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Impact of Trade with ASEAN on India's Employment in Industrial Sector

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Abstract

In recent time, India's growing trade deficits with its partner countries have been a major policy concern, making Indian policymakers cautious about signing new free trade deals. In this paper, we argue that in addition to the impact of trade agreements on India's trade balance, policy discussions on trade agreements should also take into account the impact of trade on a spectrum of other economic indicators, such as economic growth, income distribution and employment. In particular, the impact on employment is central to assess whether or not greater trade integration is helping or harming the country, since employment numbers capture both growth and distributional aspect of trade. This paper sheds light on this aspect by examining the impact of Association of South East Asian Nations (ASEAN)-India Free Trade Agreement (AIFTA) on industry-level employment in India during the period of 1996-97 to 2016-17. We use a dynamic econometric model in a panel framework and find that while export and import have had favorable impact on industrial sector employment prior to 2004-05, AIFTA led to decline in industrial sector employment post 2004-05.

Key words: *Trade, Employment, India-ASEAN Free Trade Agreement, KLEMS*
JEL Codes: *F1, F4, J2*

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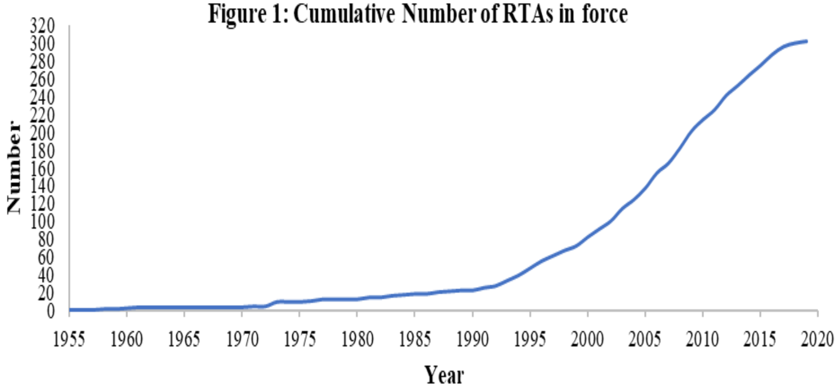
Devasmita Jena
Swati Saini

INTRODUCTION

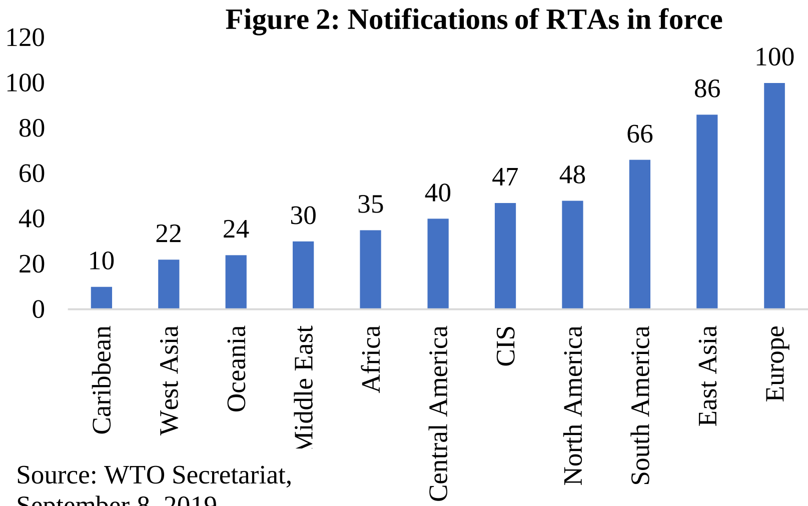
The growth in world trade has plummeted significantly in recent times. According to the World Trade Organization (WTO) economists, growth in merchandise trade volume is expected to fall to 2.6 per cent in 2019 — down from 3.0 per cent in 2018[1]. Owing to the ongoing US-China trade war, uncertainty on Brexit, escalating trade tensions across the world and the attack on WTO, the fact that the world is facing weak global trade growth has also been underscored by the IMF[2] and the World Bank[3]. On one hand, the global trade scenario is marked by rising trade protectionism sentiments and the weakening of multilateral trade deals with the attack on WTO and on the other hand, there is proliferation of regional trade agreements (RTAs) in the recent times. The current decade has witnessed the maximum number of RTAs being in force as the number of RTAs in force have grown from 214 in 2010 to 302 in 2019 (Figure 1). Region-wise analysis of trade agreements reveal that Europe has maximum participation in RTAs followed by East Asia (Figure 2).

Figure 1: Cumulative Number of RTAs in force



Source: WTO Secretariat, September 8, 2019

[1] https://www.wto.org/english/news_e/pres19_e/pr837_e.htm
[2] World trade grew at 3.7 per cent in 2018 and is projected to grow at 2.5 per cent in 2019
[3] World Bank Group's Global Economic Prospects, June 2019



Source: WTO Secretariat, September 8, 2019

Wilson (2015) notes the factors propelling this shift from multilateralism towards regionalism, particularly in the Asia-Pacific during the 2000s. These are - lackluster progress in the Doha Round of WTO negotiations, free trade agreements (FTAs) being considered as a means to advance trade liberalization in the areas such as investment, services and intellectual property and peer pressure among the countries in the region to sign FTAs to neutralize disadvantages of not being associated with trade agreements spreading across the region.

Trade economists are of the view that, amidst mounting trade tensions and in the face of rising protectionism, India should negotiate new RTAs and strengthen existing RTAs with Asian peer countries in order to insulate India's trade and investments from the uncertainties engulfing the global trading system (Kher and Das, 2019). However, in recent years, Indian policymakers are cautious about signing new free trade deals as they argue India has hardly benefitted from FTAs; rather, these FTAs have been more advantageous to the partner countries. In a recent NITI Ayog note on India's FTA, Saraswat *et. al*. (2018) analyze India's key trade agreements with China, Korea, Japan, the Association of

South East Asian Nations (ASEAN) and Sri Lanka and argue that except for its FTA with Sri Lanka, India's trade balance has worsened due to such FTAs. Thus, the view that FTAs have benefited the partner countries in terms of the reduction in their import-export ratios post- implementation of the trade agreements, while India's exports to these countries (regions) have remained significantly low is gaining ground across the policy makers.

In addition, Indian industries have sounded out that FTAs have adversely impacted India's manufacturing sector, which the Indian government is trying to bolster through 'Make in India'.[4] There has been calls for safeguarding India's manufacturing in the face of higher imports from partner countries in the recent times. Such skepticism on RTAs precipitated in India's opting out from the ambitious Regional Comprehensive Economic Partnership (RCEP)[5] and in view of this, the Indian finance ministry has initiated a review of India's free trade agreement framework to assess the impact of trade agreements on the overall economy and to ensure that such agreements don't undermine the government's efforts to boost the manufacturing sector. Such reviews could be the deciding factor of India's trade negotiations in future.

In this paper, we argue that in addition to the impact of FTA on India's trade balance, policy discussions on trade agreements should take into account the impact of trade on a spectrum of economic indicators such as economic growth, income distribution and employment. Therefore, an assessment of the impact of free trade agreements on the employment in India's industrial sector is important to assess whether such trade agreements are benefitting or harming the country because the employment numbers capture both the growth and distributional aspects of trade.

[4] The government aims to lift the share of manufacturing in the economy to 25 per cent from about 16 per cent (at current prices) by 2022.

[5] RCEP is a proposed Indo-Pacific free trade agreement between India, ASEAN countries, China, Japan, South Korea, Australia and New Zealand

Given this backdrop, our paper attempts to examine the impact of trade with ASEAN on industry-level employment in India during the period of 1996-2016. The motivation of this study stems from two compelling reasons. First, ASEAN is India's largest trading partner and, at the 16th ASEAN Economic Ministers (AEM)-India consultations, India and ASEAN "agreed to initiate the review of the ASEAN-India Trade in Goods Agreement (AITIGA) to make it more user-friendly, simple, and trade facilitative for businesses and to constitute a Joint Committee". In this context, it will be interesting to study whether the deepening of India-ASEAN trade association has any impact on India’s industrial sector employment.

Secondly, the existing empirical literature on the subject of India-ASEAN FTA (AIFTA) have focused on its impact on Indian economy at an aggregate level, i.e. impact of AIFTA on India’s overall balance of trade and terms of trade (Ahmed, 2010; Sikdar and Nag, 2011; Ohlan, 2012; Bhattacharyya and Mandal, 2016; Khurana and Nauriyal, 2017 etc.) and on welfare impact of AIFTA (Ahmed, 2010; Veeramani and Saini, 2010; Mondal et. al., 2012 etc.), impact on trade in agricultural and manufacturing sector (Francis 2009; Harihal, 2010; Veeramani and Saini, 2010; Yean, 2014 etc.), and on India’s comparative advantage in services sector (Banik et.al., 2014). However, the impact of AIFTA on industry-level employment in India has not been explored substantially in the existing studies.

