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Measuring Import Contents of Export and Output of Manufacturing Sector– Study of India and Selected Group of Countries

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ABSTRACT

*The bulk of the world trade in commodities now a days consis of intermediate goods which play an important role in production and creation of value added. As a consequence, the global production process is getting much more integrated today than ever before. The fragmentation of production because of vertical disintegration has profusely impacted upon growth in world trade and output via vertical specialization in production and trade. This study is purported to examine the twin objectives of measuring (1) the domestic and import contents in exports, and, (2) the domestic and import content in output in the manufacturing sector of India and a few select countries that include both the developed and developing countries. For this, we first of all evaluate the '**foreign value-added content of exports** (FVA)', which corresponds to the value-added due to imported intermediate goods. The FVA may further be distinguished as direct and indirect value-added components. On the other hand, the domestic value-added content (DVA) being used to measure the sectoral contribution to final consumption and for further processing. Similarly, the domestic and foreign value-added content of gross output captures the domestic and imported intermediary inputs as a share of gross domestic production. These measures are sensitive to the degree of vertical integration; hence they are useful to evaluate the effects of international outsourcing.*

*Given this backdrop, we have tried to measure the degree of internationalization of the Indian manufacturing sector by measuring FVA and GVA following the methodology as explained by Hummels et al. (2001). They have used a country's **input-output table (IOT)**. Whereas, we have used in our study the **World Input-Output Database (WIOD)** to estimate the DVA and FVA shares of export and output. The details of the construction of WIOD is explained in the text. The WIOD database covers 18 manufacturing industries, coded from C10 to C32. The period of our study is from 2000 to 2014.*

Our results pertaining to the aggregate manbufacturing industry of India reveal that while, in one hand, the domestic value-added contents of export and output have fallen significantly, the foreign value-added contents of export and output, on the other hand, have increased significantly over time. We have also conducted disaggregated industry level analyses which shows that there is a wide variation in the degree of vertical integration in production. Thus, this analysis helps us to identify the importance of global integration of production in increasing export potentials of the Indian economy.

*Further, our cross-country analysis reveals that the FVA content shares in total manufacturing export and output have increased for all developed (**except Canada**) countries in 2014 over 2000. Except **Mexico**, all other developing countries' FVA shares in their total export either have increased or remained stagnant. This scenario indicates a larger backward linkage of the manufacturing sector in GVC across countries. In this report we have primarily focused on the six key manufacturing industries viz. Food, Textiles, Chemicals, Basic Metals, Fabricated Metals and Motor Vehicles for cross-country industry level analysis. For food sector, the estimation*

reveals that for all developed economies except Korea and Japan, and for all developing or emerging economics except Turkey, India and China, both the domestic and foreign value-added shares in the gross manufacturing exports have increased in 2014 over 2000. In textile sector, the estimations of FVA and DVA shares in total export and output show a decrease in 2014 over 2000 across all developing and developed countries. In Basic metal and fabricated metal industries, the shares of foreign content in per unit final demand have increased for all developed and developing countries but with varying degree. And for motor vehicles, the shares of FVA contents in total export has increased for all developed countries which indicates their larger backward linkages in GVC. Also, the FVA shares in total output have also increased for all developed and developing economies in 2014 over 2000.

JEL Classification: C67, F14.
Keywords: Value-added trade, Domestic value-added, foreign value-added, export, gross output, Indian manufacturing

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Measuring Import Contents of Export and Output of Manufacturing Sector– Study of India and Selected Group of Countries

ANUSREE PAUL[1] and ALOKESH BARUA[1]

1. INTRODUCTION

The intensification of the global and regional economic integration resulting from global fragmentation of production is usually viewed as being reflected in the increased trade flows of both intermediate and the final goods across the developing as well as the developed countries. Obviously, this phenomenon of the global fragmentation of production has been the outcome of increasing division of labour caused by the disintegration of the production process in the face of increasing returns to scale contributing to specialization in production by phases rather than by commodities both nationally and globally.

Since the eighties, key manufacturing industries like automobile, electronics, machinery, textile, etc. have started spreading out their production processes of a final product to different locations around the world to minimize cost of production. As an outcome of this production fragmentation, both the developing as well as the developed countries have become partners in global product sharing. In consequence, the standardized production processes of manufacturing have shifted to the developing countries while the developed countries have become the hub of innovation and creation of new goods as beautifully described by Raymond Vernon (1966) in his product cycle model of trade. It has been observed that countries like Poland, India, South Korea, Indonesia, Turkey, Thailand, and China have succeeded in increasing their total share in global manufacturing value added (Baldwin & Lopez-Gonzales, 2013) because of such global sharing of production.

These developments of specialization and trade across the global economy has given rise to a body of entirely new theoretical analyses and a field of empirical methods to help our understanding of the causality of the global sharing of production by phases rather than by commodities of production.

In the field of empirical research, fragmentation of trade is analyzed mainly as vertical specialization or integration of production processes. In evaluating the extent of vertical integration, the major focus is on the exports which is purported to measure the 'foreign value-added content of exports (FVA)'. This corresponds to the value added of inputs that are being imported to produce intermediates or final goods to be exported. It also indicates the backward global value chain (GVC) participation of a country. Further, forward participation to global value chain relates to how the domestic value-added content (DVA) is being used in the third economies for further processing or export. For instance, a portion of the domestic value- added embodied in gross exports (DVA) may be used as inputs by industries in other countries which

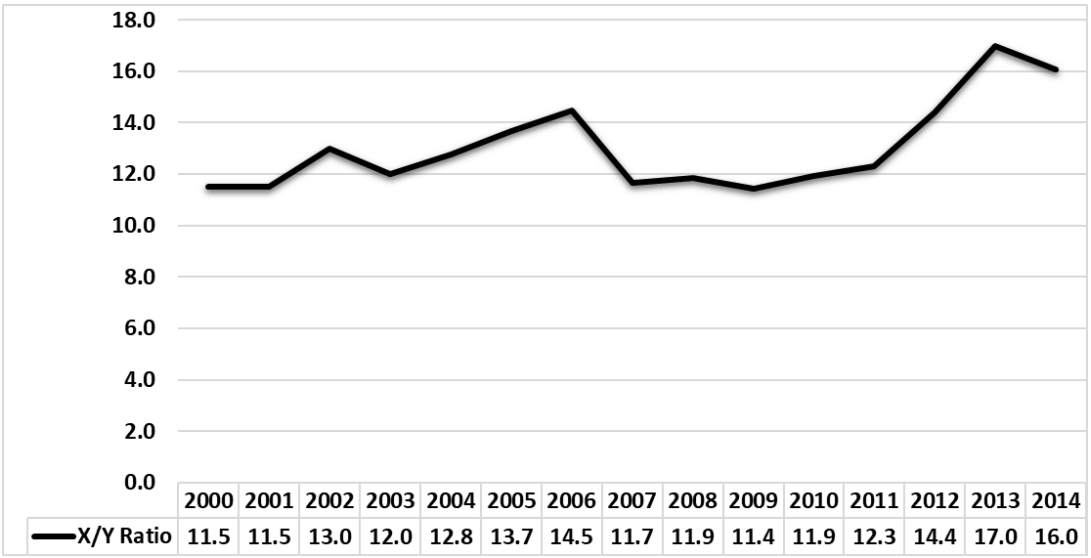
[1] We sincerely thank Prof. Abhijit Das, Head, Centre for WTO Studies and Prof. Manoj Pant, Director, Indian Institute of Foreign Trade for their valuable support to undertake this study.

produce goods or services for export to the rest of the world. The remaining portion is the final export which accounts for the consumption of other countries. In our present analysis, we are unable to calculate these two proportions of DVA separately as country specific IOT does not give us how the importing countries use their imports (implying our exports) for consumption and inputs in the production. Hence, all our inferences have been drawn on the total domestic value-added content in export which comprises further intermediate goods and final goods. A further analysis can be done to calculate these proportions. This will help us to understand our contribution to global value chain in terms of intermediate goods and final goods for consumption.

If we see the world shares of exports and imports to gross domestic products, the trend is increasing which indicates an increase in the international integration of national economies. Particularly for developing countries, a significant share of this global exchange is the intermediate goods trade. These measures give important insights for policy measures. For example, trade in value-added sheds light on the issues like trade imbalance disputes, jobs and growth, the notion of competitiveness of a country etc.

In India, the growth of trade relative to output for manufacturing products has been moderate during the last fifteen years. The export-to-output ratio for manufacturing sector has increased from 11.5 percent in 2000 to 16.0 percent in 2014 which shows a 1.6 percent growth rate[2] (Figure 1.1). This growth in gross exports to output partially reflects the trade intensification or export dependence of Indian manufacturing.

Figure 1.1: Export-to-Output Ratio for All Manufacturing (in percent)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
X/Y Ratio	11.5	11.5	13.0	12.0	12.8	13.7	14.5	11.7	11.9	11.4	11.9	12.3	14.4	17.0	16.0

Source: WIOD database, 2016 release. Authors' calculations.

Since inputs cross the borders several times, this kind of indicator of export dependence has become less reliable to evaluate the value added that exports create in India. The development of global production chain has affected India post-nineties where large proportions of imported inputs are used in domestic production in different stages.

[2] The growth rates have been calculated by fitting semi-logarithmic trend equation.

To understand this internationalisation and the forward and backward participations of Indian manufacturing industries in GVCs, in this study, we have used the input-output accounting framework to estimate the domestic and foreign content share in India's export and output in manufacturing for the period 2000 to 2014.

Now, how to measure domestic and foreign content in a country's export? In the literature on "trade in value-added" shares with the literature on vertical specialization, the methodology to distinguish the foreign and the domestic content in gross exports is given by Hummels et al. (2001). They have used a country's input-output table (IOT) to decompose its export into domestic and foreign value-added shares. They assumed that the intensities in the imported inputs use are same between the production for domestic sales and the production for exports. Further, Daudin et al. (2011), Johnson and Noguera (2012), Koopman et al. (2010) and Trefler and Zhu (2010) have made their recent contributions in measuring value-added trade based on IOT by focusing on the factor intensity or content of trade through the testing of Heckscher-Ohlin-Vanek predictions. These studies have emphasized bilateral relation and total trade of a country. They have combined bilateral trade data with inter-country input-output tables, based on the Global Trade Analysis Project (GTAP) and World Input-Output Database (WIOD), to measure the value-added content in bilateral trade.[3]

In this study, we have broadly followed the approach of Hummels et al (2001) using World Input-Output Database (WIOD). The WIOD, release 2016 provides a time-series of world input-output tables from 2000 to 2014. WIOD has standardized the concepts and classifications which have opened new dimensions of feasible studies on production networks.

In WIOD, the world input-output table (WIOT) is prepared by combining national Input-Output tables (IOTs) where the use of products is segregated according to their origin. Each intermediate and final use of products is imparted in domestically produced and imported (by partner country) products. These are interfaced with international trade statistics (ISIC Rev. 4). Further, Supply-Use Tables (SUTs) and national account statistics are harmonized across countries which helps us to undertake a cross-country analysis over time.

Given this backdrop, in this project, we aim to study the domestic and import contents in exports, and, the domestic and import content in output of India's manufacturing for the period 2000 to 2014.

Now, having studied the Indian manufacturing sector, we further extend our study for other countries. For this purpose, we select a group of countries consisting of both developed and the developing countries to study the nature of vertical disintegration in production and trade for those economies, and to provide a comparative analysis of India vis – a - vis the other countries in the global system. This analysis is expected to provide us (1) whether the developed and the developing countries are significantly different in terms of global participation in production and trade and (2) India's global positioning in terms of its trade in value-added as compared to those countries. This information should at least provide us with some clues to infer some policy

[3] Choi and Krishna (2004) and Zhu et al. (2007) have made significant contributions in the literature related to 'factor content of trade'. In the context of intermediate goods trade, they have accepted the results of Staiger (1986) that build upon Helpman (1984).

perspectives from the view point of the Indian economy. The choice of our countries has been primarily based on the availability of data, existence of manufacturing hubs, and also the importance of the chosen countries from India's trading interests. Accordingly, the developed countries we have chosen for our study are: **Australia, Canada, France, Germany, Italy, Japan, South Korea, Russia, UK and USA**. Similarly, the developing countries chosen are: **Brazil, China, Indonesia, Mexico and Turkey**. Among these chosen countries, China, India, US, South Korea, Brazil, Japan, Mexico and Germany hold first 8 positions in the world in *terms of competitiveness* as per the 2010 Global Manufacturing Competitiveness Index[4]. Our study is therefore expected to help us to understand if at all there is any relationship between competitiveness and intensity of global participation in production.

Our study reveals that the domestic contents of export and output of Indian manufacturing have ***decreased over time*** *which signifies low usage of domestic inputs use implying lower forward participation in global production and consumption networks over time. On the contrary, the foreign contents in export and output have* ***increased over time*** *which indicates more usage of imported inputs and larger backward participation in GVC.* At the industry level, we find that the *faster-growing sectors* in terms of the intensity of trade are having more forward and backward participation in production and consumption networks. The identified sectors are **coke and refined petroleum products**, other **transport equipment**, **basic metals**, **pharmaceutical products** and **pharmaceutical preparations** and **chemicals** and **chemical products**.

Further, our cross-country analysis reveals that the FVA content shares in total manufacturing export and output have increased for all developed (except Canada) countries in 2014 over 2000. Except Mexico, all other developing countries FVA shares in their total export either have increased or stagnant. This scenario indicates a larger backward linkage of the manufacturing sector in GVC across countries. In this report we have primarily focused on the six key manufacturing industries viz. ***Food, Textiles, Chemicals, Basic Metals, Fabricated Metals and Motor Vehicles*** *for cross-country industry level analysis. For food sector, the estimation reveals that for all developed economies except Korea and Japan, and for all developing or emerging economics expect Turkey, India and China, both the domestic and foreign value-added shares in the gross manufacturing exports have increased in 2014 over 2000. In textile sector, the estimations of FVA and DVA shares in total export and output show a decrease in 2014 over 2000 across all developing and developed countries. In Basic metal and fabricated metal industries, the shares of foreign content in per unit final demand have increased for all developed and developing countries but with varying degree. And for motor vehicles, the shares of FVA contents in total export has increased for all developed countries which indicates their larger backward linkages in GVC. Also, the FVA shares in total output have also increased for all developed and developing economies in 2014 over 2000.*

The rest of the paper is structured as follows: in section 2, we have broadly enumerated the existing studies of India on value-added trade vis-à-vis other countries. Section 3 describes the methodology and the data. Results and analysis are given in section 4 and section 5 provides concluding remarks along with a couple of policy prescription.

[4] IBEF(2015). Role of Manufacturing in Employment generation in India, available at https://www.ibef.org/download/Role-of-Manufacturing-in-Employment-Generation-in-India.pdf

2. LITERATURE REVIEW

2.1 Brief Literature Review on Value Added Trade of India

Many of the earlier studies have calculated the import intensities of export[5] in the context of India to examine the role of domestic resource content in value-added trade for India. In an excellent study, Golder et al (2017) have documented the database used, measures and the findings of the existing studies on this issue (See, Table 2.1). The Table 2.1 reveals that different studies such as Bhattacharya (1989), Sathe (1995), Pitre (1992), Burange (2001), Bhat et al (2007) and Goldar (2013) have used different sources of data in their studies. This makes their results non-comparable, but still it reflects the pattern of import intensity during the period of analysis. For instance, Bhattacharya (1989) and Sathe (1995) have used IO matrix and found that during the period 1970-1980, the import intensity of the Indian economy has been marginally less than 8 per cent while the same for the manufacturing sector has been a little over 10 percent in 1973 – 74 which though has decreased to 8.26 percent in 1979 - 80. Bhattacharya (1989), thus, argued that the sectoral increase in the import content in the manufacturing sector might have been due to export linked import liberalization policy. On the other hand, Sathe (1995) following the method as proposed by Bulmer Thomas (1984) to calculate import intensity, has observed that the import intensity of the economy had been in the higher side, that is, 12. 45 percent as compared to Bhattacharya (1989). However, measuring the import intensity for the final consumption goods only, Pitre (1992) observed that it is much less than the aggregate manufacturing production of the economy. Bhat et al (2007) have calculated the import intensities of Indian manufacturing at the aggregate and across industry levels. They have used the input-output table for the decade of the 1990s and found a significant rise in import intensities. Bhat and Paul (2009) have expanded the analysis for the decade of the 2000s. They found a 24percent increase in import intensity in 2003-04 from 12.9percent in 1993-94.

Using the CMIE data over the period from 1978-79 to 1997-98, Burange (2001) had calculated import intensity for the registered manufacturing sector. His estimates are for the period of nineties (1991 – 98) and he has observed that the import intensities are higher than what was being observed for the earlier period although his database was limited to the CMIE database only. Further, he has also found that the import intensity was the highest in the chemical and chemical products industry. Moreover, while the capital goods, consumer durables and metal-based industries also have experienced a rise in the import-intensity, the agro-based chemical and non-metallic mineral-based industries recorded a fall in the import intensity during this period.

Table 2.1: Review of Some Past Studies

Sl. No.	Studies by	Database used	Measures	Period	Import intensity (percent)
1.	Bhattacharya (1989)	Input-output matrix	Import intensity of total economy	1973-74	7.85
				1979-80	7.35
			Import intensity of manufacturing	1973-74	10.04
				1979-80	8.26

[5] Import intensity of a sector is defined as a ratio of imported inputs to total output. Hence, import intensity of a product refers to the degree of value addition of an imported item (Bhattacharya, 1989; Sathe, 1995).

2.	Sathe (1995)	Input-output matrix	Import intensity of the total economy	1973-74	7.75
				1979-80	11.90
				1983-84	12.45
3.	Pitre (1992)	Input-output matrix	Import intensity of final consumption for the whole economy	1973-74	3.04
				1979-80	4.75
				1983-84	5.17
				1987-88	4.77
4.	Burange (2001)	Balance sheet data of companies listed in CMIE database	Import intensity for the registered manufacturing sector	1991-92	9.27
				1997-98	12.27
5.	Bhat et al. (2007)	Input-output matrix	Import intensity of the total economy	1993-94	10.50
				1998-99	12.61
			Import intensity for the manufacturing sector	1993-94	12.88
				1998-99	16.77
6.	Goldar (2013)	Input-output matrix	Import intensity of the total economy	2003-04	15.90
				2006-07	17.20
		Firm-level analysis using data from Capital line	Import intensity of exporting firms	1999-00	9.16
				2010-11	13.60
			Import intensity of non-exporting firms	1999-00	5.23
				2010-11	5.46
7.	Goldar et al. (2017)	ASI industry level data	Import content in Indian exports (including service trade)	1995	11.00
				2011	22.00
			Import content in merchandize exports	1995	11.00
				2011	26.00
8.	Paul & Barua (2018) (present study)	WIOD Input-output matrix	Import content of export in manufacturing	2000	20.00
				2014	25.00
			Import content of output in manufacturing	2000	19.20
				2014	25.80

Source: Goldar et al. (2017) and own compilation.

In a recent paper, Golder (2013) has extended the study by using both the firm-level and input out matrix data. He has observed that the import intensity of manufacturing as measured by the input out matrix has shown relatively higher (15.9 percent to 17.2 percent for the years 2003 - 4 and 2006 – 7 respectively) than what was being observed at the firm level, of course, for different years. Further, his firm-level analysis also confirms that import intensities are higher for exporting firms than for the non-exporting firms. In a very recent paper, Golder (2017) has used the ASI data base to estimate the import intensity in manufacturing for the Indian economy for the year 1995 and 2011. Two interesting conclusions can be drawn from this study. One, the

import intensity has increased by more than doubled during the period. Second, the import intensities are higher in comparison to the ones estimated by using the I – O database. Finally, the latest study by Joseph (2018) on import intensity for a select 12 product-specific sectors have also revealed a high import intensity of Indian manufacturing sector. He selected the industries based on the availability of information on CMIE website as well as top export sectors based on the Export-Import Data Bank of Ministry of Commerce & Industry. Further, few recent studies are worth mentioning here which have given more insights in this context.

In Goldar et al. (2017), we can also find estimates of the import content in Indian exports at a disaggregated industry level using Hummel et al. (2001) approach. Their analysis indicates that India's import content in exports has increased steadily from about 11percent to about 22percent during 1995 - 2011. For merchandize exports, the rise in import content was relatively greater (about 26percent in 2011 from about 11percent in 1995). They have also done a commodity level analysis using IO tables of Annual Survey of Industries published by Central Statistics Office for India. Their *results reveal a reduction in domestic value-added content and simultaneous increase in foreign value-added content in export at commodity level*. Further, they have used WIOD database to perform an inter-country comparison with respect to these indices to understand the degree of integration of India vis-à-vis other emerging economies (Taiwan, Korea, Philippines, Vietnam, Malaysia, Thailand and China) in global value chain. Their result reveals that India is lagging in terms of its participation in GVC compare to these emerging economies.

Another study was done by Veeramani et al. (2017) where they have estimated domestic value-added contents and number of jobs supported by India's merchandise and services exports using national I-O tables of Annual Survey of Industries. The period for their study is from 1999-2000 to 2012-13. Their results show that the ratio of DVA to gross exports have steadily declined from 0.86 in 1999-00 to 0.65 in 2012-13 and it is particularly sharp for manufacturing sectors. It suggests that Indian industries have become more involved in global production sharing (GPS), especially since the second half of the 2000s. Further, the share of export-supported jobs in total employment in the country increased from little over 9percent in 1999-00 to 14.5percent in 2012- 13. The study concludes that the backward linkages, particularly from manufacturing to agriculture and services, have become an important source of export-related DVA and job creation in the country.

In the same way, Banga (2014), has also found a declining trend in domestic value added to gross output ratio for all manufacturing industries between 1995 and 2009. She noticed in her study that the domestic value-added share in exports has declined even for traditional export-oriented industries. Her overall observation and conclusion on Indian manufacturing are that it is not gainfully linked with global value chains (GVCs) and India is losing out in domestic value-added growth for many manufacturing industries in which it is "locking out" of the GVCs.

In contrast to the previous studies, our study adds value to the existing literature in several ways: firstly, this study gives a structural scenario of the overall internationalization of Indian manufacturing. Secondly, separate estimates of the domestic value added (DVA) and foreign value added (FVA) contents of export and output tell us about the forward and backward linkages of Indian manufacturing in global production and consumption networks. Thirdly, this study also gives us the information of relative significance of individual manufacturing

industries in terms of their participation in a global production network. Fourthly, cross-country comparison is helping us to understand the global positioning of the Indian manufacturing sector and in respect of individual industries, which enables us to formulate proper policy guidelines. Finally, our analysis has been conducted by using the WIOD database, which has a potential advantage over the existing other databases in the evaluation of globalization of Indian manufacturing. This database gives us industry-wise directly imported intermediate inputs data which is not available in national IOTs of India. Further, WIOD classification for industries is same across nations. Hence it gives us a good platform to undertake inter-country and cross-country analysis for each sector/industry.

2.2 Brief Literature Review on Value Added Trade at Cross-Country Level

Chen *et al* (2005) have developed a broader indicator, which considers both direct and indirect import content in export to measure the same phenomenon for a group of OECD countries. Egger and Egger (2003) have used a measure of direct import content of production to calculate the average annual change of international outsourcing between 1990 and 1997 for a number of European countries.

Following these methodologies, several cross-country analyses have been performed. For example, in an earlier study by Breda & Cappariello (2010), the extent of internationalisation of production between 1995 and 2006 for Italy and Germany had been evaluated. Their analysis has been based on a large set of indicators of international outsourcing such as the direct and indirect import content of production, and also it takes into account the import content of domestic inputs. They used the input-output tables of imported products compiled by the national statistical institutes, which are available up to 2006 for Germany and Italy. For the manufacturing sector, their result reveals that in 2006, the direct and indirect import content of production amounted to 32.4 per cent for Italy and 30.0 per cent for Germany. The import content of exports was slightly higher for Italy than for Germany due to a different sectoral composition of exports. Johnson and Noguera (2012) have calculated value-added to gross export (VAX) ratio for 42 countries including India. In case of India, they have found that during the period of their study, 1970-2009, the VAX ratio declined by 17percent which implies a deceleration in the participation in global production network. In another study by Jiang and Milberg (2012), an attempt has been made to capture the link between vertical specialization and industrial upgradation by using an import content of export expansion ratio (ICEER). Their study includes India along with four other countries viz. South Africa, USA, Brazil and China. For all these economies, they have found that vertical specialization follows a U-shaped pattern along with industrial upgradation. Vertical upgradation was found for India during the period 1995 to 2005.

Godbout and Langcake (2013) have explored the relationship between export, import and domestic demand using industry specific panel for 16 manufacturing industries during the period 2001-2011. Their study reveals that China imports more primary products and services and exports more manufactured goods. The import content in Chinese manufacturing goods has declined over the past decade which indicates that the production of intermediate and final goods that were previously been imported by Chinese firms has been increased. In another study by Hong Ma *et al* (2015), a framework has been developed in estimation procedure that

separately accounts for the production and trade activities of FIEs and COEs by extending the method developed by Koopman, Wang, and Wei (2012). They have used various data sources. The official I/O table is obtained from National Bureau of Statistics of China (NBSC) for the benchmark year 2007 with 135 sectors (including 80 manufacturing sectors) and the firm level export and import data for 2007 is obtained from China's General Administration of Customs (CGAC). Their analysis reveals that around 59percent of total exports is domestic content and about 56.2percent of the value of Chinese exports was through foreign owned firms, in terms of income distribution. FIEs in China created about 45percent of the domestic content in Chinese exports, whereas COEs contributed to less than 5percent.

A study by Societe Generale (2015) has prepared an EcoNote on Germany and has done a comparative study for France and UK. The study argued that the imported value contents of Germany export are notably similar to that of France and UK. In the study, it has later been argued that this result to boost German export is due the increasing use of cheap imported inputs. It was witnessed that there was a growing proportion of inputs manufactured abroad which were included in German exports. The calculations carried out by using OECD database show that the imported value-added content of German exports has gone up significantly between the middle of the 1990s and the middle of the 2000s. The recorded increase share is from 20percent to 27percent in a decade. Import content of export of manufacturing industry is recorded as 23percent in 1990 and 31percent in 2000. In this combined study, it is also noticed that the proportion of foreign value added that included in exports has slightly decreased in the United Kingdom.

