countries.

Input/Output Tariffs: Input/Output tariffs at the 4-digit industry level, obtained from Ahsan and Mitra (2014) for the period of 1990-2003, with the balance collected from the TRAINS-WITS tariff database.

Productivity: Firm-level Total Factor Productivity (TFP) is computed using the Levinsohn and Petrin (2003) methodology.

Mcomp/Tcomp: The share of managerial compensation in total labour compensation; compensation defined as the sum of all salaries, and additional bonuses.

MWages/TWages: The share of managerial wages in total wages of a firm.

MIncentives/TIncentives: The share of managerial incentives in total incentives of a firm.

Skill intensity: It is defined as the ratio of non-production workers to total employees at the 3-digit level of 2004 NIC. We obtain this from two different sources - for the years 1995-2000 has been generously shared by Dr. Sangeeta Ghosh; and for 2001-2007 from the various publications of ASI.

Factories: The number of factories at the 3-digit level of 2004 NIC.

Intermediate goods: The goods which are classified according to the I-O table as inputs by end-use. It combines intermediates, capital and basic goods.

Final goods: The goods which which are classified according to the I-O table as final products by end-use. It combines consumer durable and consumer non-durable goods.

TechAdop/GVA: Share of R&D expenditure and Royalty Payments for Technical Knowhow in gross value-added.

Cap/GVA: Share of total amount of capital employed in gross value-added.

GVA: Gross Value-Added = Total Sales - Total Raw Material Expenditure.

Assets: Total assets of a firm.

Sales: Total sales (exports + domestic sales) of a firm.

Exports: Total exports of a firm.

Imports: Total imports (import of raw materials, finished goods, stores & spares, and capital goods)

Ownership: It indicates whether a firm is domestic-owned or foreign-owned.

Age: Age of a firm in years.

B Tables

Table 17: Chinese Imports: By Industries - Before and After 2001

Industry Code	Industry Name	Chinese Imports/ World Imports	
NIC 2004 2-digit		1992–2001	2002–2007
		(1)	(2)
15	Foods Products and Beverages	1.72	3.04
16	Tobacco Products	0.69	4.95
17	Textiles	21.66	43.02
18	Wearing Apparel	9.11	18.84
19	Leather	8.80	33.70
20	Wood and Wood Products	2.81	15.73
21	Paper and Paper Products	0.92	5.39
22	Recorded Media	1.37	9.24
23	Coke, Refined Petroleum, Nuclear Fuel	10.05	10.97
24	Chemical and Chemical Products	7.94	20.12
25	Rubber and Plastics	2.27	13.51
26	Non-metallic Mineral Products	2.53	17.32
27	Basic Metals	2.05	9.01
28	Fabricated Metal Products	2.47	12.13
29	Machinery and Equipment	2.65	13.03
30	Office, Accounting & Computing Machinery	4.75	23.67
31	Electrical Machinery and Apparatus	4.75	21.57
32	Communication Equipment	4.62	19.00
33	Medical, Precision and Optical Instruments	2.82	7.42
34	Motor vehicles, Trailers and Semi-Trailers	0.39	1.28
35	Other transport equipment	1.51	20.74
36	Furniture; Manufacturing n.e.c	2.56	7.17
	Average	4.48	15.10

Notes: Numbers represent average across each industrial category according to National Industrial Classification (NIC) 2004 2-digit level. 'Chinese Imports/World Imports' is the share of Chinese imports in total imports of India.

Table 18: Outsourcing of Manufacturing Jobs - Total Expenditure, Share of Expenses, Percentage of Firms: User-based Industries

Industry Name	Outsourcing Manufacturing Jobs		
	Total	Share	% of Firms
	(1)	(2)	(3)
Basic Goods	32.46	0.50	12.55
Intermediate	30.74	0.30	12.81
Capital Goods	46.16	0.29	12.86
Consumer Durables	36.50	0.77	18.51
Consumer Non-Durables	46.43	0.64	16.30

Notes: Numbers represent average across manufacturing firms belonging to each user-based industries. Column (1) calculates the mean outsourcing expenditure by an Indian manufacturing firm. It is expressed in INR Million. Column (2) represents the mean share of outsourcing expenditure in total expenditure of a firm multiplied by 100. Column (3) represents mean percentage of firms involved in outsourcing of manufacturing jobs.