To the best of our knowledge, only two papers, viz., Sikdar and Nag (2018)[6] and Mandal (2018)[7] have studied employment effect of AIFTA, in an ex-ante scenario, using the Computational General Equilibrium (CGE) modelling framework of the GTAP database. Mandal (2018) found that the rise in employment in the manufacturing sector is around 12 per cent. Sikdar and Nag (2018) conduct simulations by

[6] Authors used the version 9 of the GTAP database
[7] Authors used the version 6 of the GTAP database

calibrating the trade liberalization scenario as of 2018 between India and the ASEAN countries. Simulation results reveal that the FTA yields unskilled employment growth in manufacturing sector. They also conclude that the overall impact of FTA on the manufacturing sector's output, employment and welfare remain positive due to the increased trade and gains from employment generation of the unemployed unskilled workforce. But to sustain this gain, the higher external demand needs to be sustained.

While CGE modelling is a powerful empirical tool to predict policy implications in an ex-ante framework, the simulation results are greatly dependent on (trade) elasticities chosen. On the other hand, ex-post analysis uses historical data, after certain policy has been implemented. In our case, since some years have elapsed since India became the dialogue partner of ASEAN and we have data till 2017, we can carry out an ex-post analysis of AIFTA which will also allow us to capture the transitional effect of AIFTA on employment. Also, we can incorporate dynamic aspects of trade and employment in our ex-post analysis. Thus, in a nutshell, the contribution of our paper lies in our empirical analysis of ex-post long run implications of AIFTA on employment in India's industrial sector. The findings of our study have topical salience as AIFTA has a phasing out period of nine years, i.e., by the end of December, 2019.

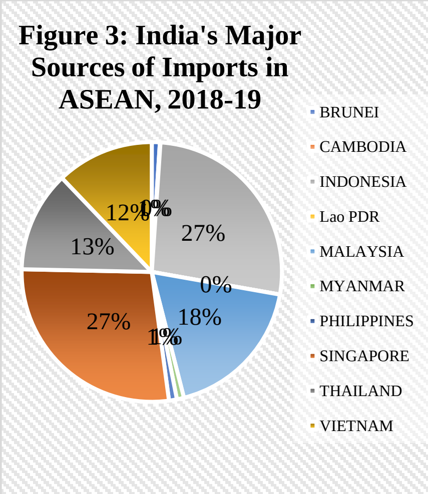
BACKGROUND

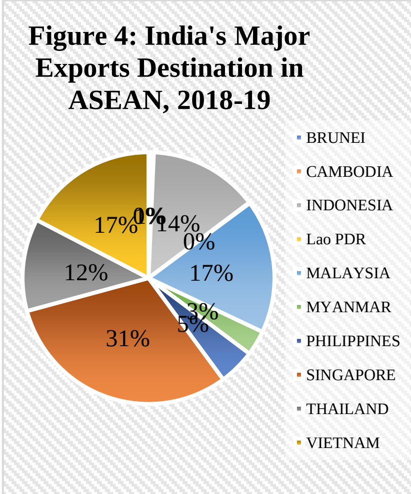
Overview of India-ASEAN Trade Patterns

India became a sectoral dialogue partner with ASEAN in 1992 as a manifestation of India's 'Look East Policy' of 1991. The India-ASEAN Free Trade Agreement (AIFTA) in goods under the broader framework of Comprehensive Economic Cooperation Agreement between India and ASEAN (August, 2009) came into effect in January, 2010, in relation to Malaysia, Singapore and Thailand and subsequently, with other countries of ASEAN. At the 10th ASEAN-India Summit (December 2012), India and ASEAN concluded negotiations for FTAs in services and investments. In order to further strengthen India-ASEAN relations and to deepen regional India's regional integration with its eastern neighbours, India's 'Look East' Policy gave way to the 'Act East' Policy in 2014. In 2017, ASEAN and India commemorated 25 years of dialogue partnership and 15 years of Summit level partnership – with expanded economic and trade linkages. AIFTA has a phasing out period of nine years, i.e., the end of December, 2019. While, India and ASEAN, along with other fourteen Asia-Pacific countries are working towards a post-RCEP negotiation, India's economic cooperation with ASEAN may deepen further. In this context, this section provides some stylized facts on India's trade relations with ASEAN.

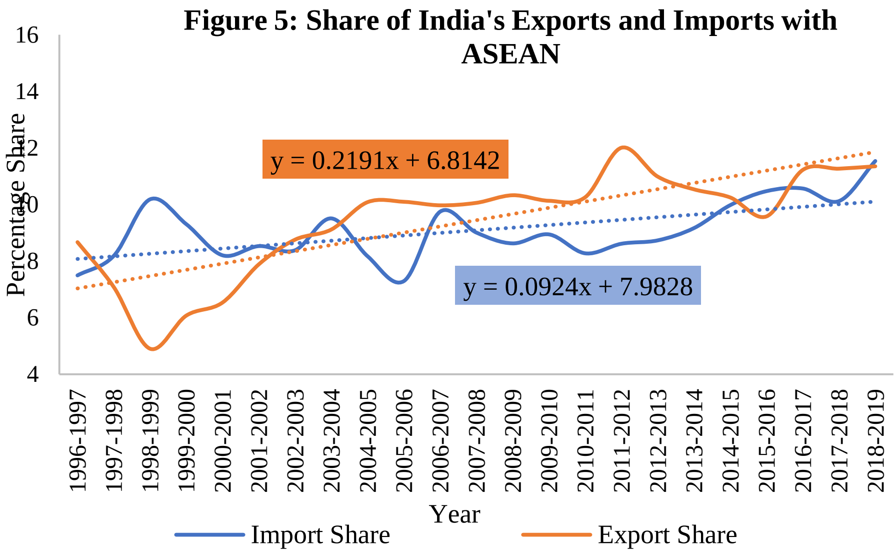
India-ASEAN trade relations have been growing steadily, with ASEAN being India's fourth largest trading partner[8]. In 2018-19, India's trade with ASEAN stood at US$ 96.80 billion, which is approximately 11.47 per cent of India's overall trade. India's export to ASEAN stood at 11.35 per cent of our total exports (Ministry of Commerce, Government of India) and India's import from ASEAN stood at 11.54 per cent of our total imports. India's top three major sources of imports are Indonesia, Singapore and Malaysia and its top three major export destinations are Singapore, Malaysia and Vietnam (Figures 3 and 4).

[8] https://mea.gov.in/aseanindia/20-years.htm





Between 1996-97 and 2018-19, as depicted in Figure 5 below, India's share of trade with ASEAN in total trade (both in terms of imports and exports) have risen. However, in the recent decade, while India's aggregate share of imports from ASEAN increased from 8.62 per cent (in 2011-12) to 11.54 per cent (in 2018-19), the share of aggregate exports to ASEAN fell from 12.01 per cent (in 2011-12) to 11.35 per cent (2018-19).



Source:Authors' calculations using data from

Consequently, worsening of India's trade deficit with ASEAN heightened steeply during the recent decade (between 2006-07 and 2018-2019). This is evident from Figure 6. India's tariffs were much higher than the trade partners and hence, the effective reduction on tariff for the partner countries was greater which lead to higher imports (Economic Survey 2015-16).

Figure 6: India's Bilateral Trade with ASEAN (In US Bill.)

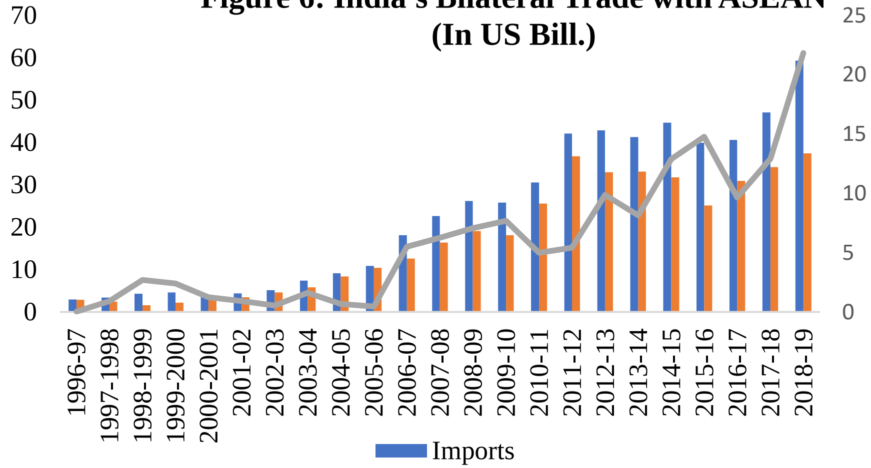
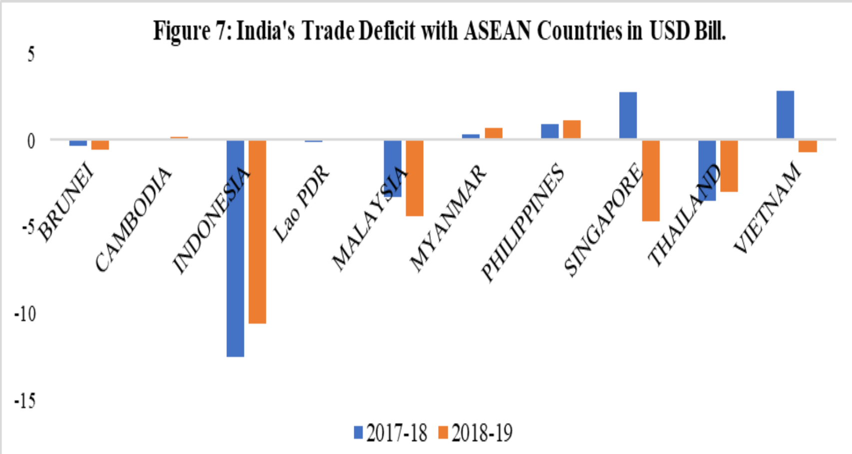


Figure 7 reports that India has the highest trade deficit with Indonesia - USD 10.57 billion followed by Singapore – USD 4.71 billion and then, Malaysia - USD 4.38 billion in 2018-19 whereas, it enjoys trade surplus with Philippines - USD 1.16 billion, Myanmar - USD 0.68 billion and Cambodia - USD 0.15 billion for the year 2018-19.