In another study by Cezar, Duguet, Gaulier & Vicard (2017), attempt has been made to calculate import content of exports for eight countries: China, Germany, Spain, France, United Kingdom, Italy, Japan & United States. The value indicators are computed from World Input Output Database (WIOD), which consists of international input-output tables (IIOT) of 40 countries and for 35 industries plus one observation for residues from the rest of the world for the period of 1995 to 2011. They have shown that the import content of exports surged between 1995 and 2008 as world gross exports rose faster than the domestic value added actually exported. According to their estimate, the share of foreign value added in world exports, rose by approximately 6 percentage points over the seventeen years of the data, from 19percent in 1995 to 25percent in 2011. Their country level calculations reveal that the import content of exports of France rose by 9 points since 1995 and stands at 29percent in 2011. Germany has a similar evolution (+10.5 points) as well as Spain (+10) and Italy (+9). Major economies as United-States, Japan and China add proportionately more domestic value added to their exports.

Further, based on TiVA database, OECD systematically produces country-notes on trade and investment, which reflect some ideas about the domestic and import content of exports at different years. Table 1 summarises the estimation results for our chosen countries:

Table 2.2: OECD estimates of DVA and FVA indicators of Select countries (in percentage)

Countries	Year	DVA*	FVA**
Canada	2011	76.6	23.4
	2009	77.7	22.3
	2008	77.3	22.7
Italy	2011	73.6	26.4
	2009	78.9	21.1
	2008	74.3	25.7
Japan	2011	85.3	14.7
	2009	88.8	11.2
	2008	84.3	15.7
Australia	2011	85.9	14.1
	2009	86.9	13.1
Korea	2011	58.4	41.6
	2009	62.5	37.5
	1995	77.7	22.3
Germany	2011	74.5	25.5
	2009	78.2	21.8
United States	2011	85.0	15.0
	2009	88.5	11.5
France	2011	74.9	25.1
	2009	78.5	21.5
United Kingdom	2011	77.1	22.9
	2009	81.2	18.8
Russia	2011	86.3	13.7
	2009	87.3	12.7
Turkey	2011	74.3	25.7
	2009	78.5	21.5
Mexico	2011	68.3	31.7
	2009	66.5	33.5
Brazil	2011	89.3	10.7
	2009	87.5	12.5
Indonesia	2011	88.0	12.0
	2009	88.9	11.1
China	2011	52.8	47.2
	2009	50.9	49.1
India	2005	81.2	18.8
	2012	74.9	25.1

* Domestic value-added content of gross exports.

** Foreign value-added content of gross exports

Source: Various Country-notes – OECD.org

According to the OECD calculations, domestic value added embodied in exports of intermediate goods and services is highest in Australia (76.7percent) in 2011 whereas the foreign value-added content of gross exports is highest in China (47.2percent) in 2011. Our study may be considered an improvement over the existing studies in the following way: a) a comparative cross-country analysis is done using more updated WIOD database to understand the relative

positions of the selected countries in terms of their forward and backward linkages in the global production process for the manufacturing sector and b) relative position of India's manufacturing vis-à-vis other selected countries in global production process.

3. DATA AND METHODOLOGY

3.1. Data

As we have mentioned earlier, in this study, we have primarily used the World Input-Output Database (WIOD) to calculate the domestic and import contents of export and output of Indian manufacturing sector. In this study we have used WIOD, release 2016 which covers the underlying data for the period of 2000-2014. The classification of the industrial sectors is done according to ISIC rev. 4 and the tables adhere to the 2008 version of System of National Accounts (SNA). WIOD gives us intermediate inputs use of both manufacturing and service sectors. Data is available for 54 sectors which includes manufacturing and service sectors. For our calculation, we have taken all 54 sectors' inputs to calculate the DVA and FVA. But as per the terms of reference, we have considered the following 18 manufacturing sectors (given in WIOD database) for our analysis for the period of 2000-2014.

Industry Codes	Descriptions
C10-C12	: Manufacture of food products, beverages and tobacco products
C13-C15	: Manufacture of textiles, wearing apparel and leather products
C16	: Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
C17	: Manufacture of paper and paper products
C18	: Printing and reproduction of recorded media
C19	: Manufacture of coke and refined petroleum products
C20	: Manufacture of chemicals and chemical products
C21	: Manufacture of basic pharmaceutical products and pharmaceutical preparations
C22	: Manufacture of rubber and plastic products
C23	: Manufacture of other non-metallic mineral products
C24	: Manufacture of basic metals
C25	: Manufacture of fabricated metal products, except machinery and equipment
C26	: Manufacture of computer, electronic and optical products
C27	: Manufacture of electrical equipment
C28	: Manufacture of machinery and equipment n.e.c.
C29	: Manufacture of motor vehicles, trailers and semi-trailers
C30	: Manufacture of other transport equipment
C31-C32	: Manufacture of furniture; other manufacturing

In the next part, we have enumerated the detailed methodology that we have adopted for this study.

3.2. Methodology

In this study, we have broadly followed Hummels et al. (2001) approach to calculate the domestic and foreign contents of export and output at aggregate and industry level. Given the structure of WIOD database, the value-based input-output table specifies the following three equations:

(1) $Y = A_d.Y + Y_d$ with $Y_d = C_d + E_d$

Where, $d_{ij} = \frac{I_{ij}^d}{y_j}$: domestically produced inputs from industry *i* use to produce output in industry *j*. $A_d = \{d_{ij}\}$: *54x54* domestic coefficient matrix. Y is a *54×1* vector of gross output and Y_d is the *54×1* vector of final demands for domestically produced products, including usage in gross capital formation, private and public consumption, and gross exports.

(2) $M = A_m.Y + Y_m$ where $Y_m = C_m + E_{re}$

Where, m_{ij} denotes the imported inputs from sector *i* used to produce one unit of sector *j*'s output. $A_m = \{m_{ij}\}$: *54x54* imported inputs coefficient matrix. Y_m is the *54x1* vector of final demands for imported products, including usages in gross capital formation, private and public final consumption and re-exports. M is a *54x1* vector of imports.

(3) $uA_d + uA_m + A_z = u$

Where, $A_z = \{v_j\}$ is the 1×54 vector of each sector *j*'s ratio of value added to gross output. u is *1xn* vector of 1's. A_d and A_m are as explained before.

From equation (3), we get additional domestic value-added and foreign value added generated by one additional unit of final demand of domestic products as:

(4) $\text{DVA} = A_z(I - A_d)^{-1}$

(5) $\text{FVA} = uA_m(I - A_d)^{-1} = u - A_z(I - A_d)^{-1}$

Where, $(I - A_d)^{-1}$ is the *54x54* inverse Leontief matrix which captures the intermediate domestic inputs embodied in domestic outputs.

Thus, expression (5) gives us the additional amount of total-foreign value added generated by one additional unit of final demand of domestic products.

The additional amount of direct import content generated by one additional unit of final demand of domestic products can be calculated as:

(6) $\text{Direct\_FVA} = uA_m$

Subtracting the direct content from the total foreign content will give us the indirect foreign content[6] in per unit of final demand of domestic products which is:

(7) $\text{Indirect\_FVA} = \text{FVA}^{\text{total}} - \text{Direct\_FVA}$

[6] Indirect foreign content measures the value of imported inputs used *indirectly* in production of exported good. That is, imported inputs used in a sector which was being used as intermediates in all other provides us with information of indirect foreign value requirement embodied in outputs as well as in exports Imported inputs are thus allowed to circulate through several stages of transition within the domestic economy before *exiting* as an export. The imported intermediaries include all direct and indirect (embodied in domestic inputs) imported inputs.

Using expressions (4) to (7) we have calculated the DVA and FVA contents of export and output in manufacturing sector of India. The details calculation process and formulas are mentioned in appendix 1.

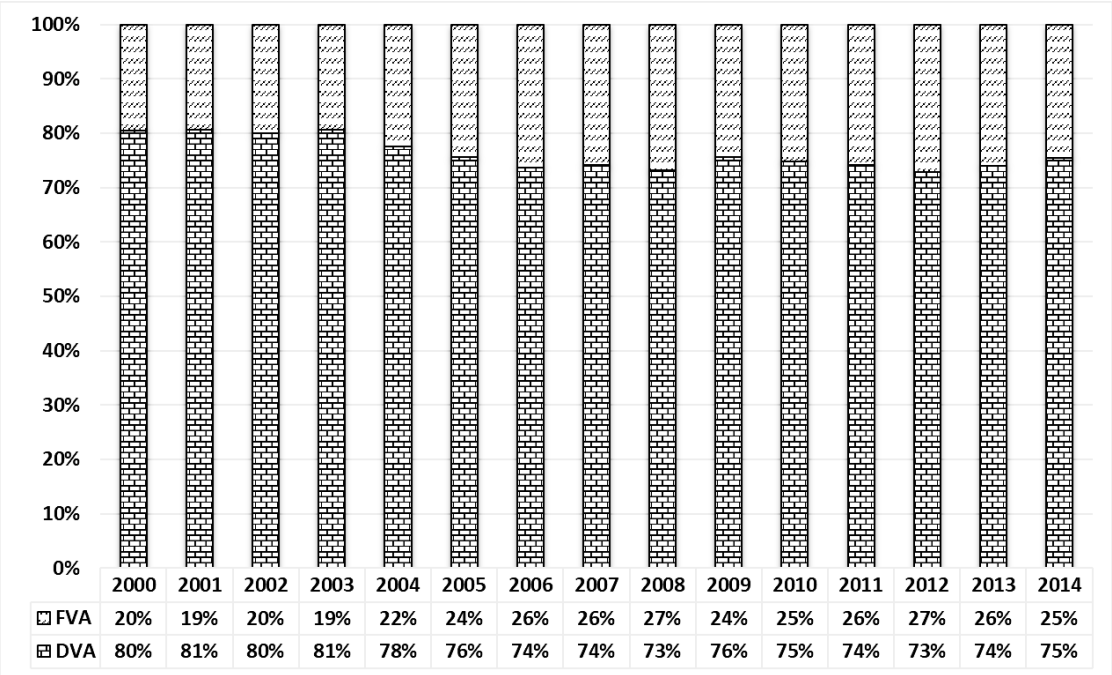
In our next section, we have calculated and analysed the domestic and import contents of export and output at aggregate and industry level for Indian manufacturing. The aggregate level measures are explained in subsection 4.1 and in 4.2 we have explained the industry level results based on the measures explained in (8) to (13) mentioned in appendix 1.

4. RESULTS AND ANALYSIS

4.1. Aggregate Level Results of India

Results reveal that share of domestic content or domestic value-added content for manufacturing sector was 80.5 percent in 2000 which was marginally decreased to 75.5 percent in 2014. Figure 4.1.1 is the graphical representation of the DVA and FVA for the period 2000 to 2014.

Figure 4.1.1: Domestic and Foreign Value-Added contents in Aggregate Manufacturing



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
FVA	20%	19%	20%	19%	22%	24%	26%	26%	27%	24%	25%	26%	27%	26%	25%
DVA	80%	81%	80%	81%	78%	76%	74%	74%	73%	76%	75%	74%	73%	74%	75%

Source: Own Calculation from WIOD database.

It is found that one additional unit of final demand of domestic products generated 0.8 units of domestic value added in 2000 that has marginally fallen to 0.75 in 2014. On the other hand, during 2000, the foreign value added was 0.2 units generated by that one additional unit of final demand of domestic products which has raised to 0.25 in 2014. This signifies an increase in foreign value-added content in each additional final demand of domestic product. We have used these fractions to calculate the domestic and foreign value-added contents in India's manufacturing export and gross output and have studied their pattern and trends to understand the trade intensification of Indian manufacturing.

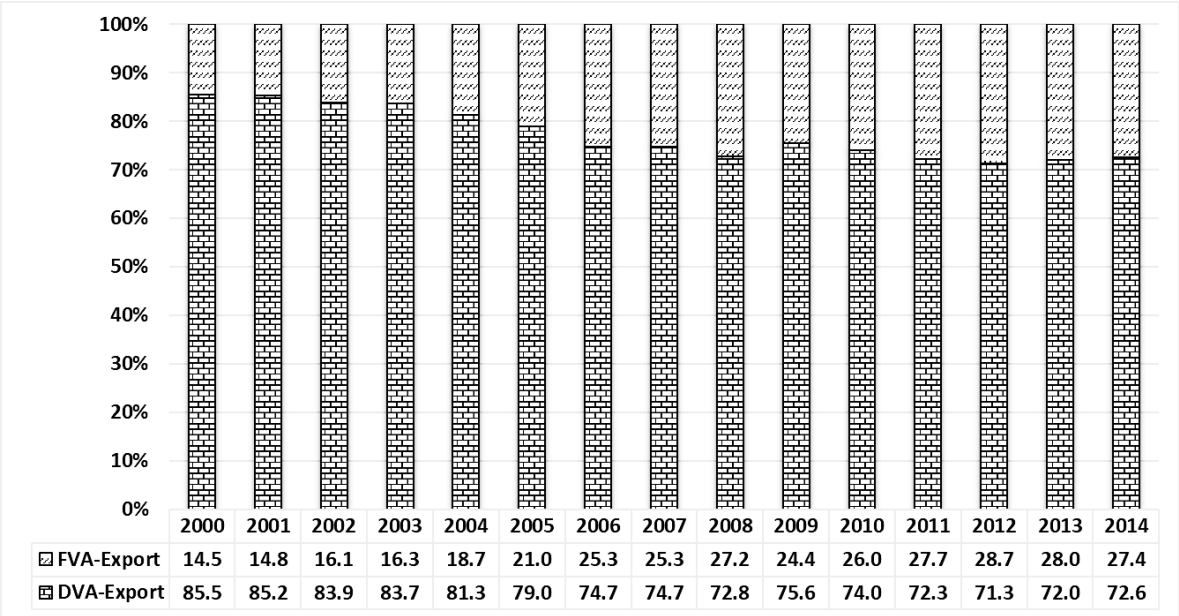
The analysis is given in following subsections.

4.1.1. Domestic and Foreign Value-Added Contents of Export

It is found that domestic value-added content of export increased to $163503.09 million in 2014 from $29749.56 million in 2000 (see table A1 in appendix 2). But in terms of percentage share of total export, the share of domestic value-added content has decreased to 70.3percent in 2014 from 84percent in 2000. During the period 2000 to 2014, we find a falling trend of share of domestic value-added content of export (Figure 4.1.1.1). The growth rate is -1.61percent. This indicates lower forward participation in global production and consumption networks of Indian manufacturing over time.

- Direct FVA content of export has increased by 7.4 percent per annum during 2000-2014.
- Indirect FVA content of export has increased by 1.5 percent per annum during 2000-2014.

Figure 4.1.1.1: Domestic and Foreign Value-Added Content of Export (in percent)



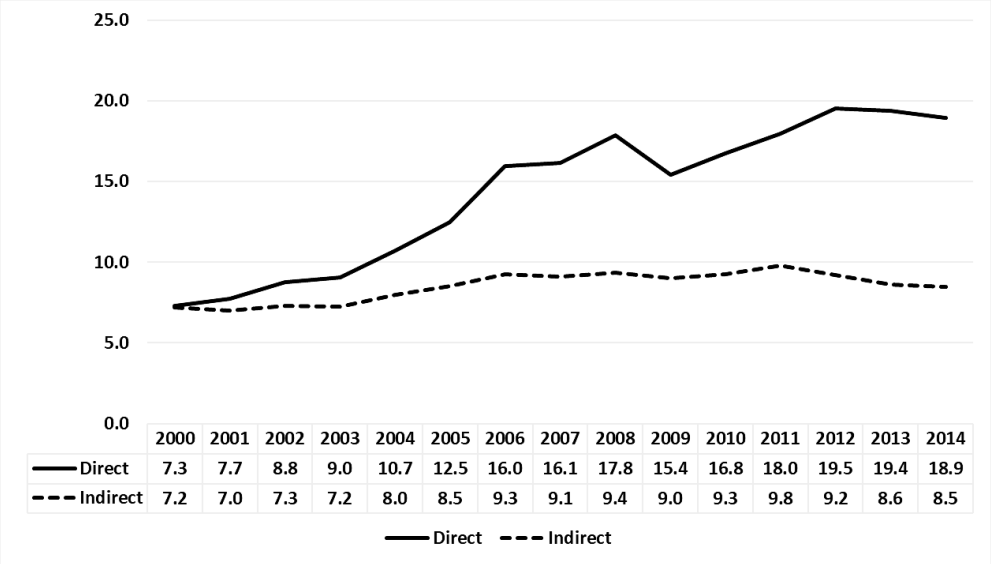
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
FVA-Export	14.5	14.8	16.1	16.3	18.7	21.0	25.3	25.3	27.2	24.4	26.0	27.7	28.7	28.0	27.4
DVA-Export	85.5	85.2	83.9	83.7	81.3	79.0	74.7	74.7	72.8	75.6	74.0	72.3	71.3	72.0	72.6

Source: Own Calculation from WIOD database.

On the contrary, the foreign value-added content of export (Figure 4.1.1.1), has increased by 5.18percent significantly during 2000-2014 for the Indian manufacturing sector. It is 16percent ($5673.78 million) of total export in 2000 which has raised to 29.7 percent ($69060.55 million) in 2014. Data reveals that the financial crisis of 2008 did not affect the foreign content in export in terms of its percentage share (see table A1 in appendix 2). This indicates backward participation in GVC has increased over time.

Looking into the direct and indirect foreign value-added content of exports of Indian manufacturing (Figure 4.1.1.2), we find that the rate of growth of direct foreign content of export is 7.4 percent and indirect foreign is 1.5 percent.

Figure 4.1.1.2: Direct and Indirect Foreign Value-Added Content of Export (in percent)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Direct	7.3	7.7	8.8	9.0	10.7	12.5	16.0	16.1	17.8	15.4	16.8	18.0	19.5	19.4	18.9
Indirect	7.2	7.0	7.3	7.2	8.0	8.5	9.3	9.1	9.4	9.0	9.3	9.8	9.2	8.6	8.5

Source: Own Calculation from WIOD database.

In share terms, during 2000, out of total 16percent of foreign content, direct and indirect foreign contents were equal in share (i.e., both are approximately 8percent of total foreign content of export). Over time, the direct foreign content of export has increased more than proportionately than the indirect content. In value terms, these shares are $2871.31 million and $2802.47 million respectively (see table A1 in appendix 2). During financial crisis of 2008, we find marginal dip in these shares as the corresponding structural break is found insignificant here. In 2014, the direct foreign content was $47978.06 million which is 20.6 percent of foreign value-added content of export.

4.1.2. Domestic and Foreign Value-Added Contents of Gross Output

Domestic and foreign value-added content of gross output ($DVA^{total}_{output_i}$ and $FVA^{total}_{output_i}$) measure the domestic and imported intermediary inputs as a share of gross production. These indicators do not focus on the industry's choice between imported or domestic inputs but they help to capture industry's substitution of domestic production with production phases abroad. These measures are sensitive to the degree of vertical integration; hence they are useful to evaluate the effects of international outsourcing. These measures were used by Eggar & Eggar (2003) first time, who have evaluated the average annual change of international outsourcing in 1990s for eleven European countries (Breda and Cappariello, 2010).

- DVA content of export has fallen by 1.61 percent per annum during 2000-2014.
- FVA content of export has increased by 5.18 percent per annum during 2000-2014.

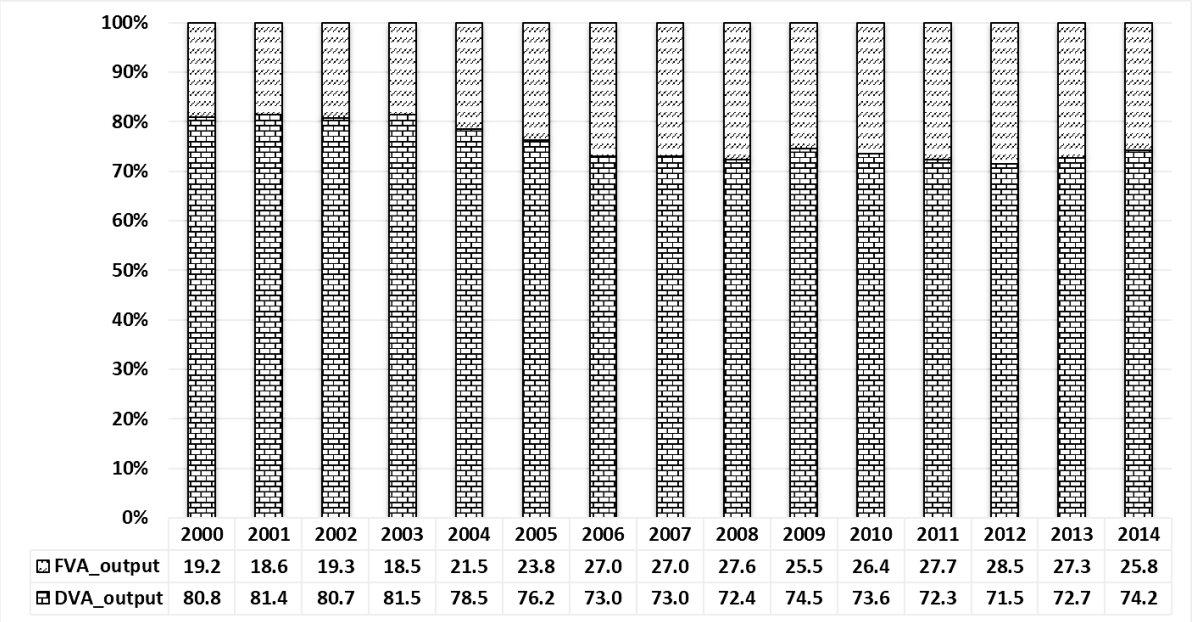
Following Breda and Cappariello (2010), we have considered indicator which includes the value of inputs indirectly used in the production process. Imported inputs can indeed be used in a

sector whose output is in turn employed in another sector, and then possibly in a third sector and so on until it is eventually included in a final good.

- DVA content of output has decreased by 0.94 percent per annum during 2000-2014.
- FVA content of output has increased by 3.12 percent per annum during 2000-2014.

As shown in figure 4.1.2.1, the share of domestic value-added share of gross output of manufacturing has decreased marginally by 0.94percent rate whereas the share of foreign value-added content has increased by 3.12percent.

Figure 4.1.2.1: Domestic and Foreign Value-Added Content of Gross Output (in percent)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
FVA_output	19.2	18.6	19.3	18.5	21.5	23.8	27.0	27.0	27.6	25.5	26.4	27.7	28.5	27.3	25.8
DVA_output	80.8	81.4	80.7	81.5	78.5	76.2	73.0	73.0	72.4	74.5	73.6	72.3	71.5	72.7	74.2

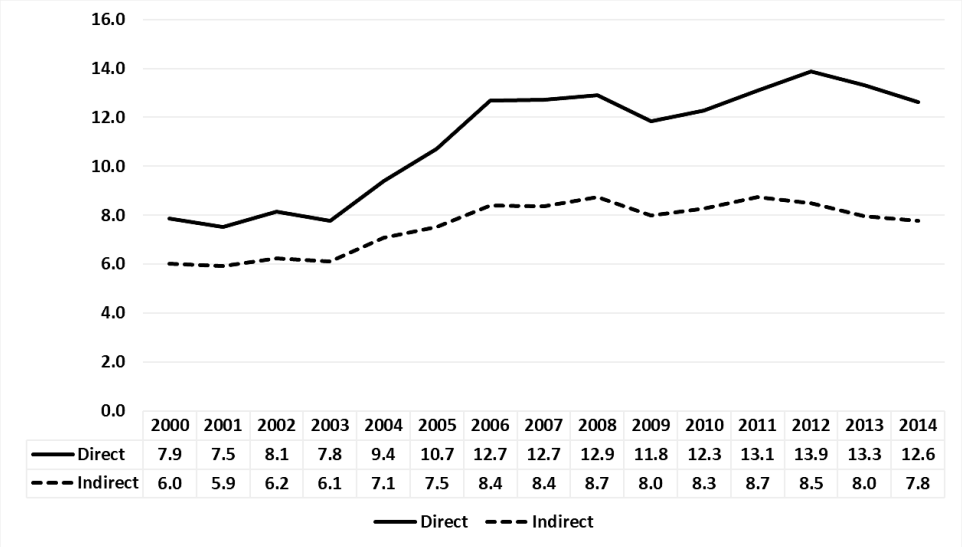
Source: Own Calculation from WIOD database.

In value terms, the gross manufacturing output was reported $307335.63 million in year 2000. Of which, the domestic value-added content was $248373.39 million that accounted for 80.8 percent share. Rest $58962.24 million is the 19.2 percent foreign value-added content during that year. In 2014, the gross output increased to $1449088.57 million, of which foreign value-added content is $374322.53 million and domestic value-added content is $1074766.05 million (see table A2 in appendix 2). These account for 25.8 percent and 74.2 percent shares respectively.

- Direct FVA content of output has increased by 4.32 percent per annum during 2000-2014.
- Indirect FVA content of output has increased by 3.77 percent per annum during 2000-2014.

If we see the direct and indirect foreign contents in manufacturing output (Figure 4.1.2.2), both show positive rate of growths during the period under consideration.

Figure 4.1.2.2: Direct and Indirect Foreign Value-Added Content of Gross Output (in percent)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Direct	7.9	7.5	8.1	7.8	9.4	10.7	12.7	12.7	12.9	11.8	12.3	13.1	13.9	13.3	12.6
Indirect	6.0	5.9	6.2	6.1	7.1	7.5	8.4	8.4	8.7	8.0	8.3	8.7	8.5	8.0	7.8

Source: Own Calculation from WIOD database.