Table 19: India's Trade Reforms and Outsourcing of Manufacturing Jobs

	Outsourcing Exp/ Total Expenses					Outsourcing Exp/ GVA				
	Year 1992−2007	Year ≤2003	Year ≤2001	Year ≤1999	Year ≤1997	Year 1992−2007	Year ≤2003	Year ≤2001	Year ≤1999	Year ≤1997
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$InpTariff_{jt-1}$	−0.004	−0.006	−0.001	0.0001	0.001	−0.029^{b}	−0.013	−0.013	−0.003	0.014
	(0.003)	(0.005)	(0.003)	(0.002)	(0.001)	(0.013)	(0.017)	(0.015)	(0.012)	(0.018)
$OutTariff_{jt-1}$	0.003	0.004	0.002	0.0002	−0.0002	0.017^{b}	0.016^{b}	0.019^{b}	0.007^{b}	0.003
	(0.002)	(0.003)	(0.002)	(0.001)	(0.001)	(0.008)	(0.008)	(0.008)	(0.004)	(0.007)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.58	0.55	0.54	0.58	0.69	0.33	0.36	0.41	0.39	0.37
N	56,281	36,211	28,080	20,073	13,250	47,872	31,620	24,751	17,929	11,902
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Columns (1) – (5) use expenditure on outsourcing (Outsourcing Expenses) as a share of total expenses (Total Expenses) as the dependent variable. Columns (6) - (10) use expenditure on outsourcing (Outsourcing Expenses) as a share of GVA (gross value-added). '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. ^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 20: Chinese Import Competition and Outsourcing of Manufacturing Jobs: Additional Results

	Outsourcing Exp/ Total Expenses						
	Controlling for $OutExp_{t-1}$	First Difference	Long Difference	FComp US, EU, ASEAN	Liu & Rosell (2013)	PPML	Fractional Logit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$DComp^{China}_{IN,jt-1}$	0.013^{a} (0.004)	0.002^{b} (0.001)	0.006^{a} (0.002)	0.016^{a} (0.004)	0.335^{b} (0.135)	0.387^{a} (0.155)	0.016^{a} (0.002)
$(OutMan\,Jobs/TE)_{it-1}$	0.303^{a} (0.055)						
$InpTariff_{jt-1}$		0.0001 (0.002)	−0.031 (0.038)	−0.005 (0.003)	−0.005* (0.003)		
$OutTariff_{jt-1}$		0.0001 (0.001)	0.021 (0.035)	0.001 (0.002)	0.002 (0.002)		
$FComp^{China}_{IN,jt-1}$		−0.00004 (0.00005)	0.0004 (0.0003)	0.0003* (0.0002)	0.0002** (0.0001)		
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.60	0.001	0.83	0.55	0.56	0.58	0.56
N	41,821	38,072	7,147	39,723	41,515	24,954	46,163
Firm FE	Yes	No	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	No	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (2-digit)*Year FE	No	No	No	No	No	No	No
Industry FE (3-digit)*Year FE	No	No	No	No	No	No	No
State*Year FE	No	No	No	No	No	No	No

Notes: Columns (1) - (7) use expenditure on outsourcing on account of manufacturing jobs (Outsourcing Expenditure) as a share of total expenses (Total Expenses) as the dependent variable. '$DComp^{China}_{IN,jt-1}$' is an index of Chinese import pentration ratio in the domestic market of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. '$FComp^{China}_{IN,jt-1}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US) except for column (6), where we include Chinese imports by EU and ASEAN additionally. '$OutMan\,Jobs/TE_{it-1}$' is the lagged dependent variable. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. ^{c},^{b},^{a} denotes 10%, 5% and 1% level of significance, respectively.

Table 21: Chinese Import Competition and Outsourcing of Professional Jobs: Benchmark Results - Placebo Effect

	Outsourcing Exp/ Total Expenses							Outsourcing Exp/ GVA	Outsourcin Intensity	
	Year 1995−2007						Year 1995−2001	Year 1995−2007	Year 1995−2007	Y 199
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(
$DComp^{China}_{IN,jt-1}$	−0.003 (0.006)	−0.004 (0.010)	−0.003 (0.006)	−0.002 (0.006)	−0.003 (0.007)	−0.002 (0.006)	−0.012 (0.018)	0.026[a] (0.008)	0.047 (0.067)	−0 (0
$(Out\,\mathrm{Pr}\,of\,Jobs/TE)_{it-1}$			0.002 (0.003)							
$InpTariff_{jt-1}$				0.004 (0.007)	0.004 (0.007)	0.004 (0.007)	−0.0004 (0.003)	0.010 (0.006)	−0.044 (0.038)	−0 (0
$OutTariff_{jt-1}$				−0.0003 (0.006)	−0.0002 (0.006)	−0.0003 (0.006)	−0.0004 (0.002)	−0.005 (0.005)	0.009 (0.033)	0 (0
$FComp^{China}_{IN,jt-1}$					0.00004 (0.0002)					
$DComp^{Other\ LWC}_{IN,jt-1}$						0.002 (0.006)				
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
R-Square	0.35	0.35	0.36	0.35	0.35	0.34	0.68	0.30	0.51	0
N	34,951	34,951	33,604	34,951	34,686	33,052	13,761	35,221	41,821	41
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
Industry FE (4-digit)*Year Trend	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
Industry FE (2-digit)*Year FE	No	Yes	No	No	No	No	No	No	No	