India’s trade deficit with Brunei and Malaysia rose up to USD 0.53 billion and USD 4.38 billion respectively in 2018-19 from USD 0.37 billion and USD 3.31 billion respectively in 2017-18. On the other hand, India’s trade deficit with Indonesia and Thailand declined marginally from USD 12.47 billion in 2017-18 to USD 10.57 billion in 2018-19 and from USD 3.48 billion in 2017-18 to USD 3.0 billion in 2018-19, respectively. While India had trade surplus with Singapore and Vietnam in 2017-18, it reversed in 2018-19. On the other hand, India’s trade deficit with Lao, Brunei and Cambodia dipped in 2018-19.

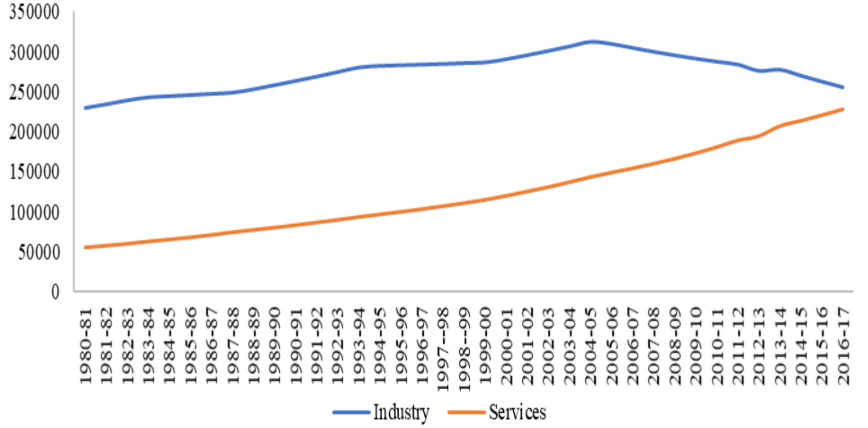


In 2016-17, Coke, Refined Petroleum Products and Nuclear fuel, Basic Metals and Fabricated Metal Products, Transport Equipment, Food Products, Beverages and Tobacco accounted for 60 percent of India's total to ASEAN; and Coke, Refined Petroleum Products and Nuclear fuel, Food Products, Beverages and Tobacco, Electrical and Optical Equipment and Basic Metals and Fabricated Metal Products accounted for 60 per cent of India's imports from ASEAN.

Overview of India's Employment Scenario

It can be observed from Figure 8 below that the overall employment in India's industrial sector saw an increase since the early 1980s till 2004-05, albeit at a slower space (since the slope is flat). But after 2004-05, industrial sector employment has been on a secular declining trend. Thus, there is a structural break at 2004-05, after which industrial sector has registered a decline in the rate of employment growth in the recent period of 2004-2017. Additionally, it can be noticed that the services sector experienced comparatively higher employment growth, mainly due to fast growth in business services, construction and the financial services sectors (Aggarwal and Goldar, 2019).

Figure 8: Trend in Employment (in 1000s)



Source: Authors' calculation using KLEMS

For the period under consideration in this paper –i.e., between 1996-97 and 2016-17—employment in India's industrial declined by 9.77 percent, which was partly offset by an increase in employment in the services sector; thus, there is a shift in employment from industrial sector to services sector. Overall, Indian economy experienced a deceleration in the growth in employment – it decelerated from an annual average growth of 2.1 per cent during 1980-1993 to 1.7 per cent during 1994-2002 and only 1 per cent during 2003-2015. Therefore, one of the major policy concerns is to put in place appropriate policies to promote employment. In order to do so, it is crucial to identify whether trade with ASEAN could be one of the major factors explaining low employment growth rate in industrial sector, especially after 2004-05, as India's trade balance with ASEAN worsened significantly during the same period (Figure 6).

THEORETICAL UNDERPINNINGS AND THE MODEL

The theory posits that trade can affect the industrial sector employment through three types of effects – *scale effect, composition effect and process effect* (Sen 2009). Trade can affect the total output of the industrial sector. On one hand, higher exports lead to an increase in level of output and therefore, raise employment level. On the other hand, greater import penetration reduces output leading to displacement of labour. This is called the *scale effect of trade* on employment (Sen 2009). The size of the industrial sector is determined by a country's comparative advantage which, in turn, is contingent upon the factor endowments. According to Krueger (1977) trade model, land to labour ratio determines the trade and production structures. Therefore, land-abundant African and Latin American countries largely export natural-resource intensive commodities whereas Asian developing economies specialize in the export of labour-intensive manufacturing exports. This is the *scale effect of trade* wherein employment increases due to expansion in the size of the industrial sector irrespective of the ultimate cause of change in output of the sector.

The *composition effect of trade* impacts the shares of different industries in the total manufacturing output by increasing the output of export-oriented industries and reducing the output of the import-competing industries (Sen 2009). The standard two-factor Heckscher-Ohlin model of trade predicts that labour-abundant developing countries will export labour-intensive goods and import relatively higher capital-intensive commodities. Thus, trade with rest of the world will increase the demand for labour-intensive commodities which, in turn, will lead to higher demand for labor and therefore, greater employment opportunities in developing countries.

Finally, the *process effect of trade* affects employment by changing the quantity and kind of labour needed to produce a given output within an industrial sector (Sen 2009). The Stopler-Samuelson theorem postulates that greater trade openness leads to a change in relative factor demand which changes relative factor prices leading to factor substitution in production. Additionally, trade-induced productivity effects can also affect manufacturing employment. Trade-induced competitive pressure can force firms to use labor-saving technologies

(Greenaway *et. al*., 1999). Such productivity effects can be due to a decrease in X-inefficiency (Chand and Sen, 2002) or due to technological transfers (Jenkins and Sen, 2006).

Empirically, there are three methodological approaches to study the impact of trade on employment. These are factor content, growth accounting and labour demand approaches. The factor-content approach examines whether a change in production structure due to greater trade openness leads to an increase in the labour-intensity of production and therefore, employment. To accomplish this, direct and indirect labour requirements per unit of export and import-substitutes are calculated. The factor content approach captures the composition effect of trade on employment (S.S. and Sasidharan, 2015).

The growth accounting approach measures the scale effect of trade on employment (S.S. and Sasidharan, 2015). Under this approach, changes in employment are decomposed into the effects of changes due to domestic demand, exports, imports and productivity. It is assumed that increased export orientation generates employment whereas increased import penetration reduces employment. The labour demand approach captures the process effect of trade on employment. To do this, industry-level labour demand equations are estimated, where industry-level employment is regressed against a bunch of explanatory variables (Hine and Wright, 1998; Greenaway *et. al*., 1999).

Earlier studies on the link between trade and employment in the Indian context have mostly focused on the employment outcome of trade via productivity effects of trade (Goldar, 2009; Mitra, 2009; Mitra, 2011; Vashisht, 2015; Malik and Mitra, 2018; Maiti, 2019; etc.). In this paper, we are interested in impact of India's trade with ASEAN on its employment in the industrial sector as measured by labour demand in the sector. To estimate the impact of trade on labour demand, following Greenway et.al. (1998), we adopt a regression-based approach grounded in a dynamic model of labour demand[9] derived from Cobb-Douglas production function:

$$q_{it} = A_{it} k_{it}^{\alpha} l_{it}^{\beta} \tag{1}$$

where *i* represents industry and *t* represents time. In equation (1), *q* is real output, *k* is the capital stock, *l* is the units of labour employed in production and *A* is total factor productivity term and α and β are the output elasticities of capital and labor, respectively.

Assuming perfectly competitive labour markets and solving the first order profit maximization for labor yields:

$$l_{it} = \frac{\beta p_{it} q_{it}}{w_{it}} \tag{2}$$

where p is the domestic price of the output and w is the wage earned by labour.

By substituting (1) into (2), we get:

$$l_{it} = \beta \left[A k_{it}^{\alpha} l_{it}^{\beta} \right] / w_{it} \tag{3}$$

and solving (3) for labour demand of industry i at time t we get:

$$l_{it} = \{\frac{p_{it} \beta A k_{it}^{\alpha}}{w_{it}}\}^{(\frac{1}{1-\beta})} \tag{4}$$

Equation (4) conditions labour demand on capital stock and output is allowed to vary with changes in domestic prices associated with

[9] There are limited number of studies in the Indian context that use regression-based techniques (Sen, 2009; Raj. S.N. and Sasidharan, 2015).

changes in trade as this could be a crucial channel through which trade affects labour demand at industry level (Castro et. al., 2007)[10].