The direct foreign content has increased from $34276.61 million in 2000 to $235943.21million in 2014, which accounted for 4.32 percent growth during 2000-2014. Indirect foreign content has increased from $24685.63 million to $138379.32 million which signifies 3.77percent growth during the period 2000-2014 (see table A2 in appendix 2).

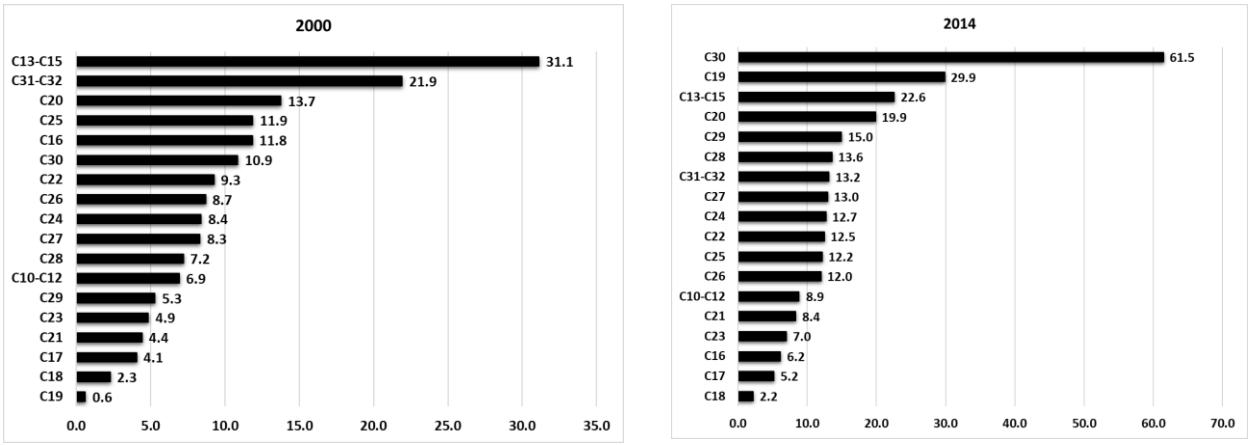
Next, we have explored the pattern of these domestic and foreign contents of exports and output at the industry level for Indian manufacturing.

4.2. Industry Level Results of India

Here we have taken 18 manufacturing industries for our industry-level analysis of domestic and foreign value-added contents of gross export and gross output of manufacturing. Before going to that analysis, we have tried to capture the trade intensifications of each sector which can be roughly measured through export to output ratio. Figure 4.2.1 is the graphical representation of export to output ratio for all 18 manufacturing for the years 2000 and 2014.

In terms of trade intensification, the fast-growing manufacturing industries are coke and refined petroleum products (C19), other transport equipment (C30) and motor vehicles, trailers and semi-trailers (C29), which show 23.8 percent, 12.4 percent and 6.8 percent growth per annum respectively during the period. The second set of industries, viz. pharmaceutical products and pharmaceutical preparations, machinery and equipment n.e.c., chemicals and chemical products, electrical equipment and paper and paper products (C21, C28, C20, C27 and C17) reveal moderate growth in their trade intensification statistic. Their growth rate per annum are 3.6, 2.8, 2.1,2.1, 1.6 and 1.5 percent respectively.

Figure 4.2.1: Sectoral Export-to-Output Ratio (in percent)

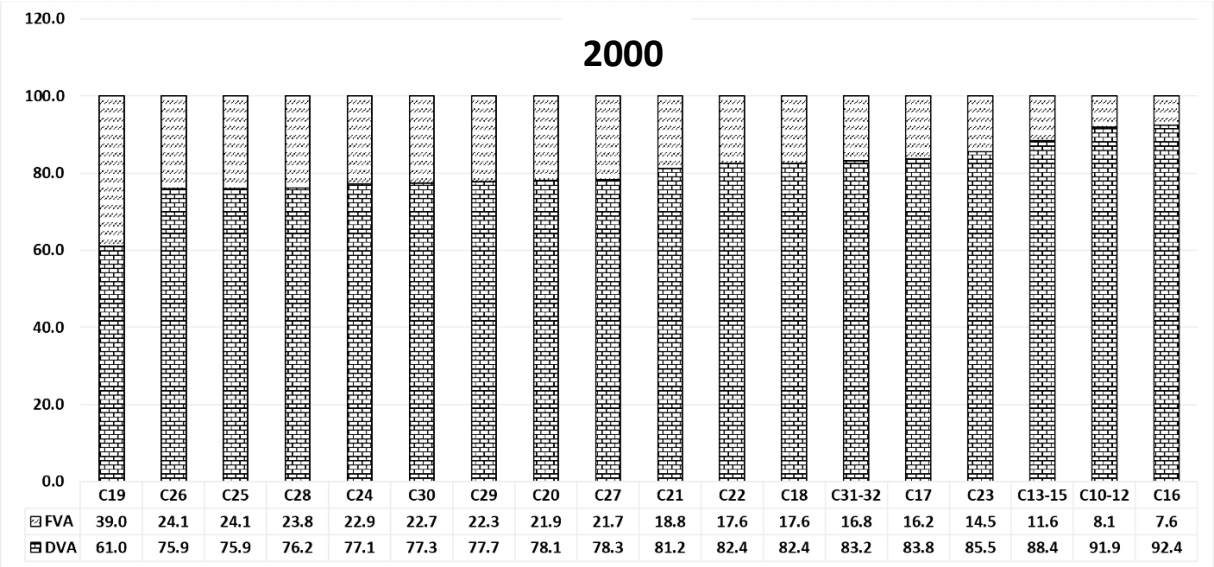


Food, beverages and tobacco(C10-12); Textiles, wearing apparel and leather (C13-15); Wood and cork(C16); Paper (C17); Printing and reproduction of recorded media(C18); Coke and refined petroleum(C19); Chemicals (C20); Pharmaceutical (C21); Rubber and plastic (C22); Other non-metallic mineral(C23); Basic metals(C24); Fabricated metal(C25); Computer, electronic and optical(C26); Electrical equipment(C27); Machinery and equipment n.e.c.(C28); Motor vehicles, trailers and semi-trailers(C29); Other transport equipment(C30); Furniture; other manufacturing(C31-32)

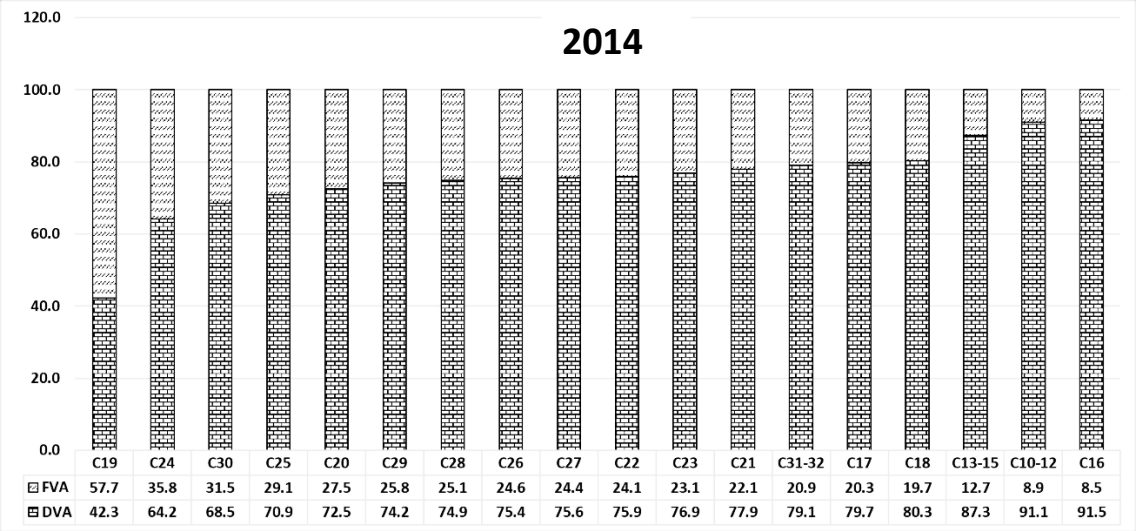
Source: Prepared from table A3, appendix 2.

Now, if we investigate the fraction of domestic value added generated by one additional unit of final demand of domestic product of different manufacturing industry (Figure 4.2.2), it reveals that for coke and refined petroleum products (C19), the DVA has dropped from 0.61 units in 2000 to 0.42 units in 2014 for each additional unit of final demand of domestic coke and refined petroleum product.

Figure 4.2.2: DVA and FVA in 18 industries in 2000 and 2014



	C19	C26	C25	C28	C24	C30	C29	C20	C27	C21	C22	C18	C31-32	C17	C23	C13-15	C10-12	C16
FVA	39.0	24.1	24.1	23.8	22.9	22.7	22.3	21.9	21.7	18.8	17.6	17.6	16.8	16.2	14.5	11.6	8.1	7.6
DVA	61.0	75.9	75.9	76.2	77.1	77.3	77.7	78.1	78.3	81.2	82.4	82.4	83.2	83.8	85.5	88.4	91.9	92.4



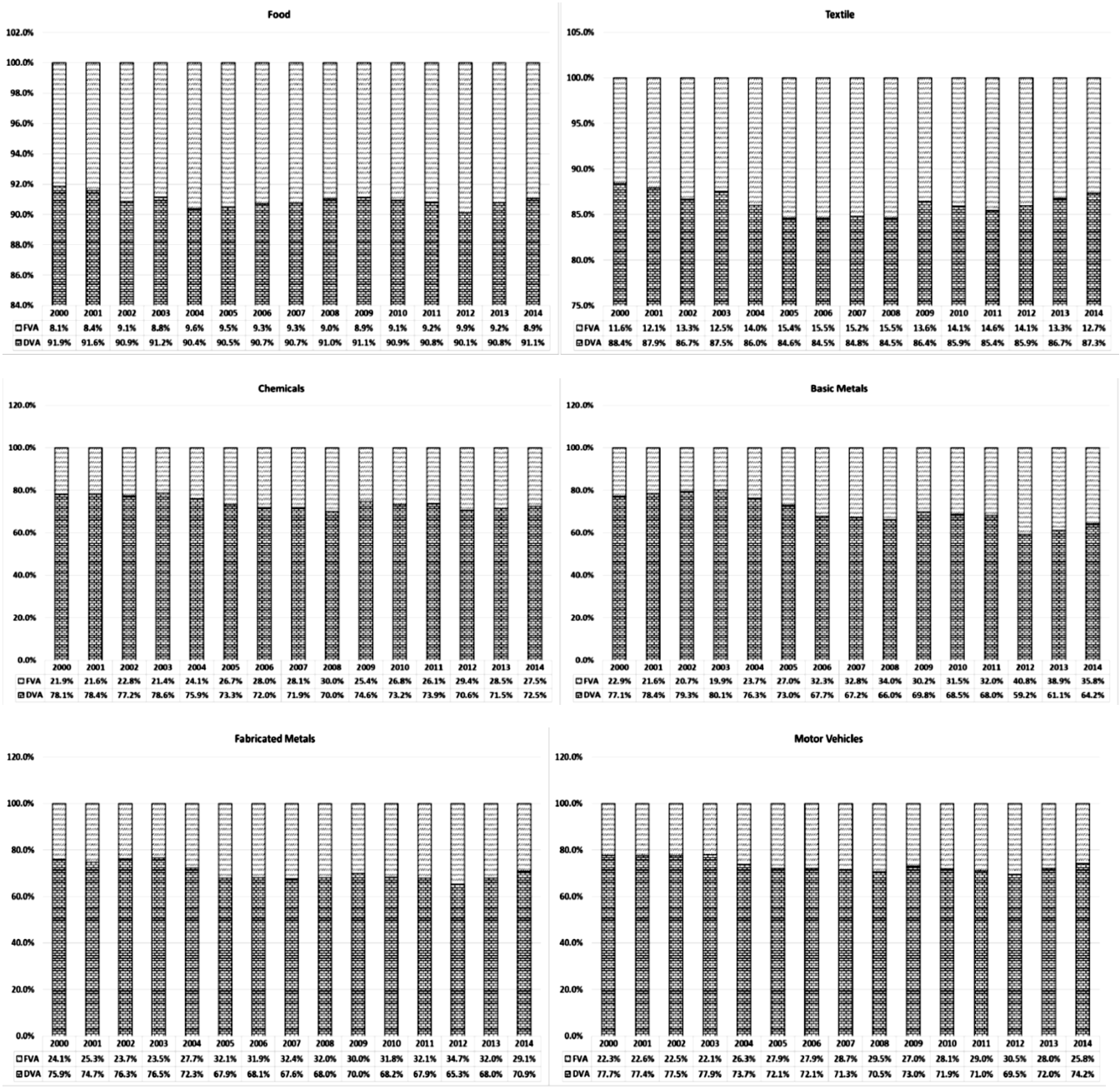
Food, beverages and tobacco(C10-12); Textiles, wearing apparel and leather (C13-15); Wood and cork(C16); Paper (C17); Printing and reproduction of recorded media(C18); Coke and refined petroleum(C19); Chemicals (C20); Pharmaceutical (C21); Rubber and plastic (C22); Other non-metallic mineral(C23); Basic metals(C24); Fabricated metal(C25); Computer, electronic and optical(C26); Electrical equipment(C27); Machinery and equipment n.e.c.(C28); Motor vehicles, trailers and semi-trailers(C29); Other transport equipment(C30); Furniture; other manufacturing(C31-32)

Source: WIOD database, 2016 release. Own calculations.

Looking at the annual trends of employment during 2000-2014, we find that among the manufacturing industries, food(C10-12), textiles, wearing apparel and leather (C13-15), chemicals (C20), basic metals(C24), fabricated metal(C25) and motor vehicles (C29) are comparatively more employment generating industries .[7] As defined in equations (4) and (5), for these industries, the share of domestic contents (in 1 unit of final demand of domestic products) are lying between 70 percent to 91 percent whereas the share of foreign content varies between 30percent to 9 percent. The per unit share of foreign contents are the highest for basic metals and fabricated metals and the lowest for food industry. The calculated figures reveal that these per unit shares are stagnant over the years for all these industries except for chemicals and basic and fabricate metals (see tables A4 and A7 in appendix 2). Figure 4.2.3 gives us the evaluations of DVAs and FVAs of these sectors.

[7] IBEF (2012). Role-of-Manufacturing-in-Employment-Generation-in-India. Available at https://www.ibef.org/download/Role-of-Manufacturing-in-Employment-Generation-in-India.pdf
Sanghi & Srija (2015). Make in India and the Potential for Job Creation, CII. Available at http://www.ies.gov.in/pdfs/make-in-india-oct15.pdf

Figure 4.2.3 DVAs and FVAs of six key manufacturing industries in India



Source: Prepared from tables A4 and A7 in appendix 2.

DVA content of export has increased industries viz. coke and refined petroleum products, other transport equipment, machinery and equipment.

Among the other industries, we find that the shares of foreign contents of coke and refined petroleum products, other non-metallic mineral products, other transport equipment, and pharmaceutical products (C19, C23, C30 and C21) industries have increased in 2014 over 2000.

Based on these marginal ratios (see tables A4 and A7 in appendix 2), we have calculated the share of domestic and foreign value-added content of total exports by using expressions (8) to (11) and share of domestic and foreign value-added content of total outputs by using expressions (12) to (13). These we have discussed in our following sub-sections.

4.2.1. Distribution of the Shares of Domestic and Foreign Value-Added Contents in Total Manufacturing Export

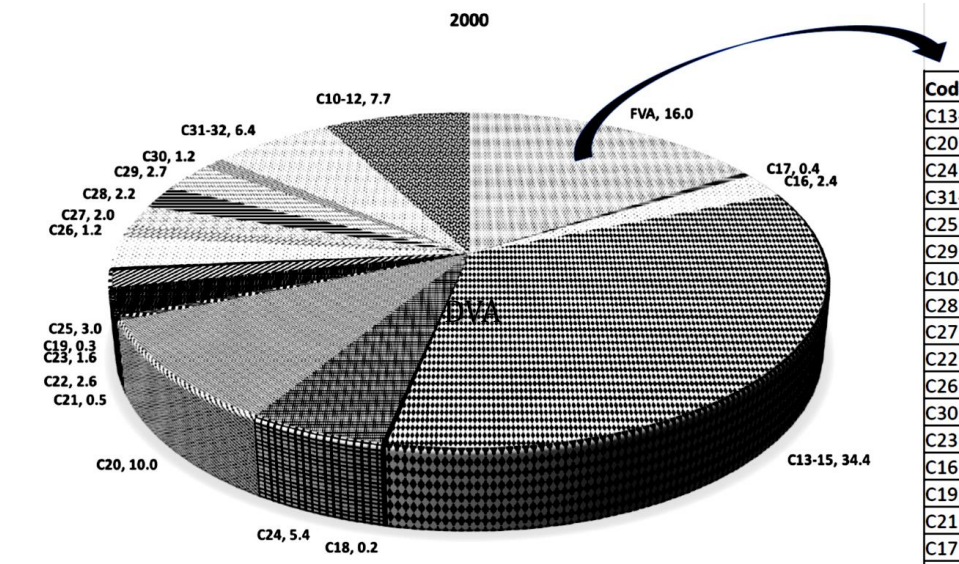
The industry-specific distributions of the domestic value-added content of total manufacturing exports ($DVA_{exp_i}^{total}$)for 18 manufacturing sectors in India depict the extent of industries' participation in GVC. In figure 4.2.1.1, we have graphically shown $DVA_{exp_i}^{total}$ for the years 2000 and 2014. The calculations of all years (2000 to 2014) are given in table A6 in appendix. In value terms, industry C19, i.e., coke and refined petroleum products generated $105 million worth of domestic value-added content in its sectoral export in 2000 (see table A5 in appendix 2) which is 0.3percent share in total manufacturing export. This has increased to $19376.6 million in 2014 which accounted for 8.3 percent share in total manufacturing export during that period. This growth is 18.9 percent per annum. This industry has reported highest growth in domestic value addition in total manufacturing export of the country during 2000-2014.

One of the other industries, which show 9 percent growth rates per annum in terms of its share in DVA in total manufacturing export is other transport equipment (C30). Machinery and equipment n.e.c. industry has increased by 2.0percent per annum.[8] In value terms, during 2000, other transport equipment industry has reported DVA in export equal to the amount of $410.1 million which is accounted 1.6percent of total manufacturing export. This has increased to $9097.2 million in 2014 which is 3.9percent of total manufacturing export. Hence, these industries' forward participation in global product and consumption network is significant during the period of consideration.

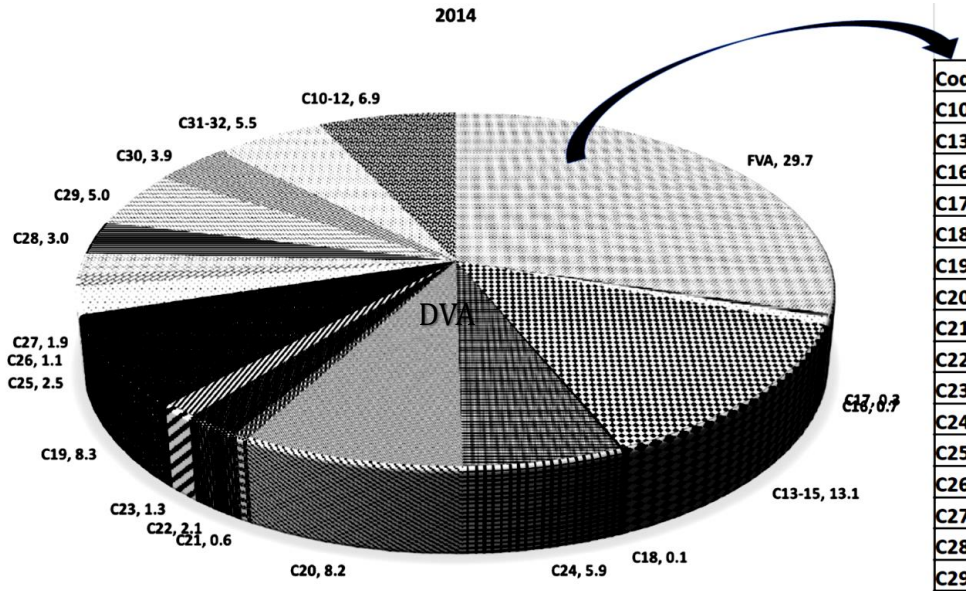
The sectors which show significant downward trends in terms of its share in DVA content in total manufacturing export are wood and products of wood and cork, printing and reproduction of recorded media, paper and paper products, other non-metallic mineral products, rubber and plastic products, and furniture; other manufacturing.

[8] See appendix 2, table A6.

Figure 4.2.1.1: Distribution of the Share of Domestic and Foreign Value-Added Content in Total Manufacturing Exports in 2000 and 2014 (in Percent)



Code	FVA
C13-15	4.53
C20	2.81
C24	1.59
C31-32	1.29
C25	0.94
C29	0.78
C10-12	0.68
C28	0.68
C27	0.55
C22	0.55
C26	0.39
C30	0.34
C23	0.27
C16	0.19
C19	0.19
C21	0.11
C17	0.08
C18	0.04



Code	FVA
C10-12	0.7
C13-15	1.9
C16	0.1
C17	0.1
C18	0.0
C19	11.4
C20	3.1
C21	0.2
C22	0.7
C23	0.4
C24	3.3
C25	1.0
C26	0.4
C27	0.6
C28	1.0
C29	1.7
C30	1.8
C31-32	1.5

Food, beverages and tobacco(C10-12); Textiles, wearing apparel and leather (C13-15); Wood and cork(C16); Paper (C17); Printing and reproduction of recorded media(C18); Coke and refined petroleum(C19); Chemicals (C20); Pharmaceutical (C21); Rubber and plastic (C22); Other non-metallic mineral(C23); Basic metals(C24); Fabricated metal(C25); Computer, electronic and optical(C26); Electrical equipment(C27); Machinery and equipment n.e.c.(C28); Motor vehicles, trailers and semi-trailers(C29); Other transport equipment(C30); Furniture; other manufacturing(C31-32)

Source: Prepared from tables A6 & A9, appendix 2.

Turing to the shares of the foreign value-added content of total manufacturing exports ($FVA_{exp_i}^{total}$) for different manufacturing industries (Figure 4.2.1.1), we find that 10 industries out of 18 industries have shown positive and significant growth rate per annum in their FVA content

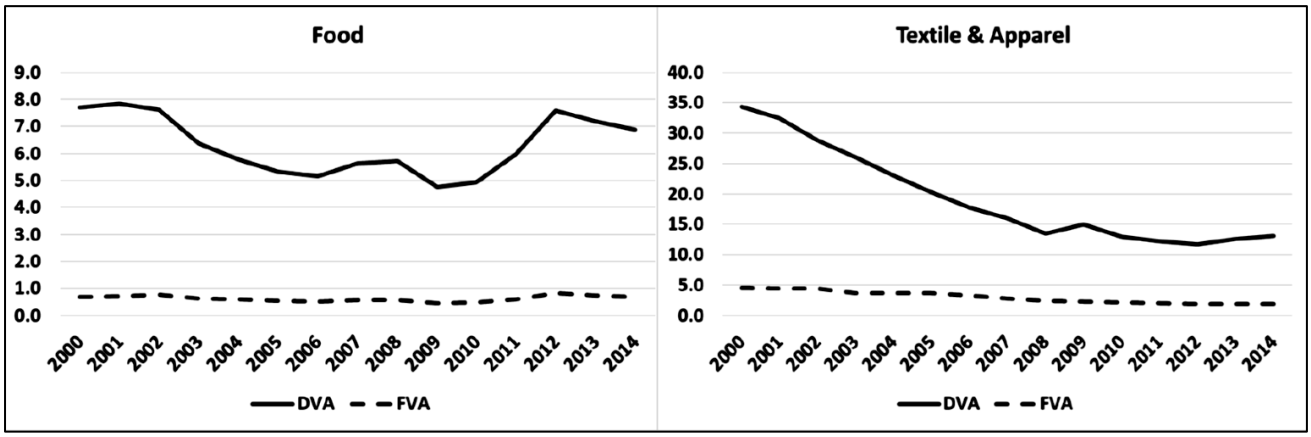
in total manufacturing export during 2000 to 2014 (see table A7 in appendix 2). These industries are coke and refined petroleum (28.22 percent), other transport equipment (1.55 percent), machinery and equipment n.e.c (3.34 percent), other non-metallic mineral (3.05 percent), pharmaceutical (2.15 percent), electrical equipment (1.72 percent) and rubber and plastic (0.98 percent). These industries contribute more to the increase in aggregate FVA in total export. Their contributions of FVA in export also signify their higher backward participation in GVC.