Notes: Columns (1) – (7) and (8) uses expenditure on outsourcing (Outsourcing Exp) as a share of total expenses (Total Expenses) and outsourcing expenditure as a share of GVA (gross value-added) as the dependent variable, respectively. Columns (9) and (10) use outsourcing intensity (OutIntensity) as the dependent variable. Column (9) takes a value 1 if the share of outsourcing expenditure (OutExp) as a share of total expenses (Total Expenses) $\rangle$ 0, whereas column (10) takes a value 1 if the share of outsourcing expenditure (OutExp) as a share of GVA $\rangle$ 0. All the measures focus on professional jobs. '$DComp^{China}_{IN,jt-1}$' is an index of Chinese import pentration ratio in the domestic market of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$InpTariff$' and '$OutTariff$' is the natural logarithm of input and output tariffs faced by Indian industries at 2004 NIC 4-digit. '$FComp^{China}_{IN,jt-1}$' is the measure of Chinese import competition faced by Indian firms in an export destination (US). '$DComp^{Other\ LWC}_{IN,jt-1}$' is the share of imports from all other low-wage countries. '$Out\,\mathrm{Pr}\,of\,Jobs/TE_{it-1}$' is the lagged dependent variable. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. [a] denotes 1% level of significance, respectively.

Table 22: Chinese Import Competition and Outsourcing of Manufacturing Jobs: Firm Characteristics

	Outsourcing Exp/ Total Expenses							
	Single-Product Firms				Multi-Product Firms			
	Size	End Use	Export Orientation	Ownership	Size	End Use	Export Orientation	Ownership
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$DComp^{China}_{IN,,jt-1} \times Qr_1$	−0.022 (0.021)				0.023 (0.029)			
$DComp^{China}_{IN,,jt-1} \times Qr_2$	−0.035 (0.029)				−0.016 (0.033)			
$DComp^{China}_{IN,,jt-1} \times Qr_3$	0.033 (0.043)				0.010 (0.010)			
$DComp^{China}_{IN,,jt-1} \times Qr_4$	0.011 (0.013)				0.020** (0.010)			
$DComp^{China}_{IN,,jt-1} \times Final$		0.035^{c} (0.018)				0.012^{a} (0.005)		
$DComp^{China}_{IN,,jt-1} \times Intermediate$		−0.049 (0.039)				0.026^{a} (0.009)		
$DComp^{China}_{IN,,jt-1} \times Exporter$			0.061^{a} (0.017)				0.005 (0.007)	
$DComp^{China}_{IN,,jt-1} \times Non-Exporter$			−0.033 (0.021)				0.005 (0.013)	
$DComp^{China}_{IN,,jt-1} \times Domestic$				−0.005 (0.022)				0.008 (0.013)
$DComp^{China}_{IN,,jt-1} \times Foreign$				−0.091 (0.1781)				0.004 (0.018)
Firm Controls$_{t-1}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.73	0.73	0.73	0.73	0.63	0.63	0.63	0.63
N	4,212	4,212	4,212	4,212	37,609	37,609	37,609	37,609
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE (4-digit)*Year Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Columns (1) – (8) use expenditure on outsourcing on account of manufacturing jobs (Outsourcing Expenditure) as a share of total expenses (Total Expenses) as the dependent variable. '$DComp^{China}_{IN,,jt-1}$' is an index of Chinese import pentration ratio in case of India. It is calculated as the share of Chinese imports in industry j at time t by India divided by total domestic production, imports and exports for industry j in 1994 for India. '$LMktR_s$' is an indicator for labour market regulation. It takes a value 1 if a state has flexible labour market laws and 0 otherwise. Quartiles ($Qr_{i=1,2,3,4}$) are defined according to the total assets of a firm. A firm belongs to 1st quartile if the total assets of that firm is $\langle$ 25th percentile of the total sales of the corresponding industry and so on. '$Final$' is a dummy variable. It takes a value 1 if the industry produces consumer durable and non-durable products. '$Intermediate$' is a dummy variable which takes 1 if the industry produces basic, capital and intermediate goods. '$Exporter$' is a variable which takes a value 1 if a firm exports. '$Non-Exporter$' is a variable which assumes a value 1 if a firm's export flows is 0. '$Domestic$' is a variable which assumes a value 1 if firm's ownership is domestic. '$Foreign$' in case a firm has foreign ownership. All the regressions control for '$FComp^{China}_{IN,jt}$' and its interaction terms. 'Firm Controls' include age, age squared of a firm, size (assets) and technology adoption (sum of R&D expenditure and Technology Transfer). Both 'Assets' and 'Technology Adoption' are used at $t-1$ period and in real terms. Numbers in the parenthesis are robust clustered standard errors at the industry-level. Intercepts are not reported. $^{c\ b\ a}$ denotes 10%, 5% and 1% level of significance, respectively.