It is expected that over time the total factor productivity increases with the rate of technology adoption and increases in x-efficiency (Chand and Sen, 2002). Now, both technological adoption and reduction of x-inefficiency are correlated to trade openness, therefore $A_{it}p_{it}$is assumed to be function of import penetration and export penetration (or export demand):

$$Ap_{it} = e^{(\gamma_0 T_i)} M_{it}^{(\gamma_1 + \left(\frac{1}{\tau^M}\right))} X_{it}^{(\gamma_2 + (\frac{1}{\tau^X}))} \qquad (5)$$

where T_i is time trend, M_{it} and X_{it} are import and export penetration respectively. τ^M is import elasticity of demand whereas τ^X is export elasticity of demand. γ_0 measures the time trend in total factor productivity (TFP). γ_1 and γ_2 are the elasticities of TFP w.r.t imports and exports respectively.

Substituting (5) into (4) and taking logs we get following equation which forms the basis for our empirical specification:

$$ln\ (l_{it})\ = \alpha_0 + \alpha_i ln\ (K_{it})\ + \alpha_2 ln\ (w_{it})\ + \alpha_3 ln\ (M_{it})\ + \alpha_4 ln\ (X_{it})\ + \alpha_5 T + \alpha_6 I + \varepsilon \qquad (6)$$

[10] According to Castro et. al (2008)., the impact of import penetration on labor demand will be larger when conditioned on capital rather than on output. This is because capital allows for the adjustment of output as import penetration changes. When labour demand is conditioned on output, the only channel through which changes in import penetration can affect employment is through its impact on total factor productivity (TFP), which is likely to be positive. The rationale for this is that as less efficient firms exit and more efficient firms become larger in the industry x-inefficiencies reduces. By conditioning on capital, both imports and exports are allowed to affect employment through changes in both TFP and domestic prices leading to changes in output.

DATA SOURCES AND CONSTRUCTION OF VARIABLES

Preparing the Database for our Study

Given the empirical specification, our study requires industry wise annual statistics on India's trade (exports and imports) with ASEAN in industrial goods, the measure of industrial output, i.e., value added, and on employment, capital stock and wages for India's industrial sector. The period of our study is 1996-97 to 2016-17. The data on India's bilateral trade with the ASEAN countries is sourced from the Trade Statistics of Ministry of Commerce and Industry (MoCI) which compiles and publishes the export and import data on merchandise goods for registered manufacturing sectors. We have collected the data on value added and capital stock at constant 2011-12 prices (in Rs. Crore) and employment (in 1000s) from India KLEMS database, the latest version of which is available as of 2019[11]. The source of data on wages is the Annual Survey of Industries (ASI), taken from Centre for Monitoring Indian Economy Pvt. Ltd (CMIE) database. As the industrial classification codes for the data pertaining to the variables of our interest differ, we, first, have to do an extensive mapping exercise so as to make all the data compatible and classified according to a single nomenclature. In brief, we want to map merchandize exports (which are goods, coded as per Harmonized System (HS)) to industries (which are classified by National Industrial Classification (NIC) code in India). Finally, it is necessary to make our data defined in accordance with India KLEMS industry codes for carrying out regression analysis. We explain the step by step process of mapping in the following paragraphs.

Firstly, the ASI classifies manufacturing activities according to the NIC schedule, which in turn is based on International Standard Industrial Classification (ISIC) nomenclature of the United Nations. The period of study is from 1996-97 to 2016–17, during which the NIC nomenclature has been restructured three times, namely NIC- 1998, NIC-2004 and

[11] Available at https://www.rbi.org.in/Scripts/KLEMS.aspx.

NIC-2008 which follow the ISIC rev 3, ISIC rev3.1 and ISIC rev4, respectively. Using the three concordance tables provided by the ASI, viz. NIC- 1998, NIC-2004 and NIC-2008[12], and the concordance table between ISIC rev 3 and ISIC rev 4[13] provided by United Nations Statistical Division, we have built a consistent time series of 15 industrial sector at 2-digit level corresponding to ISIC rev 3 covering broad industry groups.

Secondly, the MoCI adopts the Harmonized Commodity Description and Coding System (HS) for commodity classification and provides trade statistics according to HS nomenclature. As trade and industry statistics are reported according to different nomenclatures, viz., HS code and ISIC rev 3 respectively, industry- trade concordance exercise is also required for the study. To do this, trade data with the HS code nomenclature is mapped with to ISIC rev 3 codes using a concordance table accessed from World Integrated Trade Solution (WITS)[14], using minimum discretion where perfect match was not available.

Lastly, in order to make industrial classification of all our variables aligned to India's KLEMS code, we first use the concordance table between NIC code and KLEMS industry code, available in India's KLEMS manual, and we convert our NIC codes (which are now in ISIC rev 3 codes) into KLEMS industry code with minimum discretion. Next, we make the HS codes (which are now in ISIC rev 3 codes) compatible with India's KLEMS industry nomenclature, using minimum discretion[15]. Thus, the industry classification codes for the entire dataset is now in accordance with KLEMS.

In order to get a bit more insight into the nature of the industries, we have re-organized and grouped the 15 industries, classified according

[12] The concordance is generally provided at disaggregate level which permits us to build the necessary matching at the broad product categories at 2-digit level

[13] Available at: https://unstats.un.org/unsd/classifications/Econ

[14] UN has prepared the product concordance tables by mapping various nomenclatures. This is publicly available and can be accessed from: https://wits.worldbank.org/product_concordance.html

[15] The final concordance table so obtained and used in our study is available on request.

to the KLEMS industry code, into labour- intensive and non-labour-intensive industries as well as into industries producing capital, intermediate and consumption goods. For dividing the industries into labour- and non-labour- intensive industries, we start with the basic idea that an industry that requires a large amount of labour as compared to capital for production is a labour-intensive industry, i.e., if the labour cost outweighs the capital cost, the production process is said to be labour-intensive as the major cost incurred by the industry is cost of paying the workers. Using this premise, we calculate the following ratio for each industry:

$$R_i = \frac{\{\left[\frac{L_i}{K_i}\right] - \min_{i=1\ to\ n}\left[\frac{L_i}{K_i}\right]\}}{\left\{\max_{i=1\ to\ n}\left[\frac{L_i}{K_i}\right]\right\} - \{\min_{i=1\ to\ n}\left[\frac{L_i}{K_i}\right]\}} \tag{7}$$

R_i will lie between 0 and 1; with $R_i = 1$ representing the most labour-intensive industry and $R_i = 0$ representing the least labour-intensive industry. We rank the industries using this ratio and take $R_i = 0.5$ as the cut-off point to classify industries having ratio more than 0.5 to labour intensive.

Next, we use the UN Comtrade[16] classification of trade data into three categories, viz., industries producing capital goods, intermediate goods and consumption goods. Since the classification of goods in UN Comtrade is according to Broad Economic Category (BEC) codes, trade data with the BEC code nomenclature is mapped to HS codes using a concordance table accessed from World Integrated Trade Solution (WITS). It is then mapped to the KLEMS code classification, using minimum discretion where perfect match was not available. The list of industries that has been used in our study is given in the Appendix.

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[16] Available at https://unstats.un.org/unsd/tradekb/Knowledgebase/50090/Intermediate-Goods-in-Trade-Statistics;

Construction of Trade Related Indices

To study the impact of trade with ASEAN on India's industrial sector employment, we constructed trade related variables such as import penetration index and export intensity for a panel of 15 industrial sectors for the period 1996-97 to 2016-17. Motivated by Castro et. al. (2008), we also do our regression analysis with the measure of export penetration for robustness check. We use trade indices rather than absolute values of exports and imports because export intensity (or export penetration) and import penetration indices measure the performance and importance of exports and imports respectively.

The import penetration index *(IMP)* for industrial sector *i* in year *t* is defined as the ratio of total imports from trading partner (in our case ASEAN) to domestic demand or apparent consumption (i.e., the difference between output and exports):

$$IMP = \left(\frac{M_{it}^{ASEAN}}{Q_{it} - X_{it} + M_{it}}\right) \tag{8}$$

where *M* represents value imports, *X* represents value exports and Q represents output or the total value added.

The export intensity *(EXI)* is defined as the ratio of total exports for sector I in year t to total production of that sector in year *t:*

$$EXI = \left(\frac{X_{it}^{ASEAN}}{Q_{it}}\right) \tag{9}$$

The export penetration *(EXP)* is defined as the total exports to consumption ratio for sector *i* in year *t* (Castro et. al., 2006):

$$EXP = \left(\frac{X_{it}^{ASEAN}}{Q_{it} - X_{it} + M_{it}}\right) \tag{10}$$

The summary statistics of the variables are provided in Table 1.