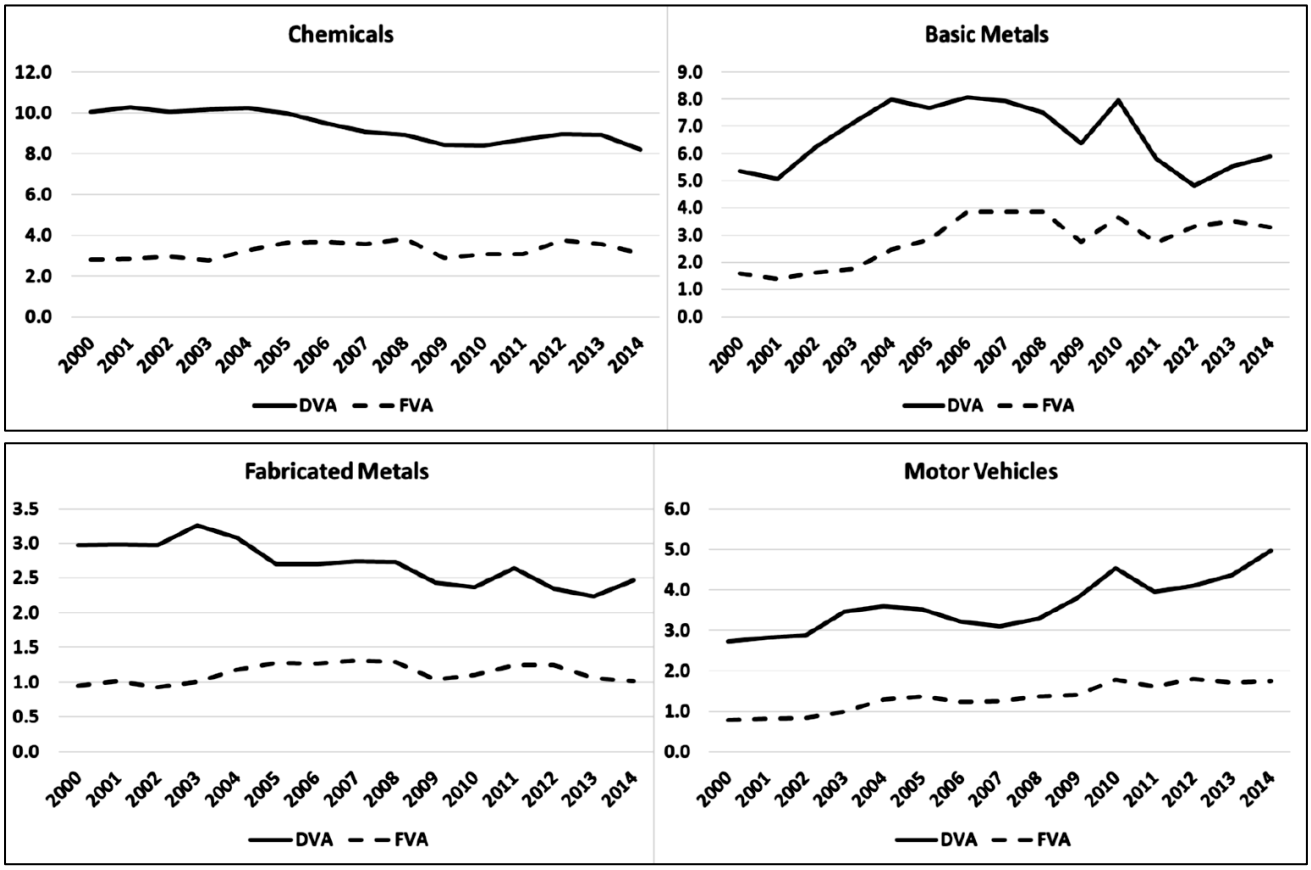
FVA content of export has increased for the industries like coke and refined petroleum products, other transport equipment, machinery and equipment, electrical equipment etc.

In value terms, the foreign value-added content in industry's export is $67.1 million in 2000 for coke and refined petroleum which has increased to $26420.7 million in 2014 (see table A8 in appendix 2). For this industry, this $67.1 million is 0.19 percent share of total manufacturing export in 2000 which raised to 11.36percent in 2014. It indicates 11.17 percentage point increase. This sector is reported the highest growth rate (28.22 percent) in FVA content among all manufacturing industries in India during 2000-2014. Now if we go to further disaggregation to calculate the direct and indirect FVA contents (following expressions (10) and (11): page 18), we find that the direct FVA content increased by 10.62 percentage points in 2014 over 2000 (see table A10 in appendix 2). Whereas, the indirect FVA content increased by 0.55 percentage points in 2014 over 2000 (see table A11 in appendix 2). Hence, the growth of direct import content in export is higher (29.6percent) than the growth of indirect import content of total export (17.6 percent) during 2000 to 2014 (see tables A10 & A11).

Now, coming to the analysis of the six major identified industries of Indian manufacturing we find that (see Figure 4.2.1.1) the shares of DVA content in export are substantially higher than the shares of FVA content. Comparing the picture of 2014 over 2000, we find that the DVA content of export was highest for textile and apparel industry in 2000 (34.37 percent). This has reduced to 13.10 percent in 2014. This accounts for 8.03 percent significant fall in the share. Figure 4.2.1.2 gives us the graphs of these six key industries for their DVA and FVA contents' movement over the 15 years period.

Figure 4.2.1.2: Shares of DVA and FVA contents of total exports of six key manufacturing industries of India.





Source: Prepared from tables A5 & A7, appendix 2.

The graphs reveal that for textile, the FVA content of total export has reduced to 1.9 percent in 2014 from 4.53 percent in 2000. It accounts for -7.28 percent growth rate during the period. Both direct and indirect FVA contents of export have reduced significantly over the period in this industry. The DVA contents of exports show fluctuations for food and basic metal during the period. We have fitted a non-linear trend equation[9] to capture the fluctuations. The growth rate of DVA contents of exports of basic metal is 12.7percent per annum which is decreasing at a rate of 0.8percent per annum. The FVA share in export has increased over the period significantly (6.06 percent per annum). The food sector reveals annual 14.2 percent negative growth rate which is increasing at a rate of 0.8 percent per annum significantly. For the fabricated metal, the DVA share in export has reduced from 2.97 percent in 2014 to 2.46 percent in 2000. The graph shows a downward trend which is -2.17 percent growth per annum. The FVA content and the direct FVA content show insignificant growth . But the Indirect FVA content in export has increased significantly at a rate of 2.6 percent per annum which indicates that the usage of indirectly imported inputs has increased in this industry than the directly imported inputs. Chemical and chemical product industry's DVA content of total export was 10.2 percent in 2000 and we find a mild falling trend over the period (-1.6 percent

- Share of DVA content of export has decreased for chemicals and fabricated metals.
- Share of FVA content of export has increased for basic metals.

[9] $\ln DVA\_exp_j = a + b.t + c.t^2$ where, t=time and j=industry.

per annum). FVA content of total export has increased marginally from 2.8 percent in 2000 to 3.1percent in 2014. Finally, for the motor vehicles, the trend reveals that DVA content of export has increased with interim fluctuations. The rate of growth is 3.6percent per annum during 2000-2014. In value terms, for chemicals, the FVA content of its export has increased to $7243.6 million in 2014 from $993.8 million in 2000 which is a 0.3 percentage point increase. The FVA content has also increased significantly from 0.78 percent in 2000 to 1.73 percent in 2014. Both direct and indirect FVA contents of export have increased for this sector. The rate of growth is 6.02 percent per annum significant at 1 percent level (see, tables A6, A9, A10 and A11). The industries, viz. food products and basic metals have shown
insignificant growth per annum in their shares of DVA of export.

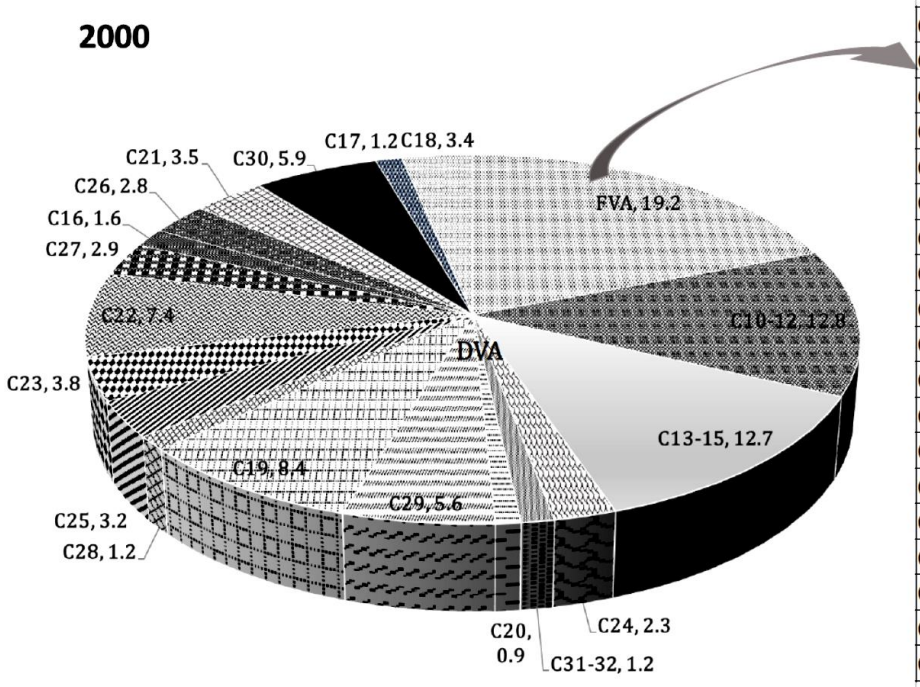
Shares of both DVA and FVA contents of export have decreased for textile & apparel and increased for motor vehicles.

Further, *we have seen that the faster-growing sectors (in terms of trade intensification) are having more forward and backward participation in global production and consumption networks. The identified sectors are* ***coke and refined petroleum, other transport equipment, basic metals, pharmaceutical and chemicals****.*

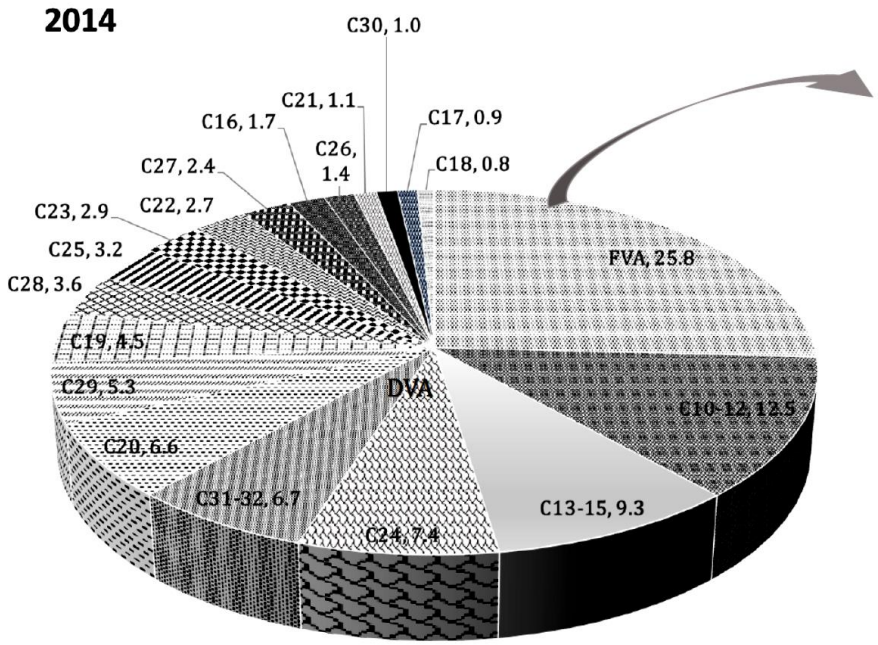
4.2.2. Distribution of the Shares of Domestic and Foreign Value-Added Contents in Total Manufacturing Output

The shares of domestic and foreign value-added contents of total production generally reveal the internationalization scenario of a sector. That is, it indicates how much-imported inputs and domestic inputs are used by an industry to produce its output. In this section, we have analyzed the calculated $DVA_{output_i}^{total}$using expression (10) and $FVA_{output_i}^{total}$as per the expression (11). $Direct\_FVA_{output_i}$ and $Indirect_FVA_{output_i}$are calculated using expressions (10)-(13) (see appendix 1). Figure 4.2.2.1 is a graphical representation of table A11 where we have considered the years 2000 and 2014 for $DVA_{output_i}^{total}$ for all 18 manufacturing industries. Our analysis reveals that fabricated metal (C25) and machinery and equipment n.e.c.(C28) have shown positive and significant growth rates in domestic value-added contents to total output. Rest all 16 industries either have shown negative or stagnant (insignificant) growth rates in case of their domestic value addition to total manufacturing production (see table A11 in appendix 2). These signify that most of the industries are using foreign inputs (both direct and indirect) over domestic inputs in their production.

Figure 4.2.2.1: Distribution of the Share of Domestic and Foreign Value-Added Content in Gross Manufacturing Output in 2000 and 2014 (in Percent)



Codes	FVA
C19	3.58
C20	2.35
C24	2.18
C29	1.71
C13-15	1.68
C10-12	1.14
C28	1.09
C25	0.92
C27	0.76
C22	0.68
C31-32	0.68
C23	0.64
C26	0.52
C30	0.36
C21	0.29
C17	0.24
C18	0.20
C16	0.19



Codes	FVA
C19	6.10
C24	4.14
C20	2.51
C29	1.86
C31-32	1.78
C13-15	1.35
C25	1.33
C10-12	1.23
C28	1.19
C23	0.88
C22	0.85
C27	0.78
C26	0.47
C30	0.47
C21	0.30
C17	0.24
C18	0.20
C16	0.16

Food, beverages and tobacco(C10-12); Textiles, wearing apparel and leather (C13-15); Wood and cork(C16); Paper (C17); Printing and reproduction of recorded media(C18); Coke and refined petroleum(C19); Chemicals (C20); Pharmaceutical (C21); Rubber and plastic (C22); Other non-metallic mineral(C23); Basic metals(C24); Fabricated metal(C25); Computer, electronic and optical(C26); Electrical equipment(C27); Machinery and equipment n.e.c.(C28); Motor vehicles, trailers and semi-trailers(C29); Other transport equipment(C30); Furniture; other manufacturing(C31-32)

Source: Prepared from tables A11 & A13, appendix 2.

Next, the shares of the foreign value-added content of gross output ($FVA_{output_i}^{total}$) across 18 manufacturing industries are given in table A13 in appendix 2. The tables in figure 4.2.2.1 give FVAs of the 18 industries for the years 2000 and 2014. Table A12 in appendix 2, shows the foreign value-added contents in each industry's output in value terms ($ million) for the period

2000-2014. These values are then used to calculate the shares of foreign value-added contents to total manufacturing output of each industry which is given in table A13. Tables A14 and A15 are the measures of direct and indirect value-added content shares to total manufacturing output i.e., direct and indirect FVAs for all 18 industries.

Share of DVA content of output has decreased for textile & apparel, motor vehicles, chemical & chemical products, food.

Analysis shows that coke and refined petroleum, rubber and plastic, other non-metallic mineral, machinery and equipment n.e.c. and motor vehicles, trailers and semi-trailers industries have shown significant growth per annum in their share of foreign value-added content to total manufacturing output, which further evidence their internationalisation over time.

The second highest growth rate is seen in coke and refined petroleum product industry. The change in import content in its production in 2014 over 2000 is $77465.1 million ($10990.3 million in 2000 and $88455.4 million in 2014). In terms of percentage share to total manufacturing output, this change is reported as 2.52 percentage point increase in 2014 over 2000. In this industry, the indirect share of FVA content to total output has decreased at a rate of 4.62 percent per annum whereas the direct FVA content has increased by 7.38 percent per annum during the period. This attributed to the total growth of FVA content at a rate of 6percent per annum.

Share of DVA content of output has increased for metal and fabricated metal products.

For the machinery and equipment n.e.c. and rubber and plastic industries, the indirect FVA contents to total output increased at a higher rate than the direct ones. That is, indirect input usage is higher than directly imported inputs in production. Manufacture of other non-metallic mineral products has accounted for 4.36percent annual significant growth rate of FVA content during the period. Again, for this industry the directly imported inputs use is higher than indirectly imported inputs use.

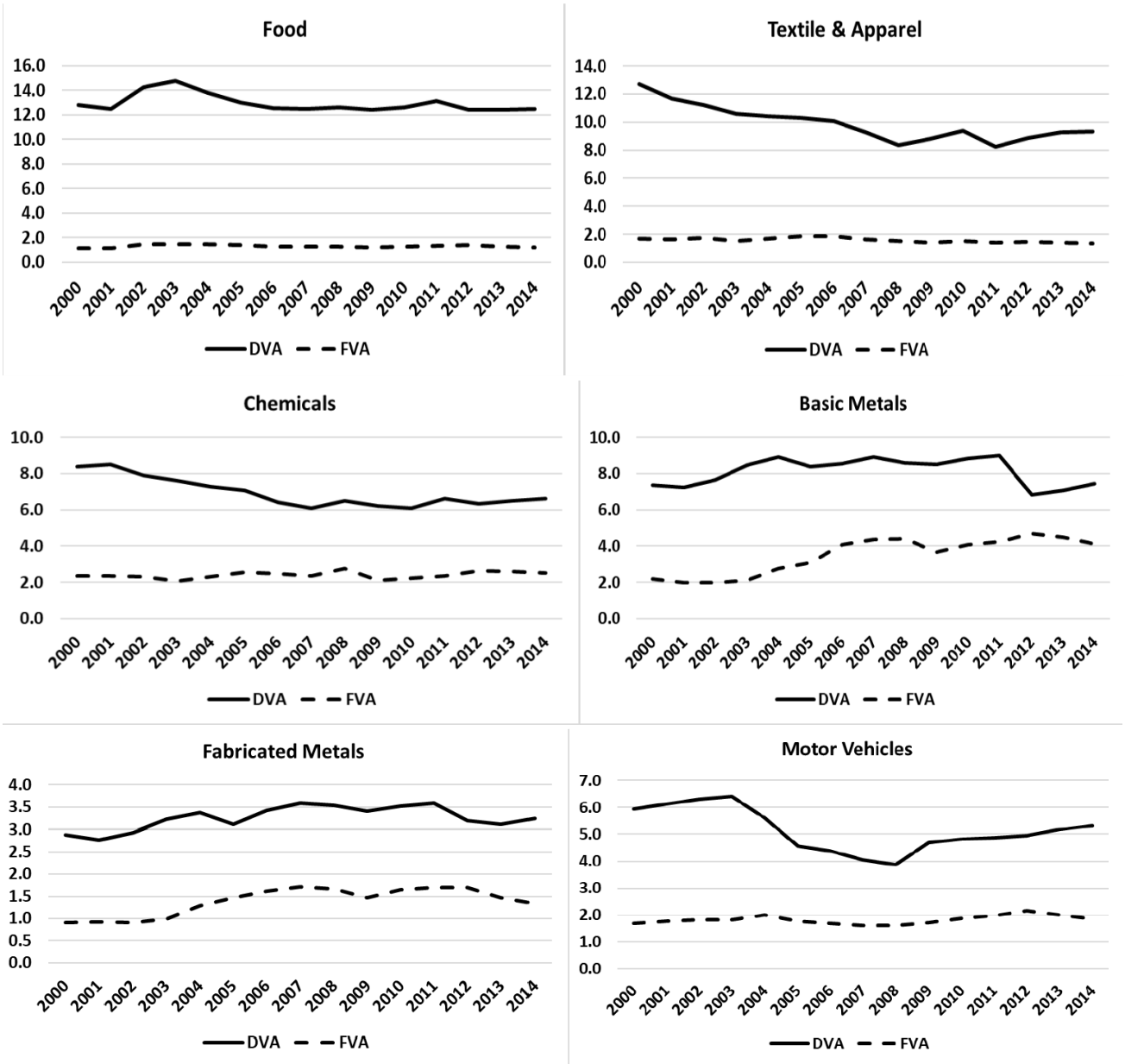
Analysis of six major identified industries

Coming back to those six key manufacturing industries, figure 4.2.2.2 shows wide fluctuations in DVA contents of output over time for all industries, except food. Food sector has decreased marginally at a rate of 0.62percent per annum. For the other five sectors, we have fitted non-linear tread curve as before[10] to capture the rate of change of growth. For both textile and Chemicals, DVA contents in output are decreasing by 7.4percent per annum where this negative growth rate is increasing at a rate of 0.3percent. Motor Vehicles' DVA content in output has decreased by 11percent per annum where this negative growth rate is increasing at a rate of 0.5 percent. For Metal and fabricated metal, the growth rate of DVA contents in output are 7.1 and 6.3 percent respectively but these growth rates are falling by 0.3percent per annum.

[10] $\ln DVA\_output_j = a + b.t + c.t^2$ where, t-time and j=industry.

In case of FVA contents in output, some non-linear trend is visualised for basic metal and fabricated metal sectors. Hence, we have fitted non-linear trend curves for both. In basic metal industry, the FVA content in output has increased at a rate of 16 percent per annum with a falling trend of 0.5percent annually. In 2000, the import content in its production was $6701.9 million which is increased to $59942.3 million in 2014. In terms of share to total manufacturing output, it indicates a 1.96 percentage point increase in 2014 over 2000. In this industry, the direct FVA content of output has increased faster than its indirect content. The annual growth rate of direct FVA content-share is 7.52percent and the indirect FVA content-share is 4.31percent. In value terms, for basic metals, the domestic value-addition to sectoral output is $22590.0 million in 2000 which is 7.35 percent of total manufacturing output. This has increased to $ 107595.2 million in 2014 which is 7.43 percent of total manufacturing output. But the growth rate per annum is insignificant.

Figure 4.2.2.2: Shares of DVA and FVA contents of output of six key manufacturing industries of India.



Source: prepared from tables A13 and A15 in appendix 2.

For fabricated metal, the growth rate per annum of FVA content of output is 17percent which is falling at a rate of 0.8percent per annum. But the foreign input use has increased substantially in this industry over the years. The upward trending graph in figure 4.2.2.2 reveals a 4.04 percent growth rate per annum for FVA content of output. Further, the growth rate of indirect FVA is 5.72 percent and direct *FVA* is 2.75percent.

Share of FVA content of output has increased for chemical and chemical products, basic metal, fabricated metal, motor vehicles.

For chemicals, the absolute change in domestic value addition in its production in 2014 over 2000 is $70005 million indicates a 1.79 percentage point decrease in total DVA in 2014 over 2000.

Share of FVA content of output has decreased for textile & apparel.

For motor vehicles, trailers and semi-trailers and textiles and apparel, the changes in domestic value addition in its production in 2014 over 2000 are $58908.9 million and $95728.8 million respectively. These account for 0.61 and 3.42 percentage points decrease in 2014 over 2000 (see table A12 & A13 in appendix 2).

The food industry (C10-12) reveals insignificant growth rate of its FVA content of output which signifies indegeneous inputs use. For this industry, the direct FVA in 2000 and 2014 are 0.53 percent and 0.49percent respectively which indicate significant negative growth rate of 1.98percent per annum. In case of indirect FVA, the shares are 0.61 and 0.73 in 2000 and 2014 which account for 1.38 percent growth.

Finally, the textiles & apparel industry shows a negative and significant growth rate of 1.61percent per annum for its total FVA over the period. It is because, its direct FVA has reduced at a rate of 3.8percent per annum with an insignificant growth in indirect FVA.

4.3 Regression Analysis

The analysis of the import content in export across industries and their trends over time prompted us to undertake an exercise to explore the relationship between export shares and import shares and output shares. That is, we are interested to find the extent to which export shares are affected by imported input shares and output shares across industries. We have used panel data for the variables mentioned above and estimated a non – linear equation where the dependent variable is export-share and the independent variables are imported input share and the output share. We run the following regression model in a balanced panel framework for 18 industries (i) over 15 years (t).

$$export\_share_{it} = \beta_0 + \beta_1 imported\_inputs\_share_{it} + \beta_2 imported\_inputs\_share_{it}^2 + \beta_3 output\_share_{it} + \beta_4 output\_share_{it}^2 + \beta_i + \epsilon_{it}$$

We have employed fixed effect model, which controls unobserved heterogeneity. We run the model with and without time effects to capture the differences. We have used cluster-robust standard errors to allow for heteroscedasticity and serial correlation. The result is given in table 4.3.1 below.

Table 4.3.1: Regression Results

VARIABLES	FE1	FE2
$imported\_inputs\_share_{it}$	1.261*	1.291*
	(0.624)	(0.636)
$imported\_inputs\_share_{it}^2$	-3.053**	-3.183**
	(1.376)	(1.412)
$output\_share_{it}$	-1.578	-1.799
	(1.765)	(1.754)
$output\_share_{it}^2$	16.96	18.19
	(12.00)	(11.90)
_Iind_code_2	0.240***	0.242***
	(0.0407)	(0.0407)
_Iind_code_3	0.130	0.128
	(0.0773)	(0.0789)
_Iind_code_4	0.0980	0.0948
	(0.0681)	(0.0693)
_Iind_code_5	0.117	0.114
	(0.0768)	(0.0783)
_Iind_code_6	0.168***	0.171***
	(0.0480)	(0.0484)
_Iind_code_7	0.102	0.107
	(0.0820)	(0.0785)
_Iind_code_8	0.123	0.121
	(0.0764)	(0.0779)
_Iind_code_9	0.147*	0.147*
	(0.0752)	(0.0763)
_Iind_code_10	0.146*	0.148*
	(0.0800)	(0.0813)
_Iind_code_11	0.0515	0.0579
	(0.0802)	(0.0763)
_Iind_code_12	0.148*	0.150*
	(0.0744)	(0.0750)
_Iind_code_13	0.106	0.103
	(0.0644)	(0.0652)
_Iind_code_14	0.127*	0.127*
	(0.0696)	(0.0703)

_Iind_code_15	0.106	0.106
	(0.0655)	(0.0649)
_Iind_code_16	0.141*	0.144*
	(0.0718)	(0.0720)
_Iind_code_17	0.122*	0.119*
	(0.0668)	(0.0679)
_Iind_code_18	0.155**	0.157**
	(0.0671)	(0.0668)
Constant	-0.104	-0.0973
	(0.0796)	(0.0805)
Time effect	No	Yes
Observations	270	270
R-squared	0.897	0.899

Cluster-robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

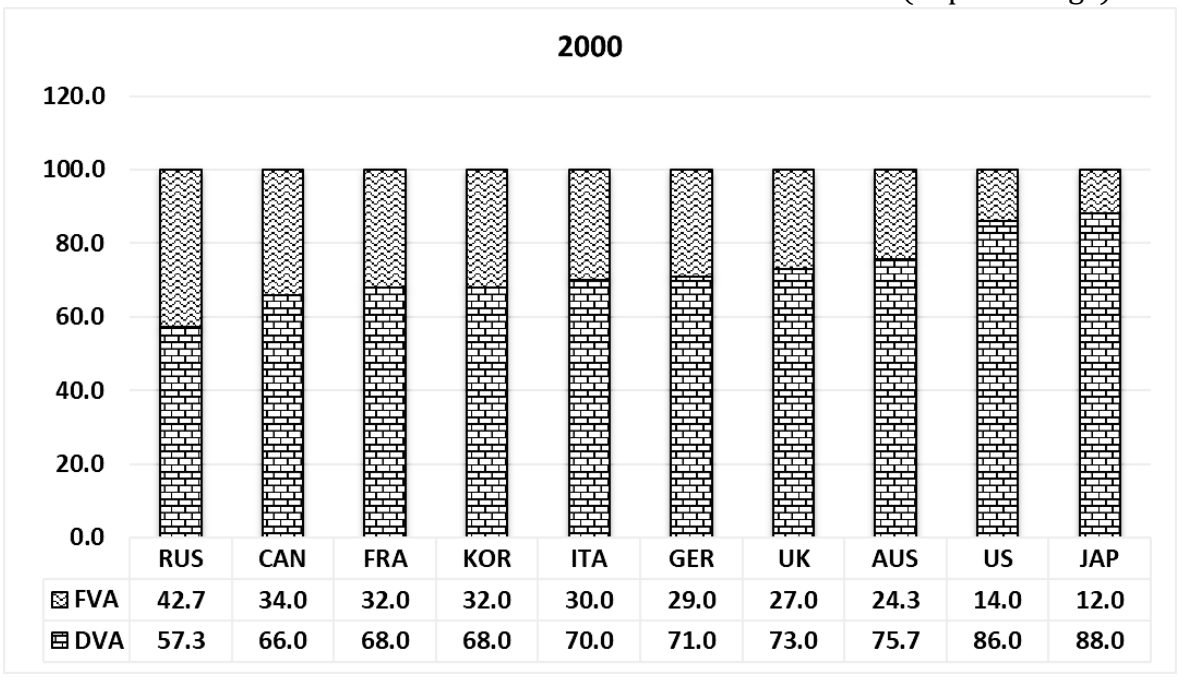
The estimation results reveal that the export shares across industries are positively and significantly related to imported inputs' share in manufacturing. However, the negative sign of the square import share term indicates that the increase in export share due to increased imported inputs shares eventually declines. This is mainly because exports cannot be increased indefinitely without expansion of the domestic output levels. In fact, the insignificant output share term does indicate that the output term if at all has negatively affected the export shares. This could be due to inconsequential effects of output shares on export as both β_3 and β_4 are statistically insignificant. Why this inconsequential effect of output shares on export shares? Perhaps, a vibrant domestic manufacturing supported by global integration is important to achieve the goals of increasing exports. It is to be emphasized that *imported inputs are compliments but not substitute for domestic output*. The industry dummies reveal that manufacture of textiles, wearing apparel and leather products and coke and refined petroleum products are most significant export competitive sectors (significant at 1percent level) followed by furniture; other manufacturing (significant at 5percent level). industries like, rubber and plastic products, other non-metallic mineral products, fabricated metal products, except machinery and equipment, electrical equipment, motor vehicles, trailers and semi-trailers, and other transport equipment are weakly significant (at 10percent level) in terms export competitiveness. This result is quite complementing our industry level findings on DVA and FVA contents of export.

4.4 Comparative Analysis of Aggregate Level Results of Developed and Developing Countries

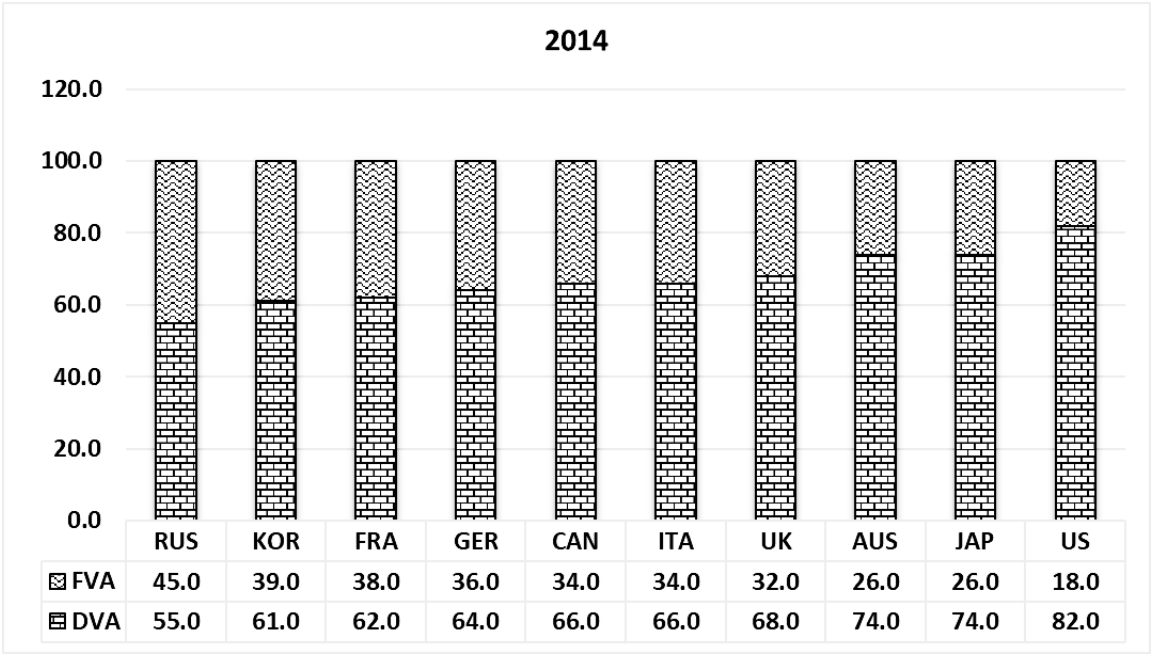
In this section, we have analysed the aggregate level results of the selected developed and developing countries vis-à-vis India considering four-year points viz. 2000, 2005, 2010 and 2014. Figures 4.4.1 and 4.4.2 show the DVA and FVA contents in each unit of final demand of manufacturing in developed and developing countries respectively.

Among the developed nation (figure 4.4.1), the domestic value-added component in each unit of final demand of manufacturing is the highest for USA, which was 86percent in 2000 and marginally reduced to 82percent in 2014. The foreign value-added content in each unit of final demand of manufacturing lies within 14percent to 18percent during the period. In case of Japan, we find that the DVA component in each unit of final demand of manufacturing was 88percent in 2000 which has reduced to 74percent in 2014.

Figure 4.4.1: DVA and FVA Contents in Each Unit of Final Demand of Manufacturing: Developed Countries (in percentage)



	RUS	CAN	FRA	KOR	ITA	GER	UK	AUS	US	JAP
FVA	42.7	34.0	32.0	32.0	30.0	29.0	27.0	24.3	14.0	12.0
DVA	57.3	66.0	68.0	68.0	70.0	71.0	73.0	75.7	86.0	88.0

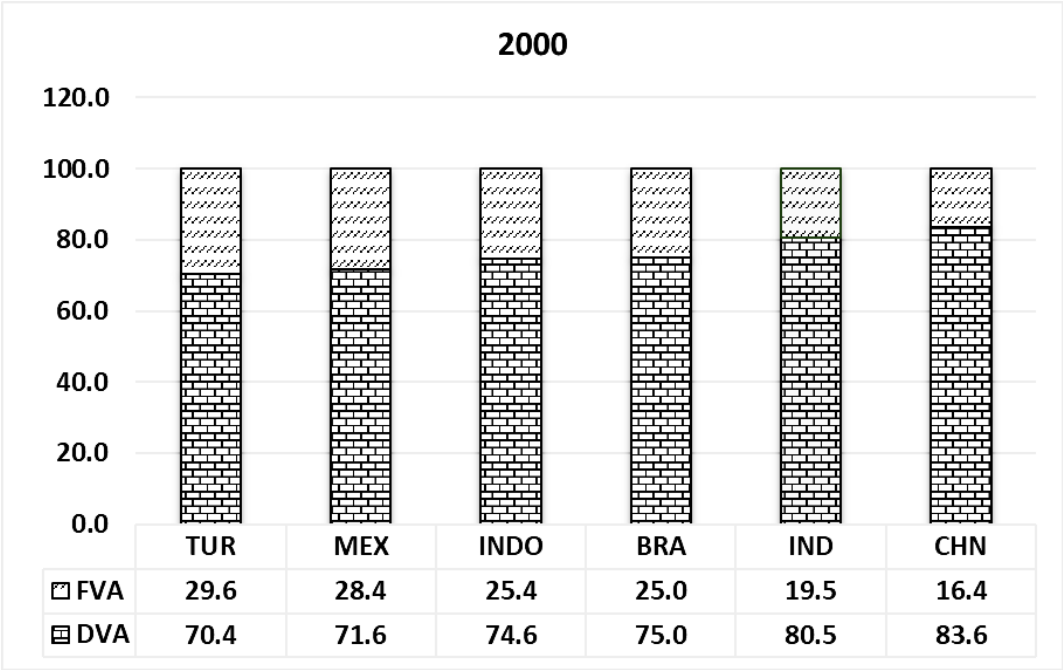


	RUS	KOR	FRA	GER	CAN	ITA	UK	AUS	JAP	US
FVA	45.0	39.0	38.0	36.0	34.0	34.0	32.0	26.0	26.0	18.0
DVA	55.0	61.0	62.0	64.0	66.0	66.0	68.0	74.0	74.0	82.0

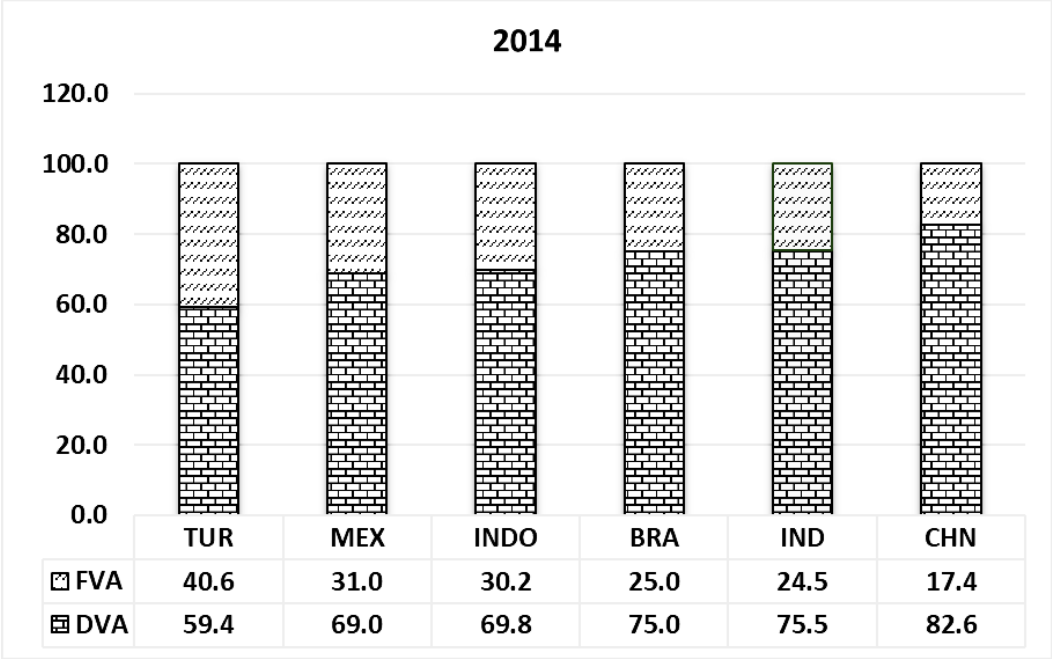
Source: Prepared from Appendix 3 tables.

The FVA content in each unit of final demand of manufacturing is highest in Russia, 43percent in 2000 which has marginally increased to 45percent in 2014. For the developing economies (figure 4.4.2), we find that Turkey's FVA content in each unit of final demand of manufacturing has increased substantially to 30percent in 2014 from 20percent in 2000.

Table 4.4.2: DVA and FVA Contents in Each Unit of Final Demand of Manufacturing: Developing Countries



	TUR	MEX	INDO	BRA	IND	CHN
FVA	29.6	28.4	25.4	25.0	19.5	16.4
DVA	70.4	71.6	74.6	75.0	80.5	83.6



	TUR	MEX	INDO	BRA	IND	CHN
FVA	40.6	31.0	30.2	25.0	24.5	17.4
DVA	59.4	69.0	69.8	75.0	75.5	82.6

Source: Prepared from Appendix 3 tables.

Except *Indonesia*, for all other developing countries, including India, the DVA contents in each unit of final demand of manufacturing have decreased in 2014 over 2000. For Indonesia, it

remains more or less constant in 2014 over 2000. Next, we have used these marginal units to calculate the DVA and FVA contents in manufacturing exports of these countries.

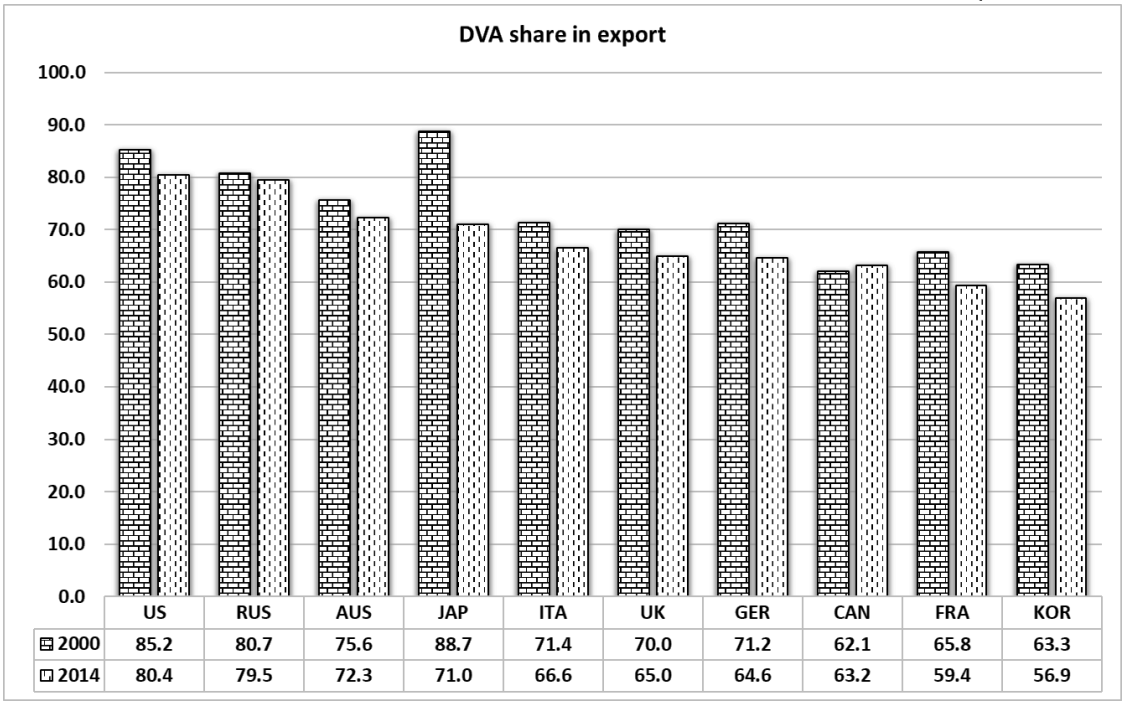
These unit-shares are used to calculate the shares of DVA and FVA contents in exports and outputs of manufacturing sectors of the countries. The analysis is given in section 4.4.1 and 4.4.2 below.

4.4.1 Shares of DVA and FVA Contents in Manufacturing Export

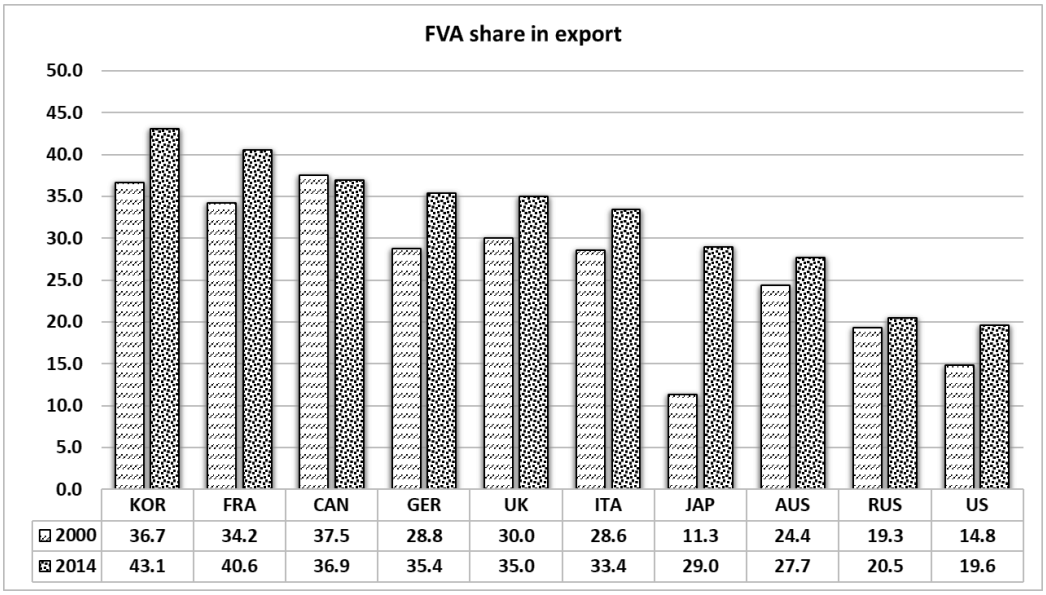
Country level estimation reveals that for EU nations, viz. France, Germany and Italy, the domestic content in their manufacturing export lies between 60-70percent on an average during the period under consideration. Italy and Germany's pattern are more or less similar in terms of their foreign and domestic contents in manufacturing export. For France, the FVA contents are higher in their manufacturing export (34.2percent in 2000 which has increased to 40.6percent in 2014) as compare to DVA contents (65.8percent in 2000 which has fallen to 59.4percent in 2014). For United Kingdom, the foreign content in manufacturing export has increased with a fall in domestic content. This reveals a more global integrated production and consumption network. Figure 4.4.1.1 has depicted these estimates.

> France, Germany and Italy: domestic contents in their manufacturing exports lie between 60-70percent.

Figure 4.4.1.1: Shares of DVA and FVA Contents in Aggregate Manufacturing Export: Developed Countries (in Percentage)



	US	RUS	AUS	JAP	ITA	UK	GER	CAN	FRA	KOR
2000	85.2	80.7	75.6	88.7	71.4	70.0	71.2	62.1	65.8	63.3
2014	80.4	79.5	72.3	71.0	66.6	65.0	64.6	63.2	59.4	56.9



	KOR	FRA	CAN	GER	UK	ITA	JAP	AUS	RUS	US
2000	36.7	34.2	37.5	28.8	30.0	28.6	11.3	24.4	19.3	14.8
2014	43.1	40.6	36.9	35.4	35.0	33.4	29.0	27.7	20.5	19.6

Source: Prepared from Appendix 3 tables.

Coming to the East Asian developed world, in *Japan,* DVA content in manufacturing export was 88.7percent in 2000 which has fallen to 71percent in 2014. Consequently, the FVA content in manufacturing export has increased from 11.3percent in 2000 to 29percent in 2014. In value terms, it indicates FVA content worth of US$ 48.2 billion in 2000 which has increased to US$ 172 billion in 2014. This indicates Japan's higher backward participation in global value chain (GVC) over time. For *South Korea* too, we find an increase in FVA contents in manufacturing export as high as 43.1percent in 2014 over 36.7percent in 2000. It obviously indicates that Korea's backward linkage in GVC has increased over time. The percentages of DVA content in manufacturing export indicate that the forward linkage in production process and final consumption has fallen (63.3percent in 2000 to 56.9percent in 2014).

Japan and Korea's backward linkages in GVC have increased over time.

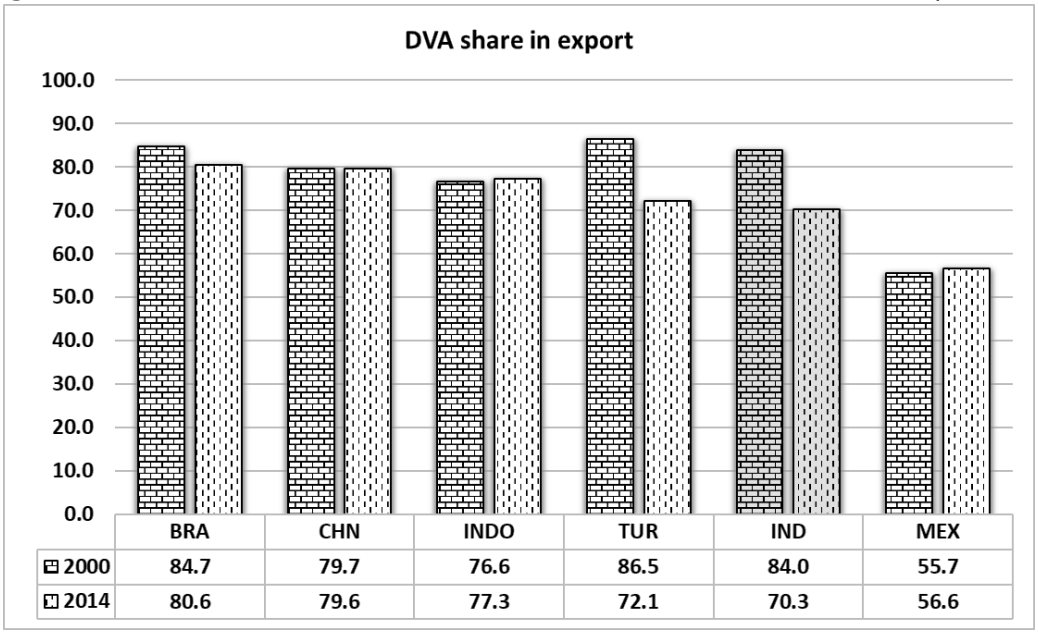
Now, for Canada and USA, we find that the DVA content in manufacturing export is higher in USA as compare to Canada. For Canada, it is lying between 62-63 percent over the decade which is quite stable. For USA, it was 85.2 in 2000 which has marginally reduced to 80.4 percent in 2014. Accordingly, the FVA content in manufacturing export was lying between 14.8 – 19.6 percent during 2000 to 2014. On the contrary, the FVA content in Canada's manufacturing export is much higher, which is approximately 37percent during the period. This reveals USA's more forward participation in global production and consumption network than Canada. Now, to find out forward linkage of GVC of the sector, this DVA content needs to be further disaggregated to estimate the DVA embodied in exports of intermediate manufacturing goods. But this is beyond the scope of the current study.

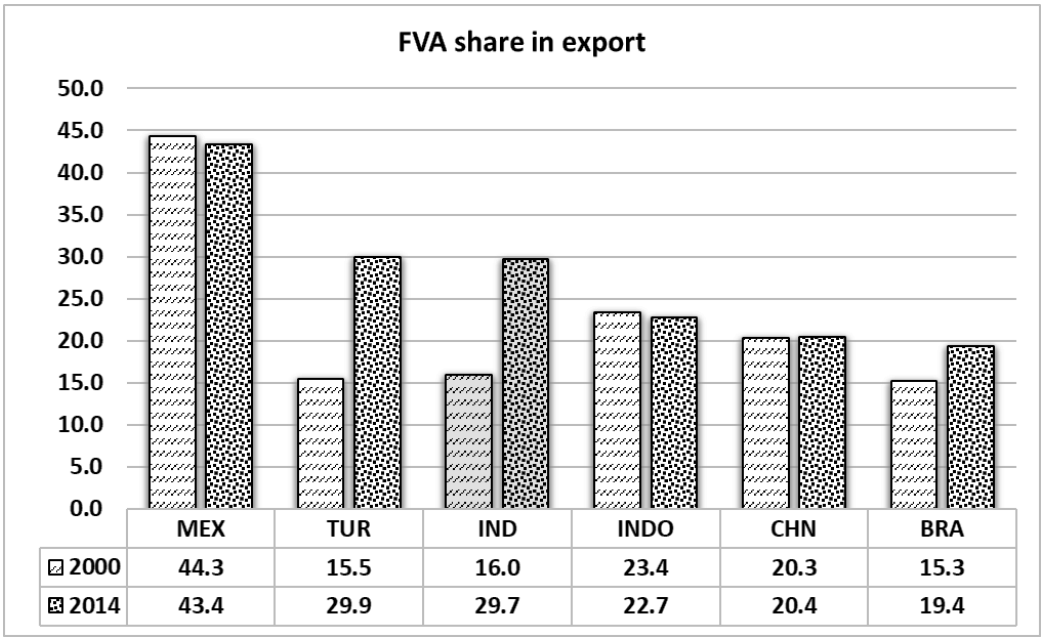
USA's forward participation in global production and consumption network is higher than Canada.

In case of Australia, DVA content has fallen marginally to 72.3percent in 2014 from 75.6percent in 2000 and correspondingly the FVA content has increased by 3.3 percentage point in 2014 over 2000. Finally, in Russia, we find that both DVA and FVA content in manufacturing export are stable during the period under consideration. The DVA content is around 80percent whereas FVA content is around 20percent during 2000-2014.

Next, we are considering the developing economies as shown in figure 4.4.1.2.

Figure 4.4.1.2: Shares of DVA and FVA Contents in Aggregate Manufacturing Export: Developing Countries (in Percentage)





Source: Prepared from Appendix 3 tables.