Table 1: Summary Statistics of Variables

VARIABLES	N	Mean	Sd	min	Max
Ln (Employment)	313	8.010	1.658	4.267	12.46
Ln (Capital)	313	12.44	0.985	9.893	15.13
Ln (Wage)	293	10.63	1.883	4.002	13.75
Ln (Import Penetration)	313	-3.492	1.561	-7.981	-0.305
Ln (Export Penetration)	312	-4.319	1.949	-12.62	-0.162
Ln (Export Intensity)	312	-4.285	1.943	-12.62	-0.269

ECONOMETRIC SPECIFICATION/ EMPIRICAL STRATEGY

The study examines the impact of trade with ASEAN on industry-level employment in India during the period of 1996-97 to 2016-17. The labour employment is likely to show inertia which may lead to first-order serial-correlation in the error term. Therefore, we estimate a dynamic panel specification where lagged period employment is included as an explanatory variable to account for potential serial correlation of the error term. However, inclusion of lagged period employment leads to "dynamic panel bias" as lagged dependent variable is correlated with the fixed effects. In this case, the standard panel-data models such as pooled ordinary least squares (OLS), Fixed effects (FE) and Random effects (RE) models are not suitable for estimating a dynamic panel specification. OLS estimates show an upward bias due to the positive correlation between lagged dependent variable and fixed effect whereas FE estimates show a downward bias due to negative correlation between within-transformed lagged dependent variable and within-transformed error term (Nickell, 1981). Furthermore, FE parametric estimates are biased if some of the explanatory variables are endogenous.

The FE model assumes common slopes but cross-section specific intercepts. Although, dummy variables can be introduced in a FE model to account for cross-sectional and time effects but this leads to loss of degrees of freedom (B. Baltagi, 2008). On the contrary, the RE model does not leads to huge loss of degrees of freedom as it assumes common intercepts. But it imposes the restriction of strict-exogeneity on the model implying that error at any period is uncorrelated with the past, present and future. This is a very restrictive assumption which is not true in the real world (Arellano, 2003). Furthermore, FE and RE estimators fail to distinguish between short- and long-run relationships of variables and therefore, do not take full advantage of the panel dimension of the data (Loayza and Ranciere, 2004). Also, they ignore the stationarity of the variables. Owing to all the above-mentioned reasons, the standard panel regression techniques such as FE, RE are not appropriate to analyze dynamic panel data.

Another most widely used alternative approach for estimating dynamic panel models is generalised method of moments (GMM) estimation technique. However, as Roodman (2009) point out, GMM estimators can provide imprecise and biased estimates in the case of small samples having small cross-sectional dimension (small N) and larger time dimension (large T). Small N might lead to unreliable autocorrelation test. Large T can affect the validity of Sargan test of overidentifying restrictions. The number of instruments get larger as the time span of the data increases which may cause the rejection of the null hypothesis of exogeneity of instruments. Since we have a small sample consisting of 15 cross-sectional units and a time dimension of 20 years, GMM estimation method may not be appropriate. Also, GMM estimators ignore the stationarity of the variables and capture only the short-run relationships of the variables. Furthermore, GMM estimates can be severely biased unless the homogeneity assumption of the slope coefficients of lagged dependent variables is, indeed, true (Pesaran, Shin, and Smith, 1999; Pesaran and Smith, 1995).

This discussion on various dynamic panel estimation techniques reveals that FE estimation and GMM estimation methods are not suitable for our dynamic panel dataset. Therefore, we adopt an alternative estimation approach of Pooled Mean Group (PMG) which is a panel autoregressive distributed lag (ARDL) technique proposed by Pesaran and Smith (1995) and followed by Loayza and Ranciere (2004) and Samargandi, Fidrmuc, and Ghosh (2015). The econometric equation is defined as follows:

$$\Delta ln\ Employment_{\ i,t} = \sum_{j=1}^{p-1} \gamma_j^i\, \Delta ln\ Employment_{\ i,t-j} + \sum_{j=0}^{q-1} \delta_j^i\, \Delta X_{i,t-j} + \varphi^i \left[ln\ Employment_{\ i,t-1} - \left\{ \beta_0^i + \beta_1^i X_{i,t-j} \right\} \right] + \in_{it} \qquad (11)$$

where *i* denote industries, *t* stands for time period, *p* represents lag length of dependent variable, *q* denotes the lag length of independent variables, ln Employment is the natural logarithm of industrial sector employment, X is the vector of explanatory variables such as ln (Capital), ln (Wage), import penetration and export penetration. γ denotes lag coefficient of Employment variable, δ represents the short-run coefficients of explanatory variables which vary across industries, φ is the coefficient of speed of adjustment to the long-run equilibrium, and β denotes the long-run coefficients that are homogenous across industries. These coefficients are derived from equation (12).

$$ln\ Employment_{\ i,t} = \beta_0^i + \beta_1^i X_{i,t} + \mu_{i,t}, \text{ where } \mu_{i,t} \sim I(0) \qquad (12)$$

It is advantageous to use PMG estimation technique over the above-mentioned dynamic panel estimation techniques on our dataset for the following reasons. First, it is appropriate for heterogenous dynamic industry-specific panel data where long-run is characterized by conditions expected to be homogenous across industries while the short-run adjustment depends on industry-specific factors such as wage-price flexibility, vulnerability to domestic and external shocks and government policies. Second, PMG model takes into account the stationarity of the variables making the unit-root tests of variables unnecessary. Third, it controls for potential endogeneity of variables by introducing optimal lag length of the variables and also, remains robust to outliers (Pesaran *et. al.*, 1999). Finally, it estimates both long- and short-run coefficients simultaneously. The long-run coefficients are homogenous across industries whereas the short-run coefficients vary across industries.

It should be noted that equation (11) can also be estimated using the alternative approaches of Mean Group (MG) and Dynamic Fixed Effects (DFE) estimations. The MG model allows for both the long-run and short-run coefficients to be heterogenous. However, MG model can yield consistent estimates only if both the time (T) and the cross-section dimensions (N) are large enough (Samargandi *et. al.*, 2015). Also, the MG estimator is sensitive to outliers when the cross-section dimension (N) is small (Favara, 2004). In contrast to MG model, DFE model assumes homogenous short- and long-run coefficients but heterogenous cross-section specific intercepts. But, DFE yields inconsistent and biased estimates due to correlation between the error term and the lagged dependent variable when the sample size is small (B. H. Baltagi, Griffin, and Xiong, 2000).

We estimate equation (11) using PMG, MG and DFE models. However, PMG estimates are more relevant for our analysis as DFE and MG estimates can be inconsistent and biased as the sample size of our study is small (15 industries (N) and 20 years (T)). Generally, the Hausman test is conducted to determine if there is a significant difference between these estimators. Following the convention, we have conducted the Hausman test to choose the most appropriate model for our analysis. The null hypothesis of the test is that there is no significant difference between PMG and MG models or PMG and DFE models. If the null hypothesis is not rejected, the PMG model is chosen. If the null hypothesis is rejected, then the MG or DFE estimator is more appropriate.

Another notable point is that an appropriate ARDL lag-structure should be determined by some consistent information criterion. Based on the Schwartz Bayesian criterion, we impose the following lag structure (1,1,1,1,1) for employment, capital stock, wages, export penetration and import penetration respectively.

REGRESSION RESULTS

Table 2 reports the results of PMG, MG and DFE estimations. The results indicate that import penetration has a negative and significant impact on manufacturing sector employment in India in the long-run but no significant impact in the short run according to the PMG estimator, whereas the MG and DFE estimators suggest an insignificant impact of import penetration in both the long- and short-run. The export intensity has a positive but insignificant impact on employment in the long-run and the short-run according to PMG model. MG and DFE estimations yield a negative coefficient on export intensity. The long-run negative coefficient on export intensity is statistically significant only in the DFE model.

Intuitively, trade can affect employment growth via two channels – its impact on growth rate of output and on growth rate of employment per unit of output. A straightforward impact of rise in export intensity of an industry can increase the output growth rate, which in turn, promotes employment in that industry. It may also happen that a rise in export intensity of an industry may simultaneously reduce the labour intensity of production as more mechanized methods of production are brought into use and thus, reduce employment growth in that industry; or it can alter the product mix in favour of labour-intensive products leading to generation of higher employment opportunities. In stark contrast, higher import penetration can adversely affect the competing domestic industry's output. An increase in import intensity can force the inefficient firms to quit the industry and force other firms to switch to labour-saving, capital-intensive production methods which might have a negative impact on employment growth (Goldar, 2009).

Additionally, we find that wage is negatively correlated with employment in a statistically significant way in the long-run in the PMG model whereas it is positively correlated with employment albeit in a statistically insignificant way in the MG and DFE models. The positive correlation between wage and employment loses its statistical significance in the short-run in all the models. Intuitively, a rise in wage rate increases the cost of hiring labour. Therefore, firms switch to employing labour-saving technology leading to a decline in industrial employment. The coefficient on capital is positive and statistically significant in the long-run only in the PMG model suggesting that an increase in physical capital stock had a complementary effect on employment and has contributed in the increase in industrial employment in India.

Furthermore, the coefficient on the error-correction term is not lower than -2 in the cases of PMG and MG estimators. This ensures the dynamic stability of the two models indicating that there exists a long-run relationship among variables (Loayza and Ranciere, 2004). The error-correction term lies outside the dynamically stable range in the case of DFE estimator implying that the dynamic stability condition does not hold for some industries.

Also, the efficiency of the PMG estimator over the other estimators is examined by the Hausman test. The Hausman test does not reject the null hypothesis implying that the PMG model is more appropriate than the MG estimator.