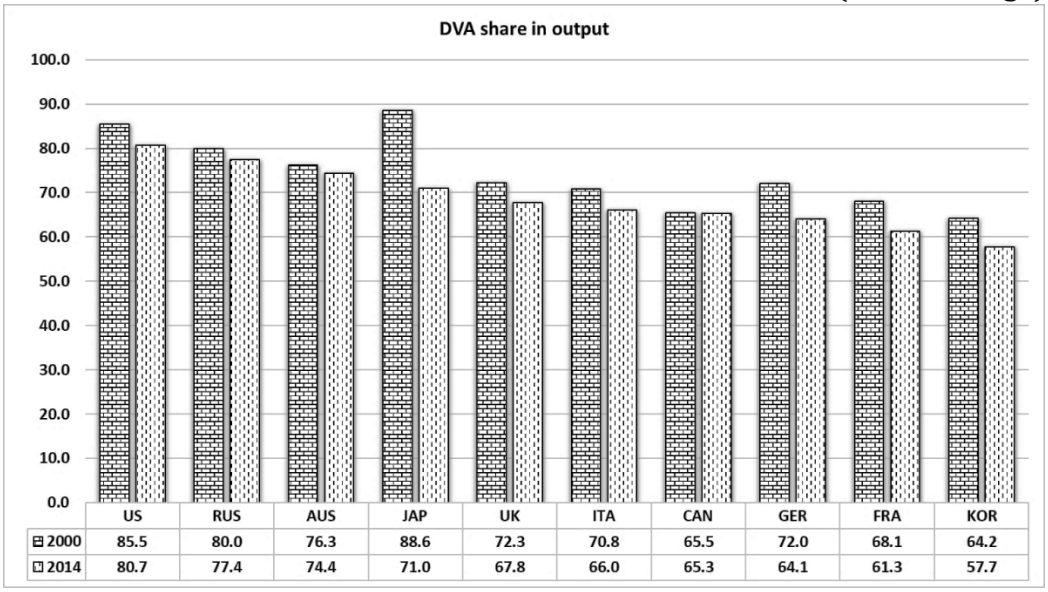
Estimation reveals that in terms of proportionate share of DVA and FVA contents in manufacturing export, Brazil, China, Indonesia and India are following similar pattern. The DVA contents in manufacturing export are lying around 70-75percent during 2000-2014 with an exception for India during 2000(84percent). Accordingly, the FVA contents in manufacturing export are varying between 25-30percent approximately for all these countries during 2000-2014. For Mexico, we find these percentages are quite dissimilar with these countries. The FVA content in manufacturing export is above 42 percent on an average whereas the DVA content is lower (around 54-56 percent) as compare to other developing economies. For Turkey, we see that the DVA content has dropped to 62.1percent in 2014 as compare to 76.5 percent in 2000. The FVA content has increased accordingly to 38 percent in 2014 from 23.5 percent in 2000.

4.4.2 DVA and FVA Contents in Manufacturing Output

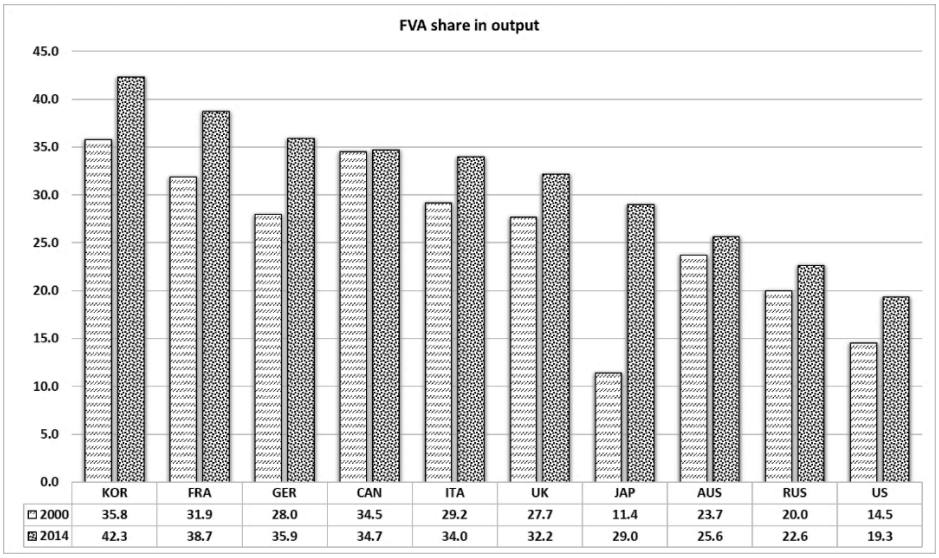
Figures 4.4.2.1 and 4.4.2.2 are the graphical representation of the DVA and FVA contents in manufacturing production for developed and developing countries respectively. For Canada, the DVA content in production is stable to 65percent approximately during 2000-2014 and the hence the FVA content is stable around 35percent. On the contrary, its major trading partner, USA is having higher proportion of DVA content than FVA content in their manufacturing production. The ratio of DVA and FVA contents' proportion is approximately around 83:17 percent during 2000-2014.

FVA contents in aggregate manufacturing output have increased for all countries (except Indonesia) reveal their higher intensification towards foreign inputs.

Figure 4.4.2.1: DVA and FVA Contents in Aggregate Manufacturing Output: Developed Countries (in Percentage)



	US	RUS	AUS	JAP	UK	ITA	CAN	GER	FRA	KOR
2000	85.5	80.0	76.3	88.6	72.3	70.8	65.5	72.0	68.1	64.2
2014	80.7	77.4	74.4	71.0	67.8	66.0	65.3	64.1	61.3	57.7



	KOR	FRA	GER	CAN	ITA	UK	JAP	AUS	RUS	US
2000	35.8	31.9	28.0	34.5	29.2	27.7	11.4	23.7	20.0	14.5
2014	42.3	38.7	35.9	34.7	34.0	32.2	29.0	25.6	22.6	19.3

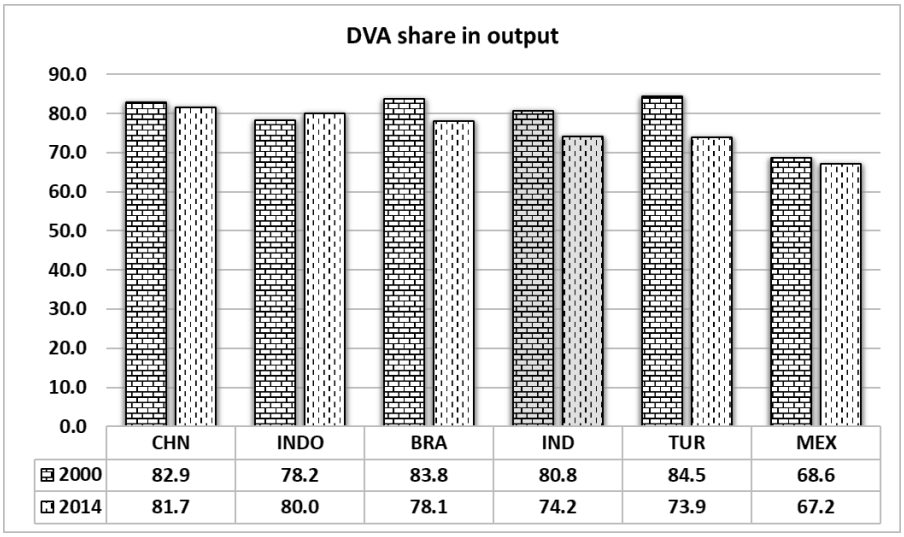
Source: Prepared from Appendix 3 tables.

EU countries, Germany and Italy show similar pattern in their foreign and domestic value-added contents in manufacturing outputs. France, Germany, Italy and UK are major trading partners of each other. Hence, even if similarities are found in their aggregate value-added trade, diversification is prevalent in their different manufacturing industries. This analysis is being carried out in our next section. To mention, all four countries DVA contents in manufacturing output is approximately lying within the bracket of 62-70percent and the FVA contents are lying between 38-30 percent.

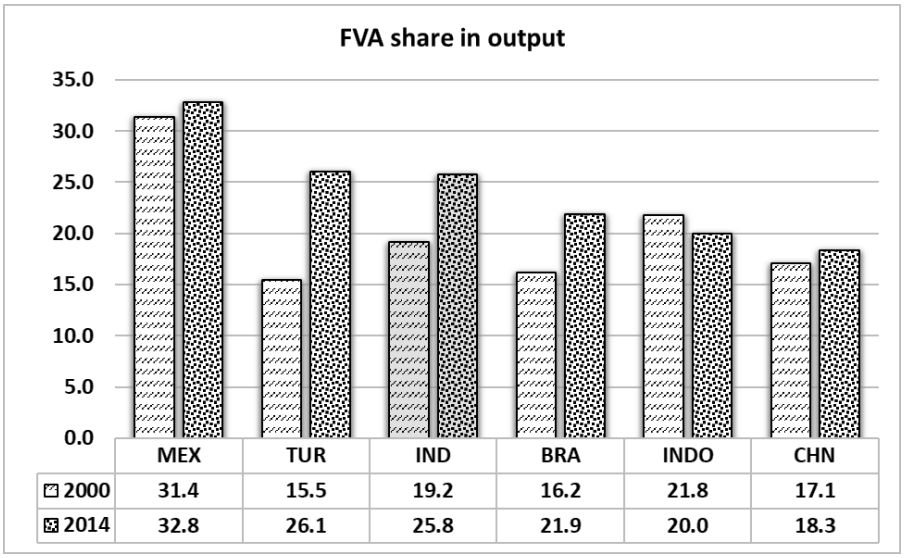
Australia's DVA content in manufacturing output was 76.3percent in 2000 which has decreased marginally to 74.4 percent in 2014. The FVA content is around 23.7 -25.6percent during 2000-2014. The East-Asian giants, Japan and Korea reveal an increasing pattern in their FVA contents in manufacturing output. For Korea, it has increased to 42.3percent in 2014 from 35.8percent in 2000. For Japan, the figures are 29percent in 2014 and 11.45 in 2000. Finally, in Russia, 77-80percent is domestic value-added content in manufacturing output and rest 20-23percent is foreign value-added content. These proportions are more or less stable during the period under consideration.

Coming to the percentage share of DVA and FVA contents in aggregate manufacturing output of developing countries (figure 4.4.2.2), we find a similar pattern as in their shares in manufacturing export.

Figure 4.4.2.2: DVA and FVA Contents in Aggregate Manufacturing Output: Developing Countries (in Percentage)



	CHN	INDO	BRA	IND	TUR	MEX
2000	82.9	78.2	83.8	80.8	84.5	68.6
2014	81.7	80.0	78.1	74.2	73.9	67.2



	MEX	TUR	IND	BRA	INDO	CHN
2000	31.4	15.5	19.2	16.2	21.8	17.1
2014	32.8	26.1	25.8	21.9	20.0	18.3

Source: Prepared from Appendix 3 tables.

Except Indonesia, all other countries, including India, the FVA content in total manufacturing output have increased in 2014 over 2000 which indicates their larger use of foreign inputs usage. The DVA content shares of these countries have decreased marginally which indicates lower substitutability of domestic inputs with foreign inputs.

In the next section we have extended our analysis at industry level.

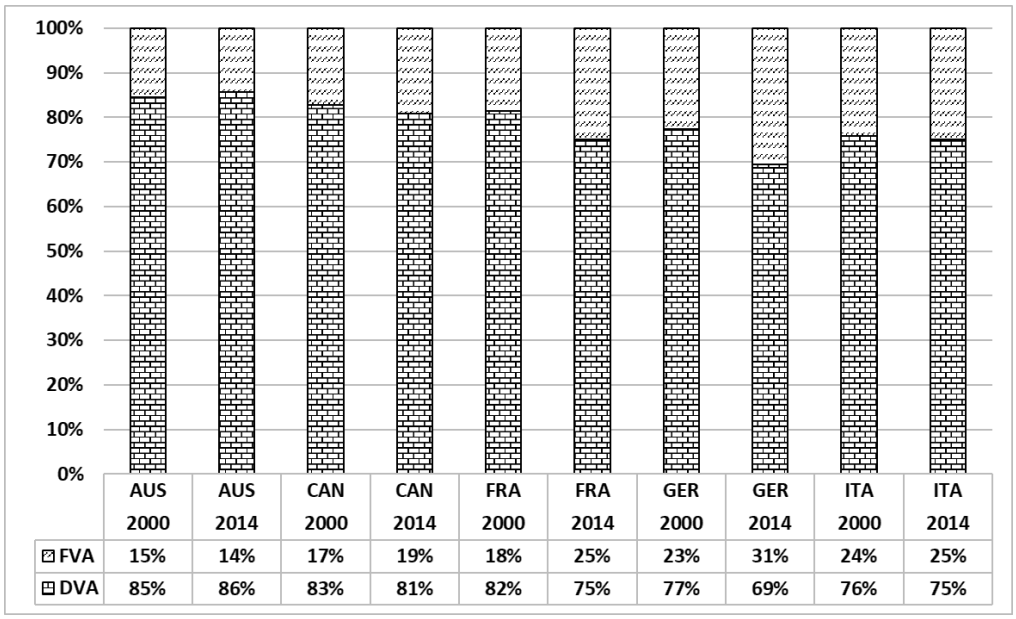
4.5 Industry Level Analysis – Cross Country Comparison of Selected Industries.

In section 4.2, we have identified six major employment generating manufacturing industries of India. The industries are: ***food, textiles, wearing apparel and leather, chemicals, basic metals, fabricated metal and motor vehicles.*** In this section, we have performed a country-level comparative analysis of these selected industries vis-à-vis India.

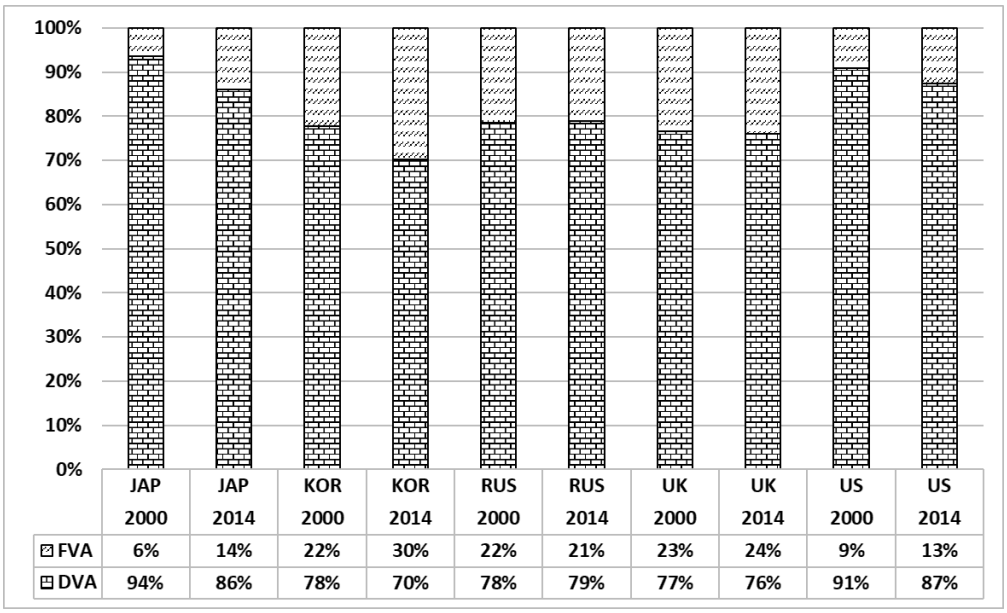
4.5.1 Food Industry

Figures 4.5.1.1a and 4.5.1.1b show the DVA and FVA contents in each unit of final demand of food industry in developed and developing countries respectively. Calculations indicate that except China, all developed and developing countries' FVA contents in each unit of final demand of food are higher than India. This indicates that all them use less indigenised production process and inputs in their food industries as compare to India and China.

4.5.1.1a. DVA and FVA contents in each unit of final demand of Food: Developed Countries.

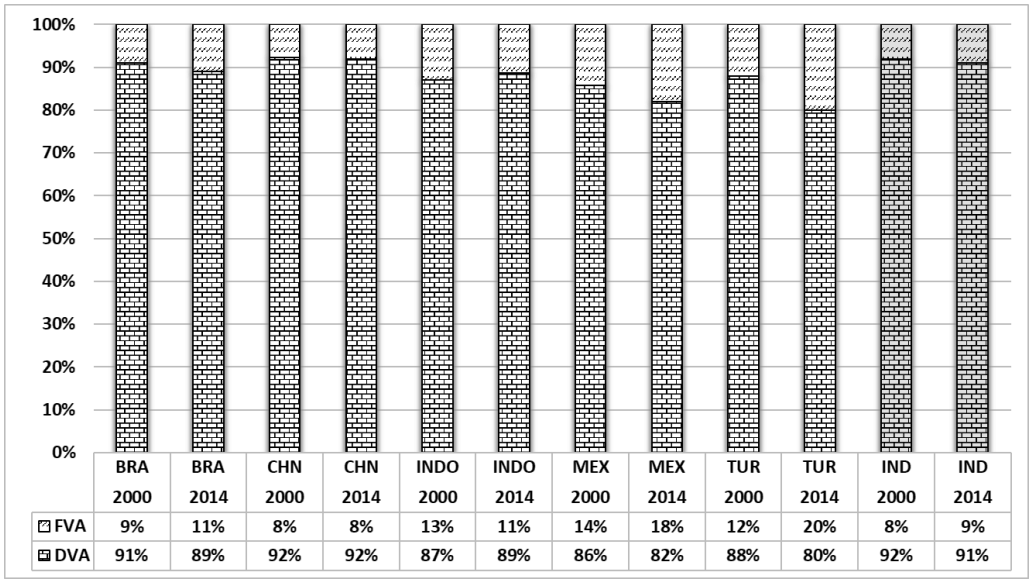


	AUS 2000	AUS 2014	CAN 2000	CAN 2014	FRA 2000	FRA 2014	GER 2000	GER 2014	ITA 2000	ITA 2014
FVA	15%	14%	17%	19%	18%	25%	23%	31%	24%	25%
DVA	85%	86%	83%	81%	82%	75%	77%	69%	76%	75%



	JAP 2000	JAP 2014	KOR 2000	KOR 2014	RUS 2000	RUS 2014	UK 2000	UK 2014	US 2000	US 2014
FVA	6%	14%	22%	30%	22%	21%	23%	24%	9%	13%
DVA	94%	86%	78%	70%	78%	79%	77%	76%	91%	87%

4.5.1.1b. DVA and FVA contents in each unit of final demand of Food: Developing Countries

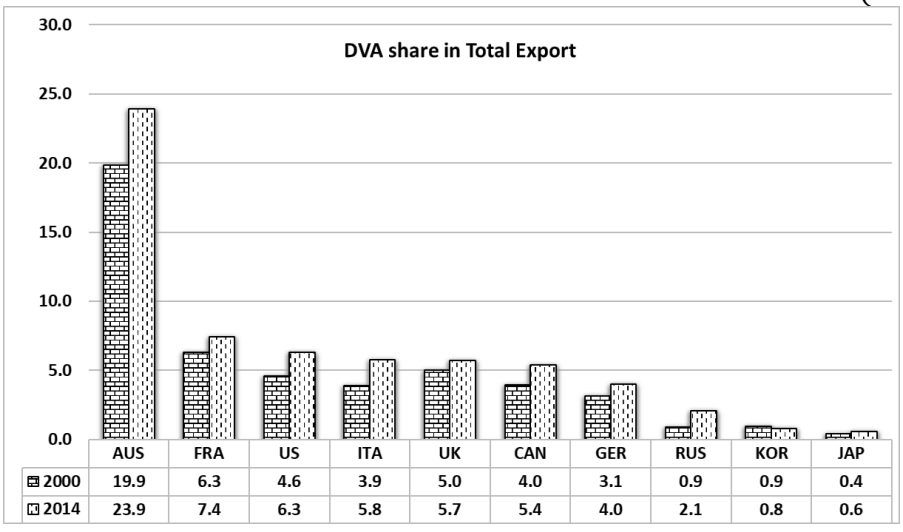


	BRA 2000	BRA 2014	CHN 2000	CHN 2014	INDO 2000	INDO 2014	MEX 2000	MEX 2014	TUR 2000	TUR 2014	IND 2000	IND 2014
FVA	9%	11%	8%	8%	13%	11%	14%	18%	12%	20%	8%	9%
DVA	91%	89%	92%	92%	87%	89%	86%	82%	88%	80%	92%	91%

Source: Prepared from Appendix 3 tables.

For Germany, France, Italy, UK, Japan, and South Korea, the import contents are more than 24percent and for other developed it is above 14percent in 2014. For the developing countries, Indonesia, Brazil, Mexico and Turkey, the foreign contents in their one unit of final demand lie between 11 to 20percent in 2014 which are marginally higher over their 2000's proportion. For India and China, these proportions are less than 10percent during the period. Now, in the following figures 4.5.1.2a and b we have shown the analysis of the shares of DVAs and FVAs of food export to total manufacturing export of developed and developing countries respectively. We have used the above unit level FVA and DVA proportions to calculate the following.

Figure 4.5.1.2a: Shares of DVA and FVA Contents of Food Industry in Total Export: Developed Countries (in Percentage)



	AUS	FRA	US	ITA	UK	CAN	GER	RUS	KOR	JAP
2000	19.9	6.3	4.6	3.9	5.0	4.0	3.1	0.9	0.9	0.4
2014	23.9	7.4	6.3	5.8	5.7	5.4	4.0	2.1	0.8	0.6

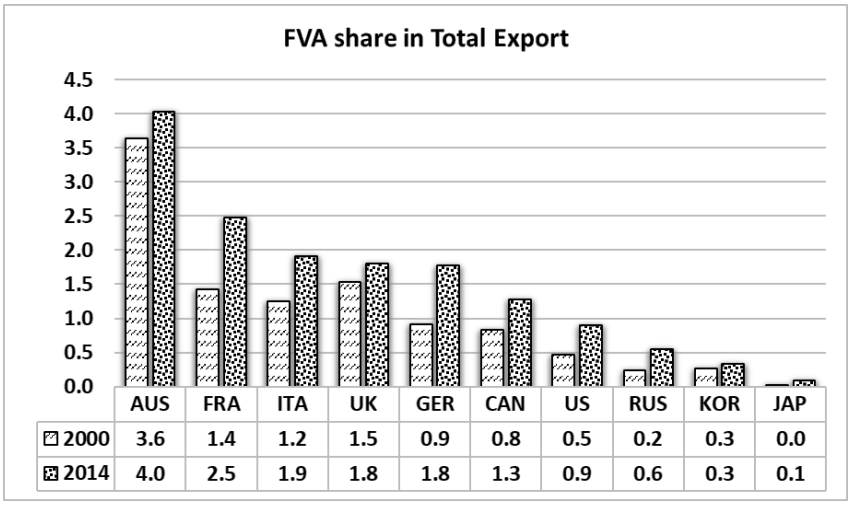
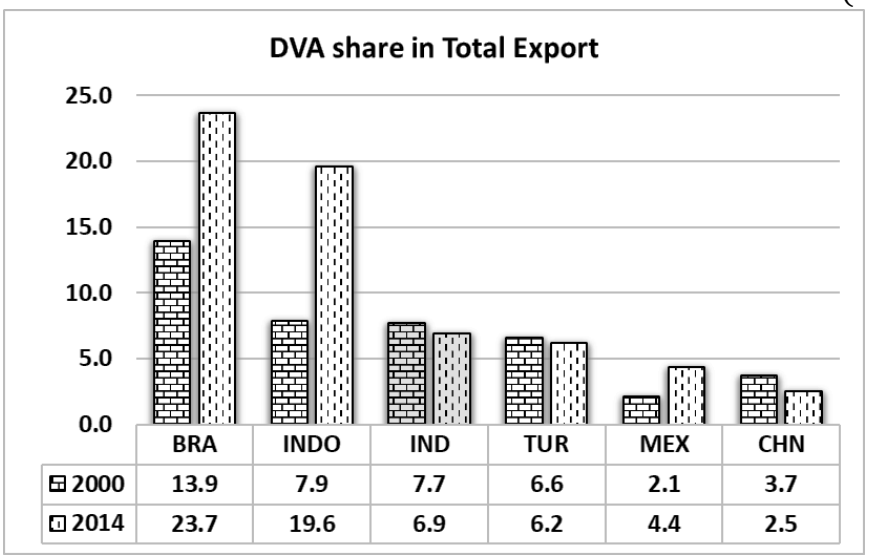
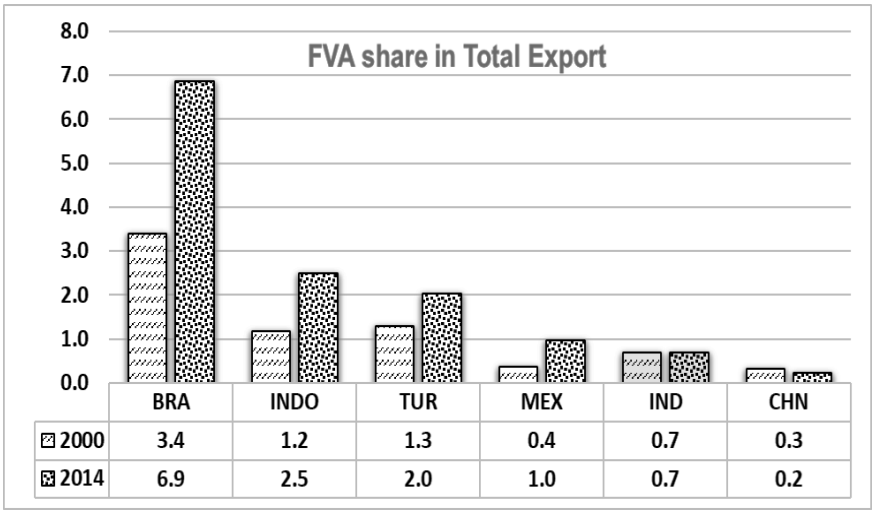


Figure 4.5.1.2b: Shares of DVA and FVA Contents of Food Industry in Total Export: Developing Countries (in Percentage)





Source: Prepared from Appendix 3 tables.

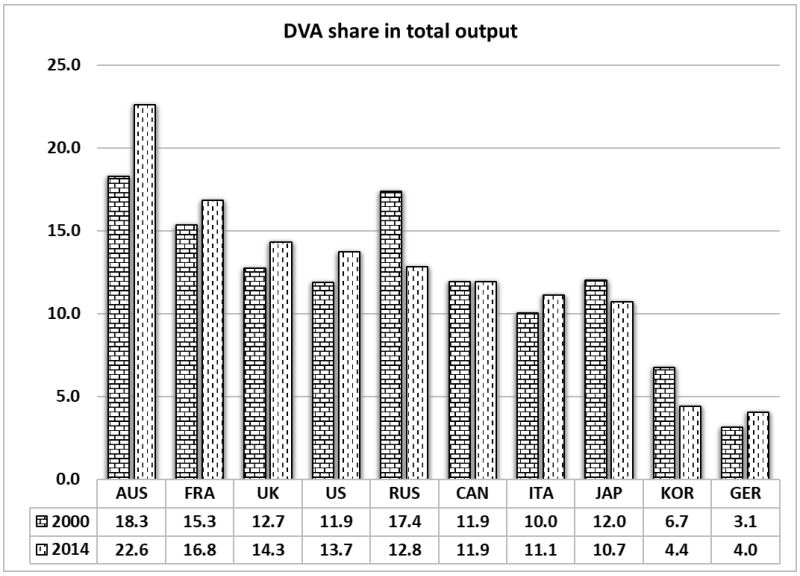
Our above industry level cross-country calculations reveal that in terms of its DVA and FVA shares in gross manufacturing export, the food industry is one of the predominant sectors in Australia, France, Italy, US, UK and Canada. Among developing countries, Brazil, India, Indonesia and Turkey are the nations were food industry's shares are relatively higher.

The estimation reveals that for all developed economies except Korea and Japan, and for all developing or emerging economics expect Turkey, India and China, both the domestic and foreign value-added shares in the gross manufacturing exports have increased in 2014 over 2000. These somewhat explaining their larger participation in global production and consumption networks. On the contrary, in case of China and India, their DVA shares in their gross manufacturing exports have decreased in 2000 over 2014 which indicate that these countries backward participations in global food value chain have reduced. Turkey's DVA share has decreased but FVA share has increased which reveals its higher forward participation in global production and consumption networks and lower backward participation in GVC. India's FVA share is more or less constant over last 14 years' period which doesn't indicate any higher or larger forward participation in global production and consumption networks.

For all developed economies except Korea and Japan, and for all developing or emerging economics expect Turkey, India and China, both the DVA and FVA shares of food industry in the gross manufacturing exports have increased in 2014 over 2000.

Figures 4.5.1.3a and b are the graphical representation of the DVA and FVA shares of food industry output to total manufacturing output. In terms of its DVA and FVA shares in gross manufacturing output, it is found that this industry is one of the predominant sectors in all selected countries.

Figure 4.5.1.3a: Shares of DVA and FVA Contents of Food Industry in Total Output: Developed Countries (in Percentage)



	AUS	FRA	UK	US	RUS	CAN	ITA	JAP	KOR	GER
2000	18.3	15.3	12.7	11.9	17.4	11.9	10.0	12.0	6.7	3.1
2014	22.6	16.8	14.3	13.7	12.8	11.9	11.1	10.7	4.4	4.0

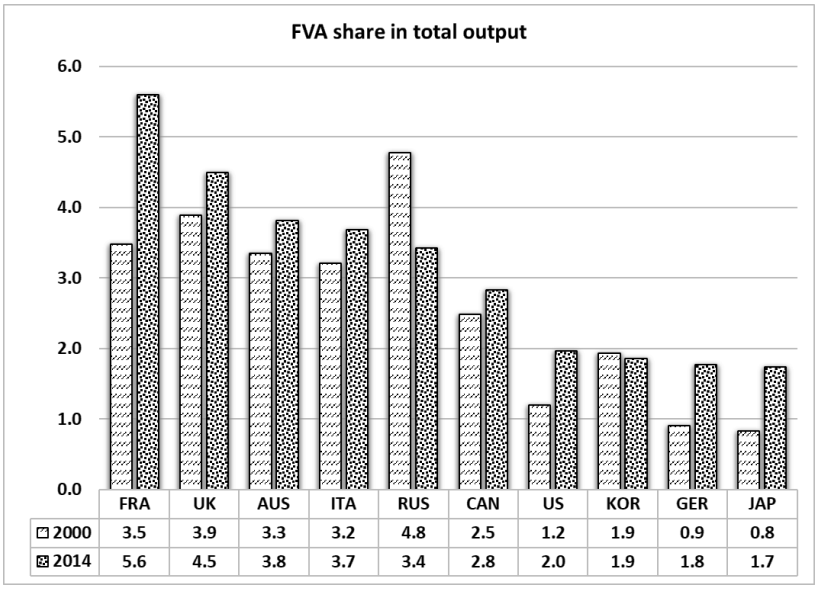
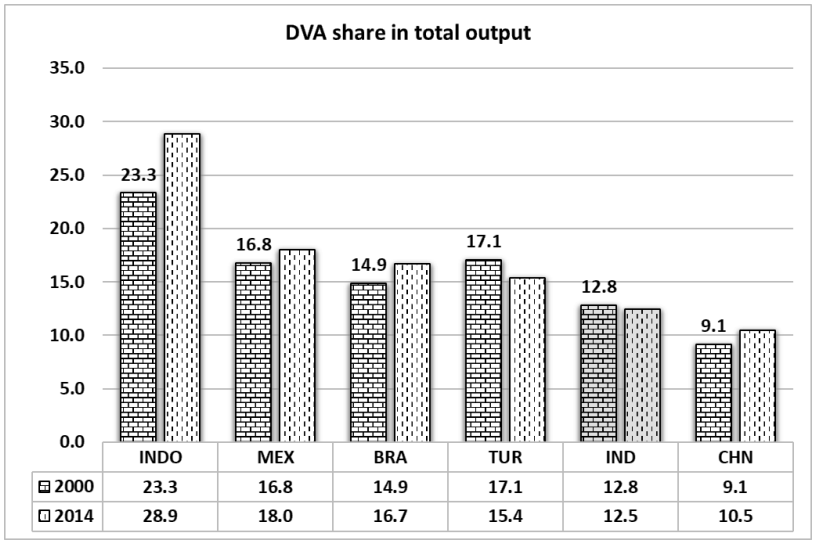
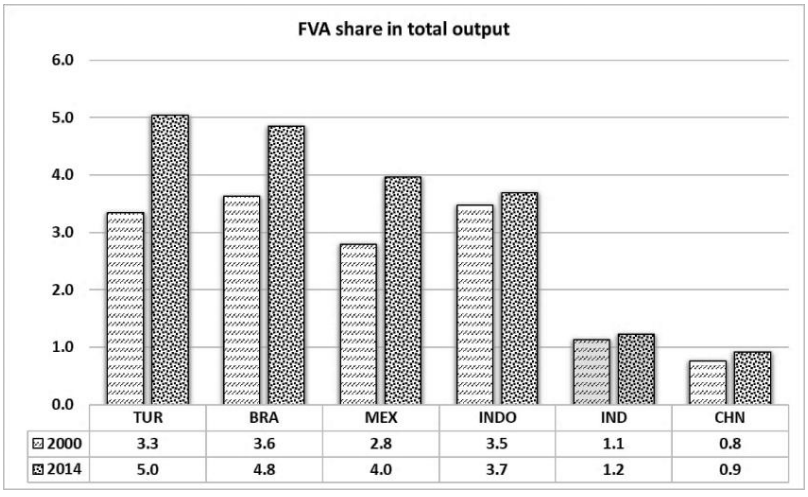


Figure 4.5.1.3b: Shares of DVA and FVA Contents in Total Output of Food Industry: Developing Countries (in Percentage)





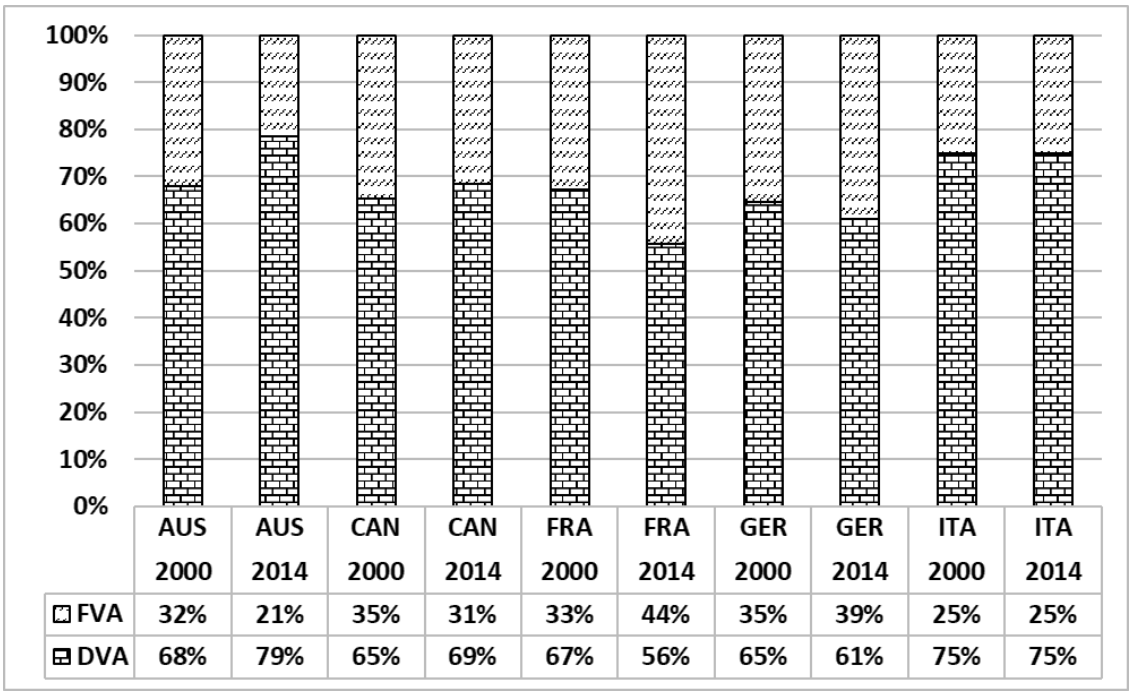
Source: Prepared from Appendix 3 tables.

In developed economies, we find in Australia, France, Italy, UK and US the DVA shares in their gross manufacturing outputs have increased in 2014 over 2000. Their FVA shares have also increased but the change in percentage points in DVA shares are higher than FVA shares. This reveals that their substitution of domestic production with production phases abroad has not increased much in compare to domestic production increase. Same phenomenon is true for the developing/emerging economies, viz. Brazil, China, Indonesia and Mexico. For Germany, Russia, Japan and Korea, the DVA shares have decreased and for Turkey and India, we find the same scenario. For India, the FVA share has also decreased whereas for Tukey it has increased. This indicates, India's lower substitution possibility domestic production with production phases abroad along with low foreign inputs usage in food manufacturing industry. In case of Turkey, they too less substitute domestic production with production phases abroad but are using comparatively more foreign inputs in the domestic production process.

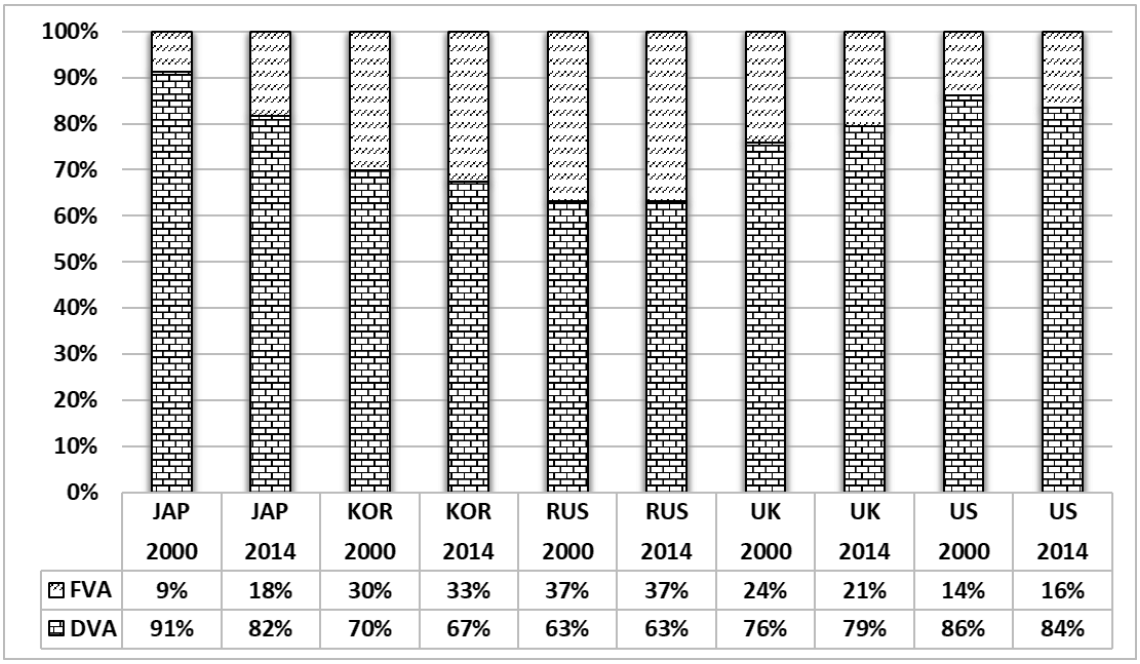
4.5.2 Textiles, wearing apparel and leather

In terms of unit shares of domestic and import contents in final demand of textile etc. product, the estimation reveals that developed countries are more inclined towards global production networks as compared developing countries. Among the developing countries, import contents are relatively higher in their unit final demand of textile etc products for Indonesia, Mexico and Turkey compare to India, China and Brazil. These figures have graphically illustrated in 4.5.2.1a and b below for developed and developing countries respectively.

4.5.2.1a. DVA and FVA contents in each unit of final demand of Textile: Developed Countries.

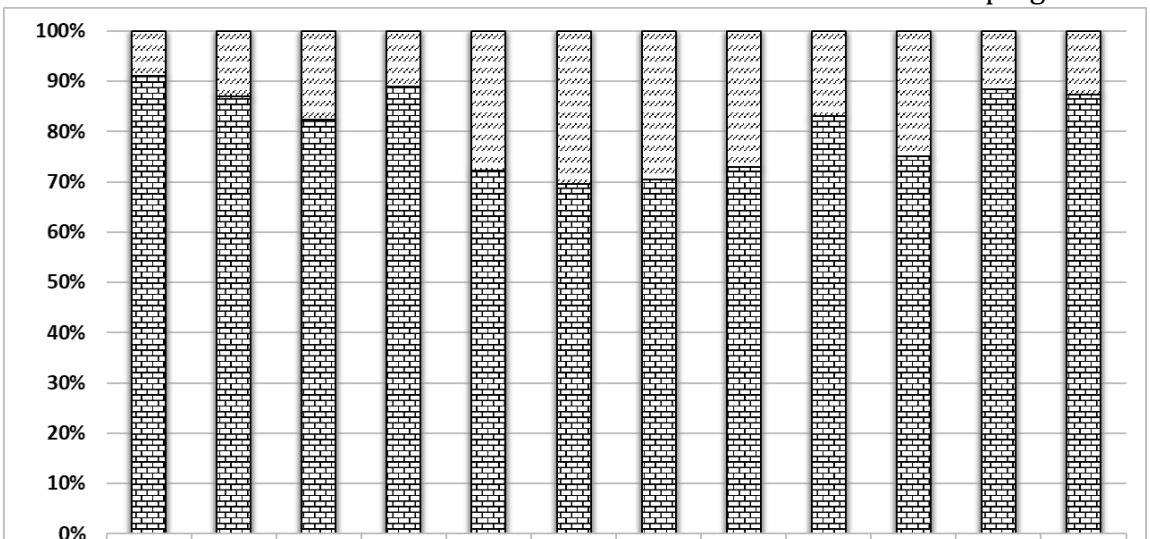


	AUS 2000	AUS 2014	CAN 2000	CAN 2014	FRA 2000	FRA 2014	GER 2000	GER 2014	ITA 2000	ITA 2014
FVA	32%	21%	35%	31%	33%	44%	35%	39%	25%	25%
DVA	68%	79%	65%	69%	67%	56%	65%	61%	75%	75%



	JAP 2000	JAP 2014	KOR 2000	KOR 2014	RUS 2000	RUS 2014	UK 2000	UK 2014	US 2000	US 2014
FVA	9%	18%	30%	33%	37%	37%	24%	21%	14%	16%
DVA	91%	82%	70%	67%	63%	63%	76%	79%	86%	84%

4.5.2.1b. DVA and FVA contents in each unit of final demand of Textile: Developing Countries.

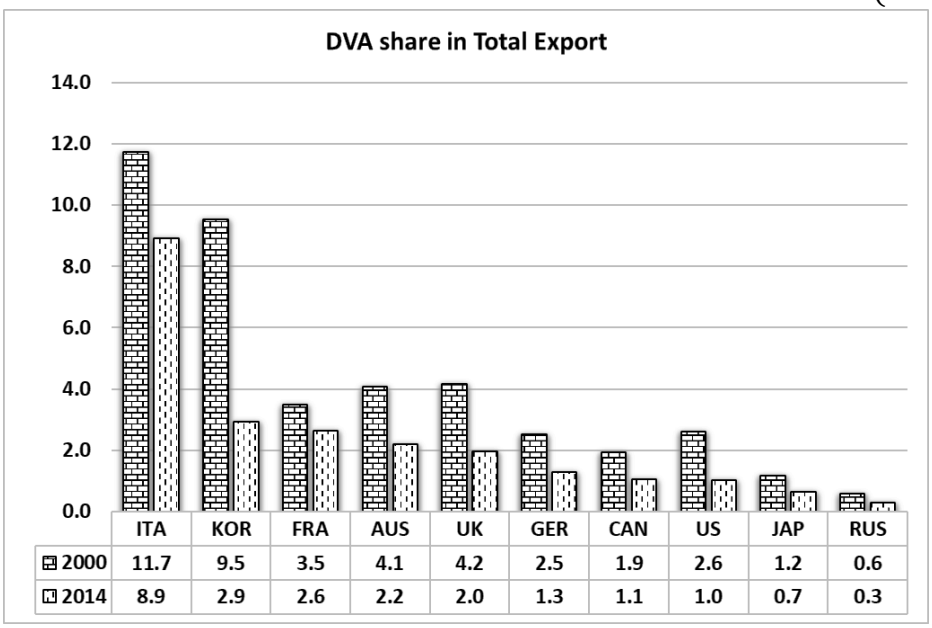


	BRA 2000	BRA 2014	CHN 2000	CHN 2014	INDO 2000	INDO 2014	MEX 2000	MEX 2014	TUR 2000	TUR 2014	IND 2000	IND 2014
FVA	9%	13%	18%	11%	28%	30%	29%	27%	17%	25%	12%	13%
DVA	91%	87%	82%	89%	72%	70%	71%	73%	83%	75%	88%	87%

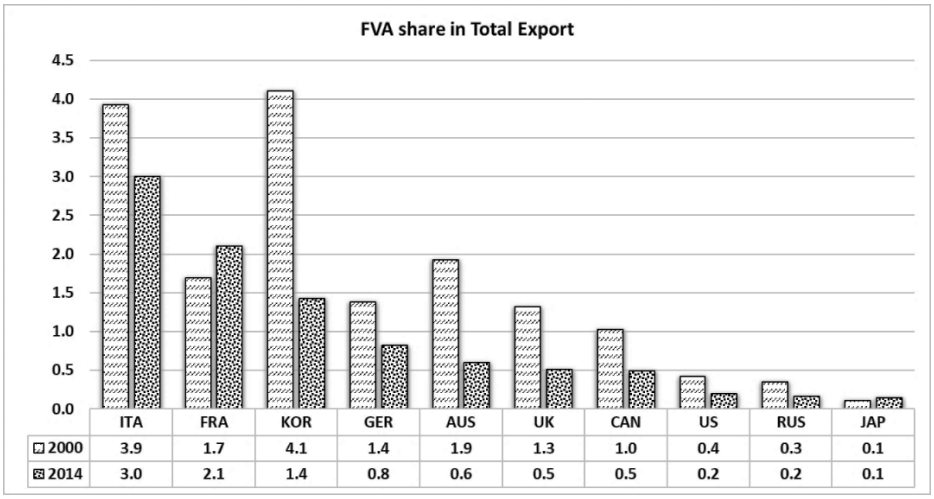
Source: Prepared from Appendix 3 tables.

We have used the above DVA and FVA unit proportions to calculate the shares of DVA and FVA contents of textile export in total manufacturing export which are illustrated in figures 4.5.2.2a and b. In terms of its DVA and FVA shares in gross manufacturing export, the textile industry is one of the predominant sectors in Italy, S. Korea, France, China, India, Indonesia and Turkey.

Figure 4.5.2.2a: Shares of DVA and FVA Contents of Textile Industry in Total Export: Developed Countries (in Percentage)

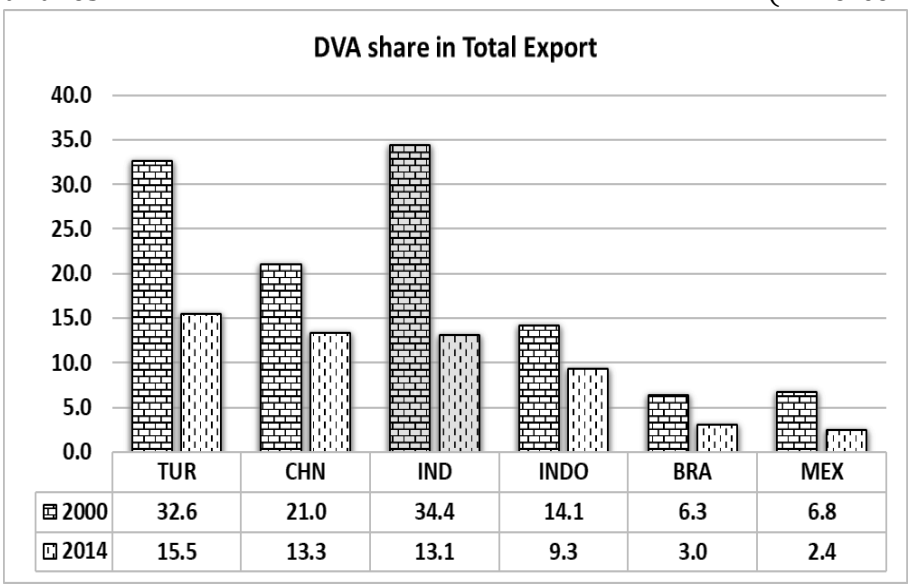


	ITA	KOR	FRA	AUS	UK	GER	CAN	US	JAP	RUS
2000	11.7	9.5	3.5	4.1	4.2	2.5	1.9	2.6	1.2	0.6
2014	8.9	2.9	2.6	2.2	2.0	1.3	1.1	1.0	0.7	0.3

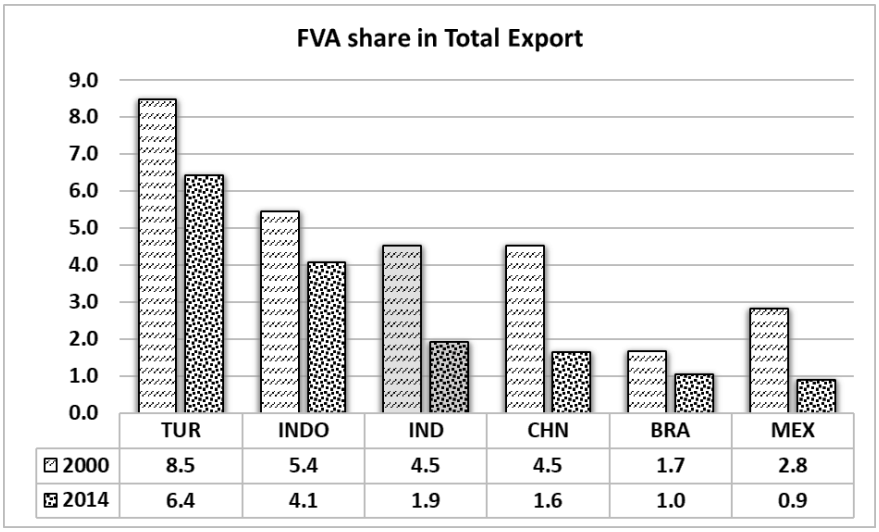


	ITA	FRA	KOR	GER	AUS	UK	CAN	US	RUS	JAP
2000	3.9	1.7	4.1	1.4	1.9	1.3	1.0	0.4	0.3	0.1
2014	3.0	2.1	1.4	0.8	0.6	0.5	0.5	0.2	0.2	0.1

Figure 4.5.2.2b: Shares of DVA and FVA Contents of Textile Industry in Total Export: Developing Countries (in Percentage)



	TUR	CHN	IND	INDO	BRA	MEX
2000	32.6	21.0	34.4	14.1	6.3	6.8
2014	15.5	13.3	13.1	9.3	3.0	2.4



Source: Prepared from Appendix 3 tables.