Table 2: Impact of India-ASEAN trade on Industrial Employment in India

Variable	Model 1	Model 2	Model 3
	PMG	MG	DFE
Long-run coefficients			
ln (Capital)	1.382***	6.183	0.370**
	(0.252)	(7.130)	(0.185)
ln (Wage)	-0.530***	11.16	0.107
	(0.123)	(11.12)	(0.0723)
ln (Import Penetration)	-0.248***	4.864	0.0748
	(0.0704)	(4.981)	(0.0910)
ln (Export Intensity)	0.0446	-17.27	-0.130*
	(0.0402)	(17.50)	(0.0644)
Error correction term	-0.0225	-0.298***	0.0548***
	(0.0152)	(0.0828)	(0.0131)
Short-run coefficients			
Δln (Capital)	-0.0298	-0.0654	0.0610
	(0.0829)	(0.0532)	(0.0423)
Δln (Wage)	0.0472	0.0160	0.00493
	(0.0349)	(0.0268)	(0.00503)
Δ ln (Import Penetration)	0.00918	0.00298	0.00801
	(0.00967)	(0.00476)	(0.00611)
Δ ln (Export Intensity)	-0.00250	-0.00482	0.000511
	(0.00321)	(0.00376)	(0.00220)
Intercept	-0.103	2.394***	-0.0923
	(0.0671)	(0.763)	(0.135)
Observations	278	278	-
Industries	15	15	15
Hausman test		4.25	-
p-value		(0.2361)	-

Note: Standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. PMG, MG, and DFE models are estimated using Stata command (xtpmg) developed by Blackburne and Frank (2007). We follow ARDL (1,1,1,1,1) criteria for lag length selection of the variables. We control for year fixed and industry fixed effects in all models. Sample: 15 industries, annual data 1996-2016. Hausman test shows the acceptance of the null hypothesis, which implies that the PMG model is better than the MG model. Dependent variable: ln (Employment)

As discussed in earlier, there is a structural break at 2004-05, after which industrial sector has registered a decline in the rate of employment growth and India’s trade balance with ASEAN also worsened.

Hence, we introduce a year dummy for the year 2004-05 to determine if there is any differential impact of trade with ASEAN on industrial employment after 2004-05. Table 3 reports the regression results. The coefficients associated with import penetration, export intensity and their respective interactions with the year dummy are statistically significant in the long-run according to PMG model. The coefficients lose their significance in the long-run in the MG and DFE estimations. Also, the impact of trade with ASEAN on employment is inconclusive in the short-run in all the specifications. We, largely, focus on PMG estimates owing to reasons cited earlier. According to PMG estimates, one percent increase in import penetration increased industrial employment by 0.227 percent prior to 2004-05 and lead to a decline in employment by 0.116 percent after 2004-05. The export intensity reveals a similar effect on employment. Before the year 2004-05, export intensity has a positive correlation with employment and the correlation turns negative between the two variables after 2004-05. Thus, both export and import penetration have led to a decline in industrial sector employment after 2004-05. These results validate the existence of a structural break at 2004-05 implying that trade with ASEAN could be one of the factors explaining low employment growth rate in industrial sector, especially after 2004-05.

Furthermore, it is observed that the inclusion of year dummy does not lead to any change in the results related to wage rate and physical capital stock. Akin to the PMG results reported in Table 2, an increase in wage rate is associated with a decline in industrial-level employment whereas an increase in physical capital stock is associated with an increase in industrial-level employment.

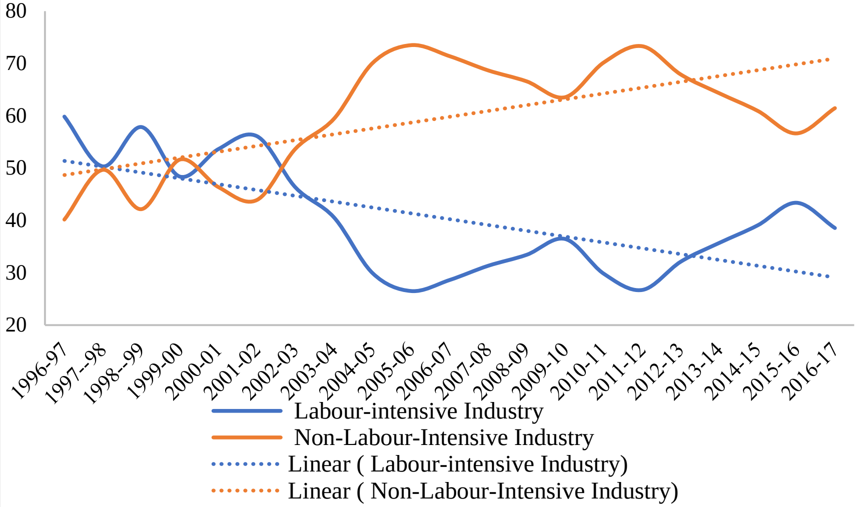
Table 3: Impact of India-ASEAN trade on Industrial Employment in India

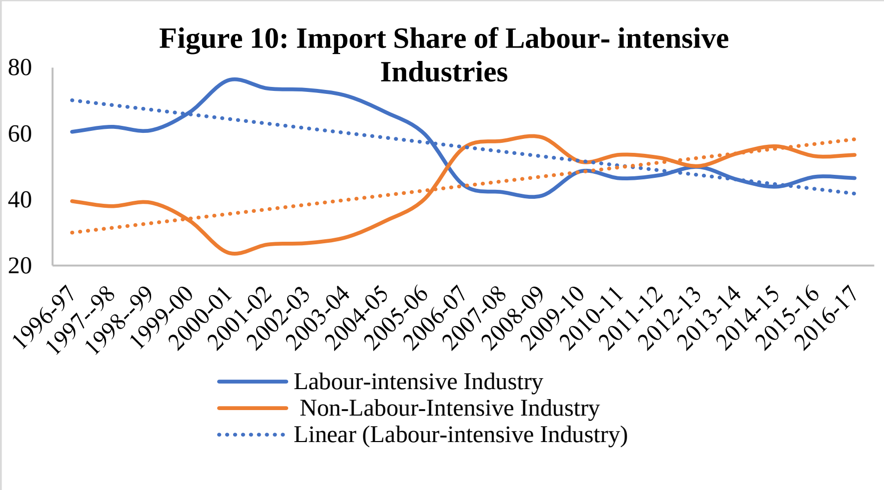
Variable	Model 1	Model 2	Model 3
	PMG	MG	DFE
Long-run coefficients			
ln (Capital)	1.187***	0.074	0.459
	(0.182)	(0.273)	(0.343)
ln (Wage)	-0.157***	0.047	0.150
	(0.0409)	(0.132)	(0.121)
ln (Import Penetration)	0.227***	0.667	0.006
	(0.0700)	(0.600)	(0.147)
ln (Import Penetration)*Year Dummy	-0.343***	-0.711	0.015
	(0.0676)	(0.595)	(0.094)
ln (Export Intensity)	0.244***	-1.026	-0.0416
	(0.0707)	(1.037)	(0.105)
Ln (Export Intensity)*Year Dummy	-0.346***	1.044	-0.327*
	(0.0774)	(1.039)	(0.183)
Year Dummy	-2.997***	2.280	-1.175
	(0.575)	(2.767)	(0.799)
Error correction term	-0.0066	-0.679***	0.035**
	(0.0192)	(0.143)	(0.014)
Short-run coefficients			
Δln (Capital)	-0.0692	-0.170	0.0362
	(0.0670)	(0.192)	(0.0447)
Δln (Wage)	0.0424	0.0489	0.00469
	(0.0477)	(0.0708)	(0.0049)
Δ ln (Import Penetration)	0.00512	-0.0862	0.0119*
	(0.0130)	(0.0637)	(0.0065)
Δ ln (Import Penetration)*Year Dummy	0.00345	0.120	-0.00682
	(0.0135)	(0.0813)	(0.0055)
Δ ln (Export Intensity)	0.0130	1.020	0.00114
	(0.0082)	(1.005)	(0.0022)
Δ ln (Export Intensity) *Year Dummy	-0.0197*	-1.042	-0.0084*
	(0.0114)	(1.008)	(0.0049)
Year Dummy	-0.0722	-4.842	-0.0509**
	(0.0482)	(4.915)	(0.0248)
Intercept	-0.0221	0.386	-0.0022
	(0.0633)	(3.658)	(0.153)
Observations	278	278	-
Industries	15	15	15
Hausman test (H_0: PMG, H_1: MG):		3.59	-
p-value		(0.8256)	-

Note: Standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. PMG, MG, and DFE models are estimated using Stata command (xtpmg) developed by Blackburne and Frank (2007). We follow ARDL (1,1,1,1,1) criteria for lag length selection of the variables. We control for year and industry fixed effects in all models. Sample: 15 industries, annual data 1996-2016. Hausman test shows the acceptance of the null hypothesis, which implies that the PMG model is better than the MG model. Dependent variable: ln (Employment)

In order to understand better why the positive impact of AIFTA on employment could not be sustained, we disaggregate total trade into trade share in labour-intensive and non-labour-intensive industries. We also bifurcate trade into trade in intermediates, capital goods and consumption good. The levels and trend analysis of export and import shares in labor-intensive industrial sector during 1996-97 to 2016-17 is presented in the following figures.

Figure 9: Export Share of Labour-intensive Industries





In terms of levels, exports growth of labour- intensive industries has lagged behind the exports growth of non-labour- intensive industries during the period of our study. Further, a trend analysis of the export and import shares of labour-intensive industries reveal that the India's trade with ASEAN for labour-intensive industries have been languishing, especially exports of these industries has witnessed steep decline during this period. These trends, further, substantiate the regression results. on that the impact of exports to and imports from ASEAN on employment. The labour intensive industries could not reap benefits of AIFTA during the period of our study.

We present the trends of export and import shares of capital, intermediate and consumption goods in India's total export from and import to ASEAN in Figures 11 and 12. It can be seen that the India's trade with ASEAN has mainly been in intermediates as the shares of both import and export in intermediate goods has been high which are usually not very employment intensive.

Figure 11: Export Shares

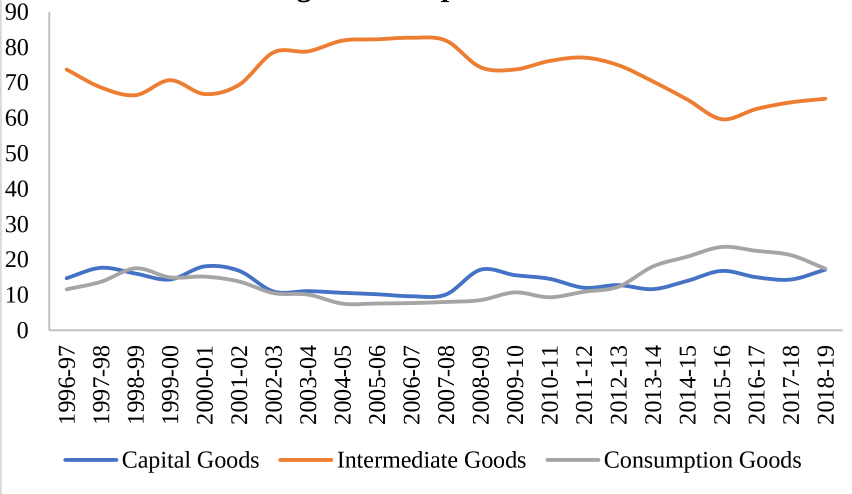
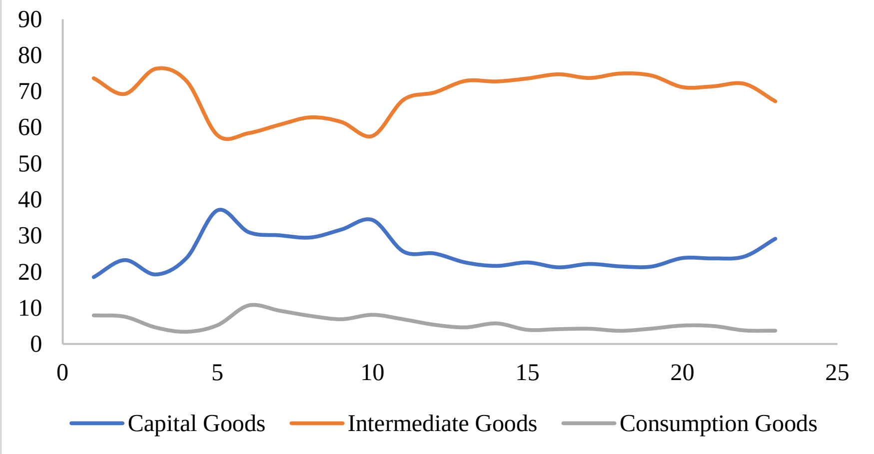


Figure 12: Import Shares



Although, import of intermediate goods may have helped India improve productive capacity and employment generation to some extent by providing cheaper inputs to its export industries and thus, propelling its expansion. But it could not be sustained after 2004-05 as exports in general, and labour intensive exports in particular, did not pick up as much as it should have been.

To test the robustness of our results, we replace export intensity with export penetration. Table 4 and 5 report the results of this alternative specification. The Hausman test rejects the null hypothesis indicating that the MG model is better than the PMG model (see Table 4). According to MG estimates, export penetration is negatively correlated whereas import penetration is positively correlated with employment both in the long-run and short-run, albeit in a statistically insignificant way. On the contrary, the PMG estimates corroborate the baseline finding that an increase in import penetration has led to a decline in industrial employment in India.

The results of MG estimation should be interpreted with caution as MG estimates produce inconsistent results for smaller cross-sectional units and are sensitive to outliers (Favara, 2003). Our study employs data pertaining to 15 Indian industries (at an aggregated level) only. Therefore, the possibility of MG results being inconsistent cannot be ruled out. The small number of cross-sectional units is a limitation of our dataset.

Table 4: Robustness test: Impact of India-ASEAN trade on Industrial Employment in India

Variable	Model 1	Model 2	Model 3
	PMG	MG	DFE
Long-run coefficients			
ln (Capital)	1.390***	1.380	0.369**
	(0.255)	(2.420)	(0.184)
ln (Wage)	-0.534***	3.707	0.106
	(0.124)	(3.674)	(0.0720)
ln (Import Penetration)	-0.249***	1.492	0.0698
	(0.0708)	(1.588)	(0.0898)
ln (Export Penetration)	0.0462	-5.341	-0.126*
	(0.0400)	(5.560)	(0.0620)
Error correction term	-0.0225	-0.294***	0.0550***
	(0.0151)	(0.0829)	(0.0131)
Short-run coefficients			
Δln (Capital)	-0.0290	-0.0659	0.0597
	(0.0827)	(0.0514)	(0.0420)
Δln (Wage)	0.0465	0.0137	0.00487
	(0.0341)	(0.0246)	(0.00503)
Δ ln (Import Penetration)	0.00903	0.00208	0.00799
	(0.00966)	(0.00477)	(0.00611)
Δ ln (Export Intensity)	-0.00255	-0.00489	0.000431
	(0.00320)	(0.00347)	(0.00219)
Intercept	-0.105	2.412***	-0.0941
	(0.0678)	(0.763)	(0.135)
Observations	278	278	-
Industries	15	15	15
Hausman test (H_0: PMG, H_1: MG):		21.32	-
p-value		(0.0003)	-

Note: Standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. PMG, MG, and DFE models are estimated using Stata command (xtpmg) developed by Blackburne and Frank (2007). We follow ARDL (1,1,1,1,1) criteria for lag length selection of the variables. We control for year and industry fixed effects in all models. Sample: 15 industries, annual data 1996-2016. Hausman test shows that null hypothesis is rejected, which implies that the MG model is better than the PMG model. Dependent variable: ln (Employment)

We, next, include a year dummy for the year 2004-05 in our alternative specification. Table 5 reports the regression results. According to the Hausman test, PMG model is more suitable than the MG model. The regression results are similar to the baseline findings. The estimated coefficients of import penetration, export penetration and their respective interactions with the year dummy are significant in the long-run in the PMG model. The coefficients lose their significance in the long-run in the MG and DFE estimations. Also, all the estimated coefficients are insignificant in the short-run in all the specifications. Both import and export penetration had positive impact on the industrial employment prior to the year 2004-05 while their impact on employment was negative post 2004-05 period. Thus, the robustness test consistently supports the previous finding that both export and import penetration have led to a decline in industrial sector employment after 2004-05. Also, wage rate is negatively correlated and physical capital stock is positively correlated with industrial employment. This is in line with the results of our baseline model.

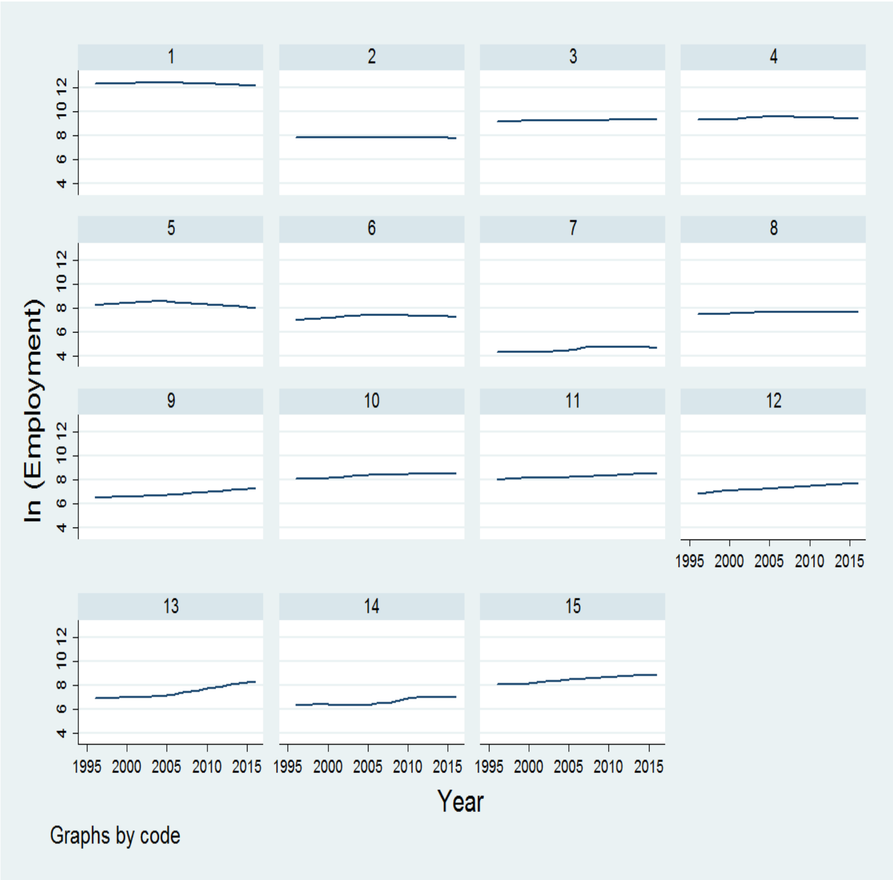
Table 5: Robustness Test: Impact of India-ASEAN trade on Industrial Employment in India

Variable	Model 1	Model 2	Model 3
	PMG	MG	DFE
Long-run coefficients			
ln (Capital)	1.212***	0.068	0.445
	(0.192)	(0.266)	(0.335)
ln (Wage)	-0.160***	0.051	0.146
	(0.0426)	(0.128)	(0.118)
ln (Import Penetration)	0.238***	0.645	0.007
	(0.0731)	(0.579)	(0.143)
ln (Import Penetration)*Year Dummy	-0.364***	-0.688	-0.007
	(0.0732)	(0.571)	(0.092)
ln (Export Penetration)	0.253***	-0.993	-0.038
	(0.0735)	(0.999)	(0.101)
ln (Export Penetration)*Year Dummy	-0.353***	1.013	-0.303*
	(0.0812)	(1.000)	(0.169)
Year Dummy	-3.130***	2.235	-1.162
	(0.620)	(2.672)	(0.782)
Error correction term	-0.0055	-0.691***	0.0352**
	(0.0181)	(0.146)	(0.0139)
Short-run coefficients			
Δln (Capital)	-0.0631	-0.182	0.0358
	(0.0642)	(0.199)	(0.0446)
Δln (Wage)	0.0421	0.0504	0.00463
	(0.0472)	(0.0739)	(0.0049)
Δ ln (Import Penetration)	0.00566	-0.0806	0.0120*
	(0.0130)	(0.0596)	(0.0065)
Δ ln (Import Penetration)*Year Dummy	0.00027	0.115	-0.0074
	(0.0127)	(0.0785)	(0.0054)
Δ ln (Export Penetration)	0.0125	0.985	0.0011
	(0.00793)	(0.969)	(0.0022)
Δ ln (Export Penetration) *Year Dummy	-0.0171	-1.006	-0.0080*
	(0.0105)	(0.971)	(0.0047)
Year Dummy	-0.0740	-4.677	-0.0515**
	(0.0493)	(4.747)	(0.0248)
Intercept	-0.0197	0.519	-0.0106
	(0.0629)	(3.555)	(0.153)
Observations	278	278	-
Industries	15	15	15
Hausman test (H_0: PMG, H_1: MG):		4.15	-
p-value		(0.7619)	-

Note: Standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. PMG, MG, and DFE models are estimated using Stata command (xtpmg) developed by Blackburne and Frank (2007). We follow ARDL (1,1,1,1,1) criteria for lag length selection of the variables. We control for year and industry fixed effects in all models. Sample: 15 industries, annual data 1996-2016. Hausman test shows the acceptance of the null hypothesis, which implies that the PMG model is better than the MG model. Dependent variable: ln (Employment)

Furthermore, it should be noted that the error-correction term is negative but statistically insignificant in all the PMG estimations (see Table 2-5). This implies that the variables converge to the long-run equilibrium but in an insignificant way. A plausible reason for statistically insignificant error-correction coefficient is that industrial sector employment in India has remained more or less stagnant over the period of study, with change in employment growth being tepid. Therefore, the variation in employment over time is not much (see Figure 13). As a result, the model does not converge to the long-run equilibrium in a statistically significant manner. However, this doesn't affect our inference on how India's trade with ASEAN has impacted its industrial sector employment. Rather, non-convergence of the model to the long-run equilibrium provides us with an important insight. While trade with ASEAN seems to have had a dampening impact on the industrial employment in India, especially post 2004-05, it is not the only factor determining stagnation (and subsequent decline) in employment in the industrial sector.

Figure 12: Industrial Employment for the Period 1996-97 to 2016-17



Concluding Discussion and Policy Direction

Amid the mounting trade tensions and rising protectionism, several policymakers and academics have advocated that India's active participation in regional trade blocks would help the economy integrate itself with global value chains and insulate itself from trade-related shocks. However, others have argued that India's history of trade agreements has been chequered, with India's trade deficits with partner countries growing since those agreements came in force. India's apprehension to enter into new regional trade agreements is manifested in India's withdrawal from ASEAN-backed RCEP. One of the reasons for opting out of RCEP is India's burgeoning trade deficit with the ASEAN. We argue that in addition to the impact of trade agreements on India's trade agreements on India's trade balance, strategic and policy discussions on trade agreements should also look at the impact of FTA on employment creation. Our research sheds light on this aspect by examining the impact of India-ASEAN FTA on India's industrial sector employment for the period of 1996-97 to 2016-17.

Between 1996-97 and 2018-19, India's share of trade with ASEAN in total trade both in terms of imports and exports have risen. However, in the recent decade (between 2006-07 and 2018-2019), while India's aggregate share of imports from ASEAN increased far more than its share of aggregate exports to ASEAN, resulting in steep worsening India's trade balance with ASEAN. Employment in India's industrial during 1996-2004 was on a steady rising trend, after which it declined.

Our analysis of impact of AIFTA on India's industrial employment reveals that import penetration does explain the decline in employment in the industrial sector. Surprisingly, while the coefficient of export intensity is positive, it is not significant. Hence, we can say that exports have the potential to contribute to growth in employment in industrial sector, the potential hasn't been harnessed to the fullest yet. This becomes more apparent when we look at the trade performance of labour- intensive industries, the export share of which has been weakening.

Since there is a structural break at 2004-05, after which industrial sector has registered a decline in the rate of employment growth, we have also analyzed differential impact of trade with ASEAN on industrial employment before and after 2004-05. Our results suggest that while export and import have had favorable impact on industrial sector employment prior to 2004-05, AIFTA led to decline in industrial sector employment post 2004-05. Moreover, trend analyses of export and import shares of capital, intermediate and consumption goods in India's total export from and import to ASEAN shows that trade is mainly in intermediate goods, followed by capital goods. While import of intermediate goods may have helped India improve productive capacity and employment generation prior to 2004-05, but it could not be sustained as exports also remained mostly in intermediates.

This leads us to the most pertinent question – should India be wary of regional trade agreements such as AIFTA? While, we may not have benefitted as much as we should have from AIFTA, a protectionist stance on India's part would not be helpful in the long run either. AIFTA has definitely opened a greater market access and inflow of intermediate and capital goods at internationally competitive prices. Regardless of the unfavorable trade balance, policy outlook should be to turn this market access and import of intermediate goods into opportunity of employment generation by boosting productivity and competitiveness of Indian industries.

To this effect, first, we have to acknowledge that our labour-intensive industries have low export competitiveness as compared to the ASEAN. This calls for structural policy reforms in labour-intensive industries in terms of removing supply side bottlenecks viz., infrastructure, credit, energy deficit, inferior logistics, rigid land and labour laws; and encourage ease of doing business. Also, we should avoid any protectionist trade measures that threaten loss of existing comparative advantage of its top exporting sectors such as textiles and gems and jewelry.

Second, we have to rethink our trade policy as a means to promote both exports and imports with the ASEAN, rather than obsessing over trade deficits. This is because imports of intermediate and capital goods from ASEAN at internationally competitive prices can improve productive capacity of India's industrial sector. Thus, it can make Indian exports competitive. This will, in turn, create employment opportunities in the industrial sector.

In conclusion, a protectionist stance, as displayed in RCEP-pull out, in a bid to save jobs may not be beneficial to India. India should give impetus to its "Act East Policy" and, further, enhance its engagement with ASEAN. In the process, its policy outlook should be to turn AIFTA into an opportunity of employment generation by taking appropriate trade and labour policy measures to make our exports competitive and exploit our natural advantage of labour surplus economy.

APPENDIX

Table A.1 List of Industries Included in our Sample

S.no	Name of Industry	Labour intensive/ Non-Labour intensive
1	Agriculture, Hunting, Forestry and Fishing	Labour intensive
2	Mining and Quarrying	Non-Labour intensive
3	Food Products, Beverages and Tobacco	Labour intensive
4	Textiles, Textile Products, Leather and Footwear	Labour intensive
5	Wood and Products of wood	Labour intensive
6	Pulp, Paper, Paper products, Printing and Publishing	Labour intensive
7	Coke, Refined Petroleum Products and Nuclear fuel	Non-Labour intensive
8	Chemicals and Chemical Products	Non-Labour intensive
9	Rubber and Plastic Products	Non-Labour intensive
10	Other Non-Metallic Mineral Products	Labour intensive
11	Basic Metals and Fabricated Metal Products	Non-Labour intensive
12	Machinery, nec.	Labour intensive
13	Electrical and Optical Equipment	Labour intensive
14	Transport Equipment	Non-Labour intensive
15	Manufacturing, nec; recycling	Labour intensive

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