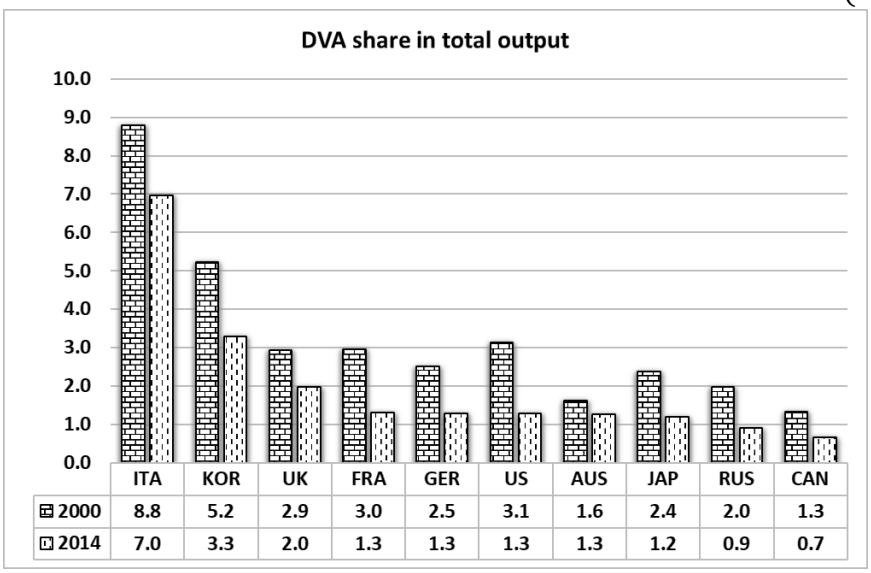
In this sector, the shares of domestic and foreign value-added content in gross exports of the respective countries have fallen in 2014 over 2000. It indicates lower participations of each country in global production and consumption networks over time. In case of developed countries, for Italy and S. Korea, the DVA shares have reduced by 2.8 and 6.6 percentage points and the FVA shares have marginally reduced to 1 and 2.7 percentage points in 2014 over 2000. Among the developing/emerging nations, Turkey's share of DVA content in their gross manufacturing export has decreased 17 percentage point which is the highest among the chosen developing economies 2014 over 2000. Brazil, China, Mexico and Indonesia's reduction is lying between 2 to 5 percentage points in 2014 over 2000. For India, the reduction of DVA share is lowest (0.8 percentage points) among the countries where textile, wearing apparel and leather industry is an important sector in terms of their value-added contributions to gross exports. The reduction in FVA shares is lying between 0.3 to 2.7 percentage point for all the above-mentioned countries. That means, less participation in the backward linkage of GVC is lower than the less forward participation in global production and consumption networks. This phenomenon is true for all countries. This somehow indicates that the consumer tastes and preferences have become more localised which is affecting the value chain network of this industry.

In textile sector, the estimations of FVA and DVA shares in total export and output show a decrease in 2014 over 2000 across all countries.

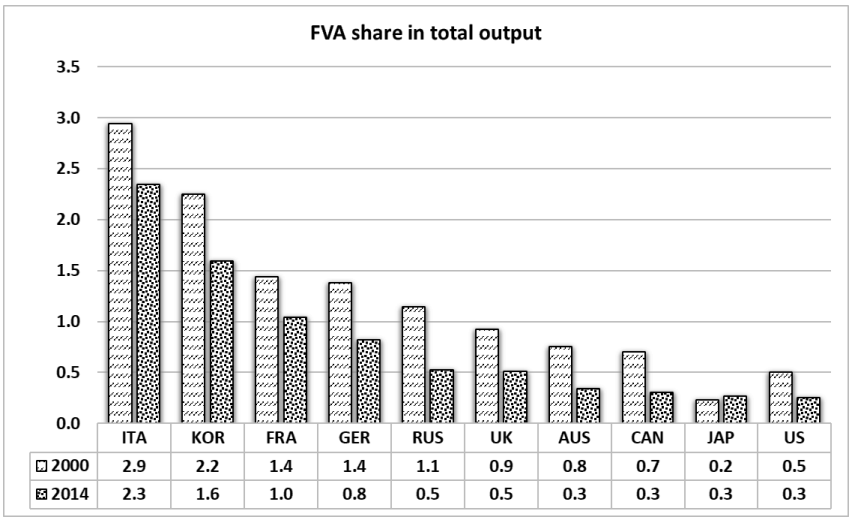
Further, in terms of its DVA and FVA shares in gross manufacturing output, this industry is one of the predominant sectors in Italy, Brazil, China, India, Indonesia and Turkey.

Coming to the DVA and FVA shares in gross manufacturing output of the individual economies, the economies where this industry plays important role are Italy, Korea, China, India, Indonesia and Turkey. Figures 4.5.2.3a and b show the shares of this industry in gross outputs for all economies that we have considered for our analysis.

Figure 4.5.2.3a: Shares of DVA and FVA Contents in Total Output of Textile Industry: Developed Countries (in Percentage)

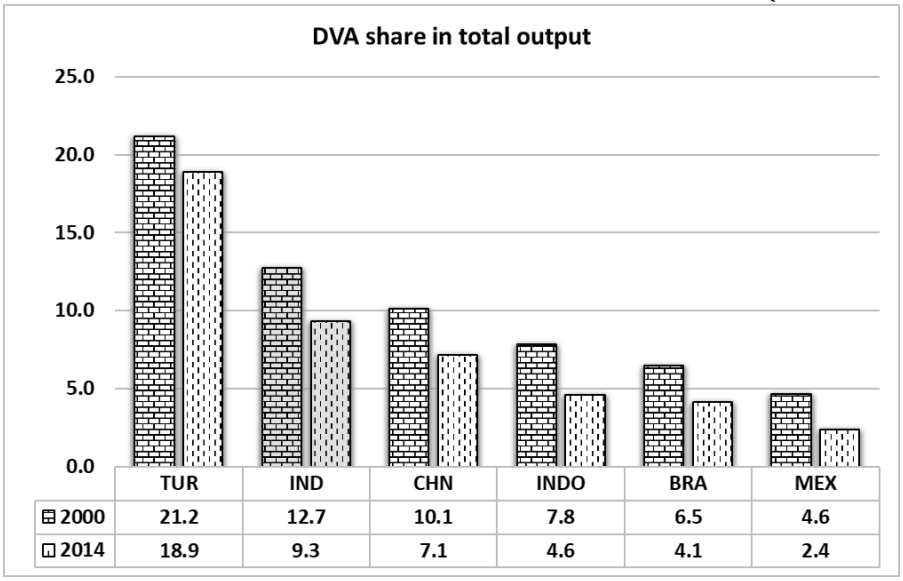


	ITA	KOR	UK	FRA	GER	US	AUS	JAP	RUS	CAN
2000	8.8	5.2	2.9	3.0	2.5	3.1	1.6	2.4	2.0	1.3
2014	7.0	3.3	2.0	1.3	1.3	1.3	1.3	1.2	0.9	0.7

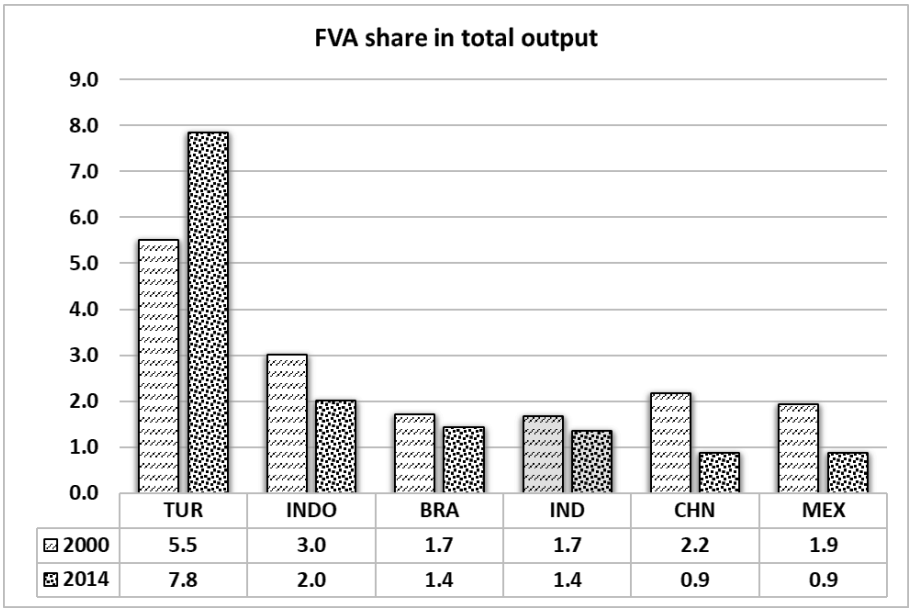


	ITA	KOR	FRA	GER	RUS	UK	AUS	CAN	JAP	US
2000	2.9	2.2	1.4	1.4	1.1	0.9	0.8	0.7	0.2	0.5
2014	2.3	1.6	1.0	0.8	0.5	0.5	0.3	0.3	0.3	0.3

Figure 4.5.2.3b: Shares of DVA and FVA Contents in Total Output of Textile Industry: Developing Countries (in Percentage)



	TUR	IND	CHN	INDO	BRA	MEX
2000	21.2	12.7	10.1	7.8	6.5	4.6
2014	18.9	9.3	7.1	4.6	4.1	2.4



	TUR	INDO	BRA	IND	CHN	MEX
2000	5.5	3.0	1.7	1.7	2.2	1.9
2014	7.8	2.0	1.4	1.4	0.9	0.9

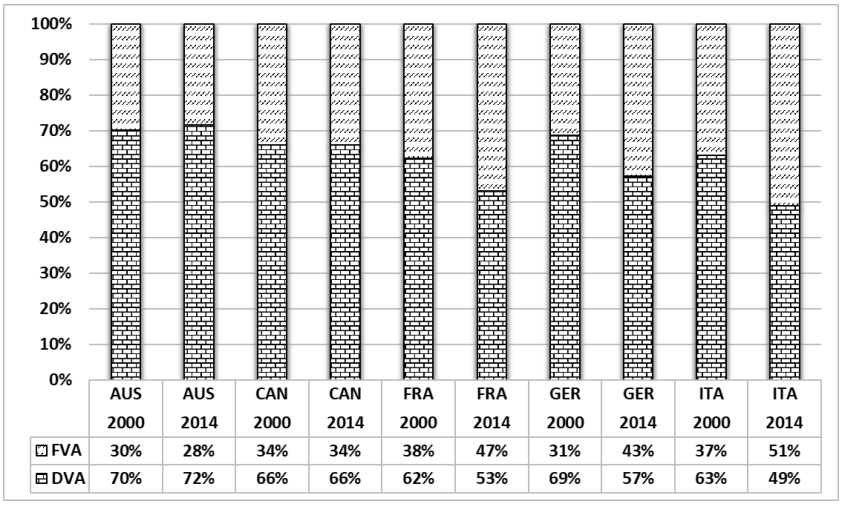
Source: Prepared from Appendix 3 tables.

Except Turkey, the DVA and FVA shares in gross manufacturing outputs have decreased for all other countries, including India. The reduction of share of DVA content in the gross outputs of the respective economies have fallen by 3 to 5 percentage points in 2014 over 2000. The FVA shares of these countries also have fallen although by a much lesser faction, 0.3 to 1 percentage points. The possible reason could be a reduction in sectoral DVA in sectoral outputs and less substitution possibility in domestic production over production possibility abroad. But further investigation is required to understand this phenomenon. For Turkey, we find that both DVA and FVA shares in gross output have increased by 2.3 and 1.7 percentage points respectively in 2014 over 2000.

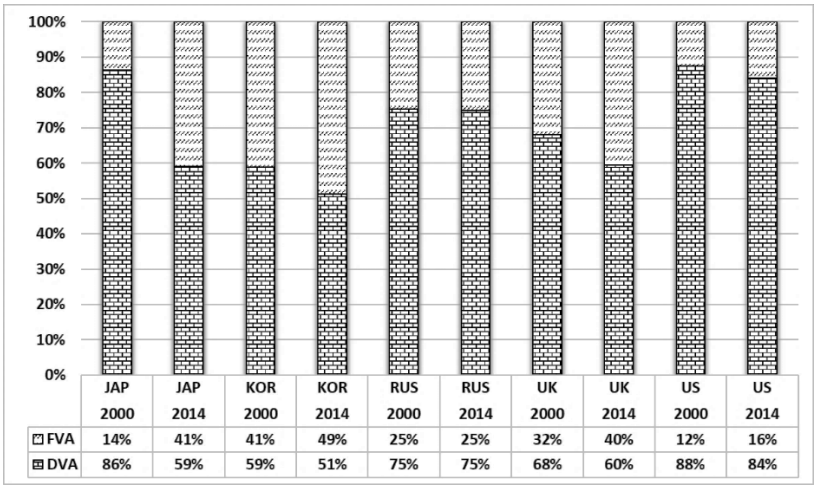
4.5.3 Chemicals

In the chemicals' industry, except US all developed countries' foreign content shares in their unit final demand are lying within 25percent to 51percent during the period (see figure 4.5.3.1a). On the contrary, for developed countries, the foreign shares are comparatively lower, lying within 16percent to 34percent during the period (see figure 4.5.3.1b).

4.5.3.1a. DVA and FVA contents in each unit of final demand of Chemicals: Developed Countries.

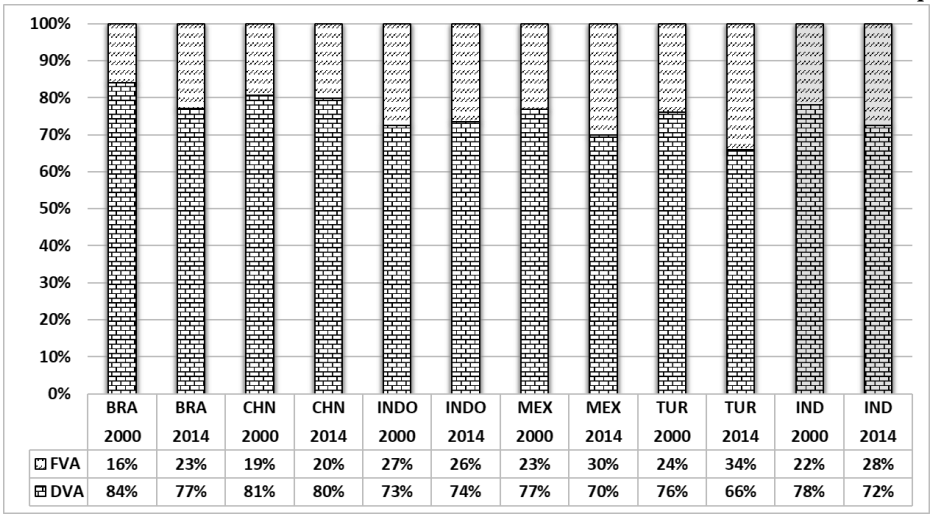


	AUS 2000	AUS 2014	CAN 2000	CAN 2014	FRA 2000	FRA 2014	GER 2000	GER 2014	ITA 2000	ITA 2014
FVA	30%	28%	34%	34%	38%	47%	31%	43%	37%	51%
DVA	70%	72%	66%	66%	62%	53%	69%	57%	63%	49%



	JAP 2000	JAP 2014	KOR 2000	KOR 2014	RUS 2000	RUS 2014	UK 2000	UK 2014	US 2000	US 2014
FVA	14%	41%	41%	49%	25%	25%	32%	40%	12%	16%
DVA	86%	59%	59%	51%	75%	75%	68%	60%	88%	84%

4.5.3.1b. DVA and FVA contents in each unit of final demand of Chemicals: Developing Countries



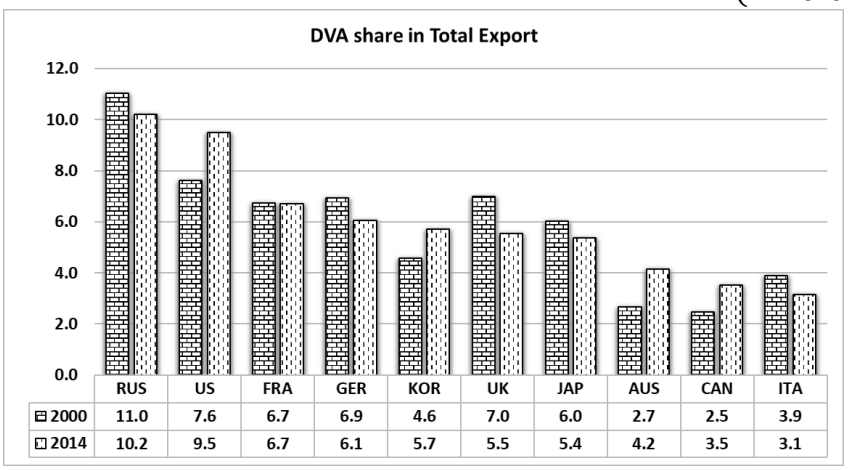
	BRA 2000	BRA 2014	CHN 2000	CHN 2014	INDO 2000	INDO 2014	MEX 2000	MEX 2014	TUR 2000	TUR 2014	IND 2000	IND 2014
FVA	16%	23%	19%	20%	27%	26%	23%	30%	24%	34%	22%	28%
DVA	84%	77%	81%	80%	73%	74%	77%	70%	76%	66%	78%	72%

Source: Prepared from Appendix 3 tables.

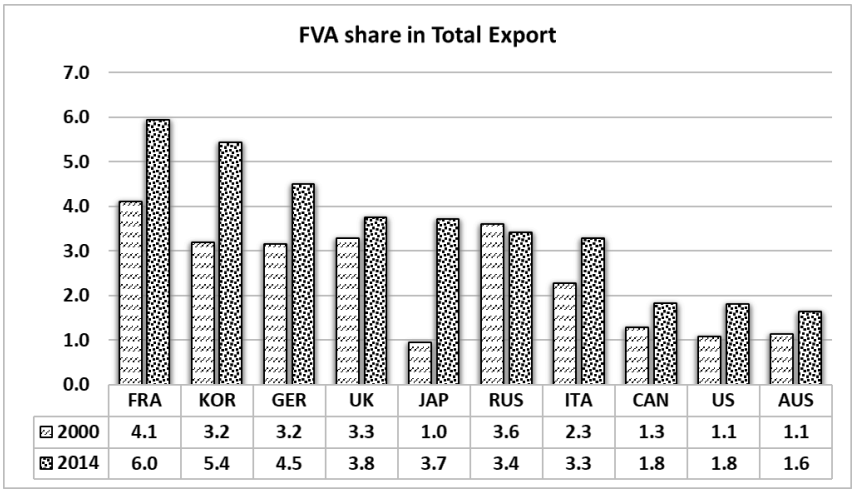
These scores are used to calculate the shares of DVA and FVA contents in export and output which are explained below.

In terms of its DVA and FVA shares in gross manufacturing export, the chemical industry is one of the predominant sectors in France, Germany, Russia, Japan, UK, US, Brazil and India. Further, in terms of its DVA and FVA shares in gross manufacturing output, this industry is one of the predominant sectors in France, Germany, Russia, S. Korea, UK, US, Brazil, Mexico, Turkey and India. Figure 4.5.3.2a 4.5.3.2b show the shares of this industry in gross exports for developed and developing countries.

Figure 4.5.3.2a: Shares of DVA and FVA Contents in Total Export of Chemicals: Developed Countries (in Percentage)

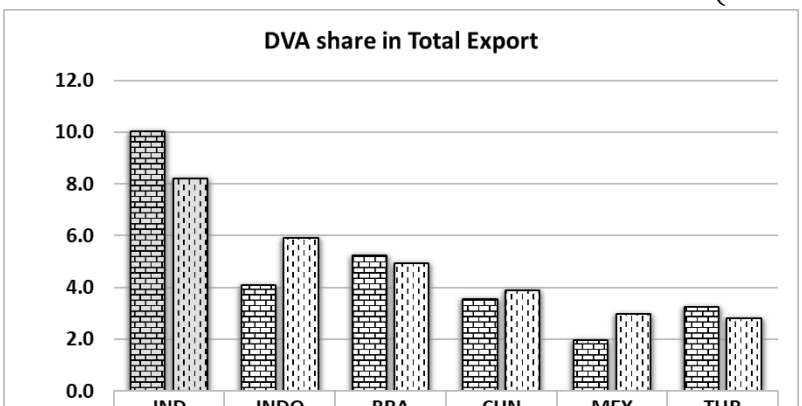


	RUS	US	FRA	GER	KOR	UK	JAP	AUS	CAN	ITA
2000	11.0	7.6	6.7	6.9	4.6	7.0	6.0	2.7	2.5	3.9
2014	10.2	9.5	6.7	6.1	5.7	5.5	5.4	4.2	3.5	3.1

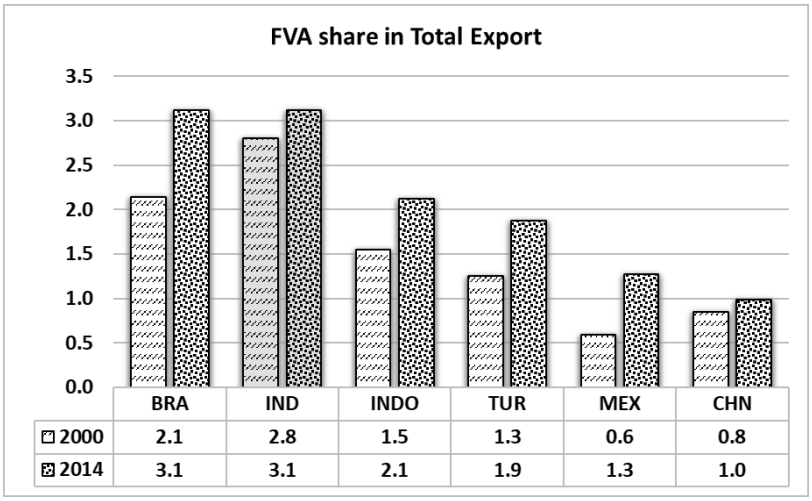


	FRA	KOR	GER	UK	JAP	RUS	ITA	CAN	US	AUS
2000	4.1	3.2	3.2	3.3	1.0	3.6	2.3	1.3	1.1	1.1
2014	6.0	5.4	4.5	3.8	3.7	3.4	3.3	1.8	1.8	1.6

Figure 4.5.3.2b: Shares of DVA and FVA Contents in Total Export of Chemicals: Developing Countries (in Percentage)



	IND	INDO	BRA	CHN	MEX	TUR
2000	10.0	4.1	5.3	3.5	2.0	3.3
2014	8.2	5.9	4.9	3.9	3.0	2.8



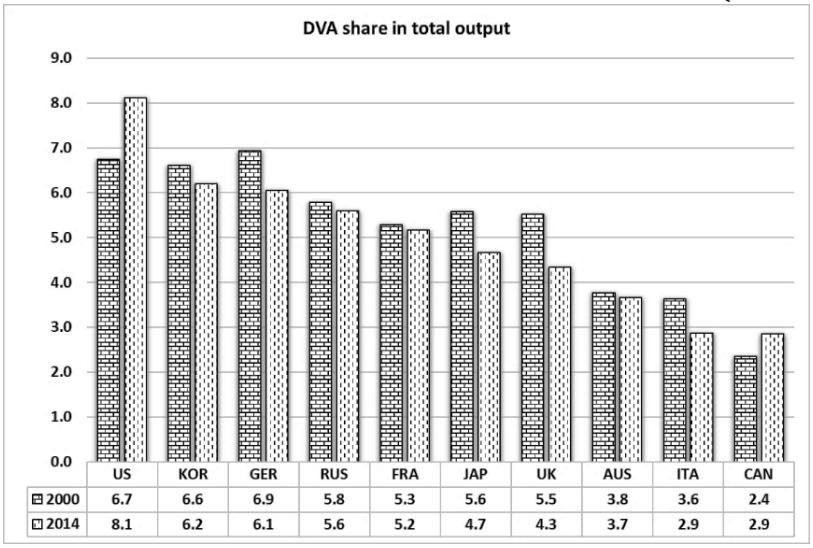
	BRA	IND	INDO	TUR	MEX	CHN
2000	2.1	2.8	1.5	1.3	0.6	0.8
2014	3.1	3.1	2.1	1.9	1.3	1.0

Source: Prepared from Appendix 3 tables.

For all developed countries, the foreign content shares in their total export have increased in 2014 over 2000. The same picture is true for all developing countries also. For France and Russia, both the DVA and FVA shares in gross export for this industry have decreased which reveal their lower forward and backward participation in global production and consumption networks over time. Germany, Japan, UK and India have revealed their fall in DVA shares along with a marginal increase in their FVA shares in gross export. This indicates their higher concentration in catering domestic demand along with a comparatively higher backward participation in global value chain. For US and Brazil, both DVA and FVA shares have increased in 2014 over 2000, which indicate their higher forward and backward participation in global production and consumption networks.

Next, considering the DVA and FVA shares in gross manufacturing output of the individual economies, the economies where this industry plays important role are France, Germany, Russia, S. Korea, Brazil, Mexico, India and Turkey. Figures 4.5.3.3a and b show the shares of this industry in gross outputs for developed and developing economies respectively.

Figure 4.5.3.3a: Shares of DVA and FVA Contents in Total Output of Chemicals: Developed Countries (in Percentage)



	US	KOR	GER	RUS	FRA	JAP	UK	AUS	ITA	CAN
2000	6.7	6.6	6.9	5.8	5.3	5.6	5.5	3.8	3.6	2.4
2014	8.1	6.2	6.1	5.6	5.2	4.7	4.3	3.7	2.9	2.9

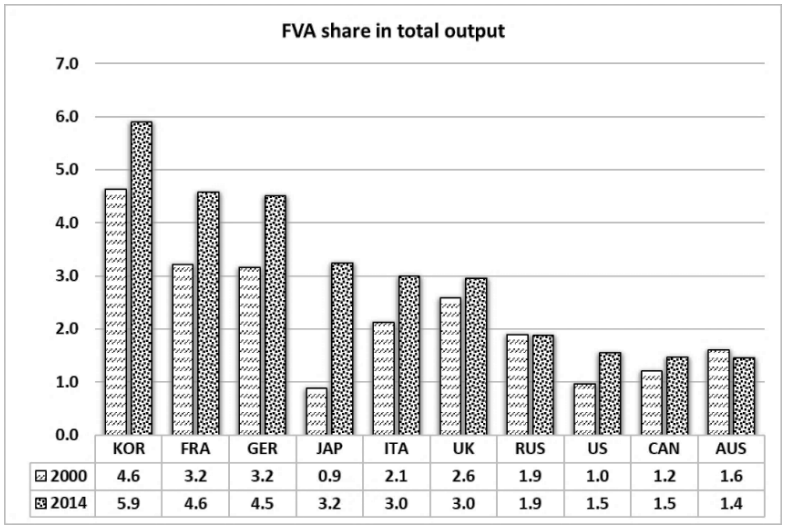
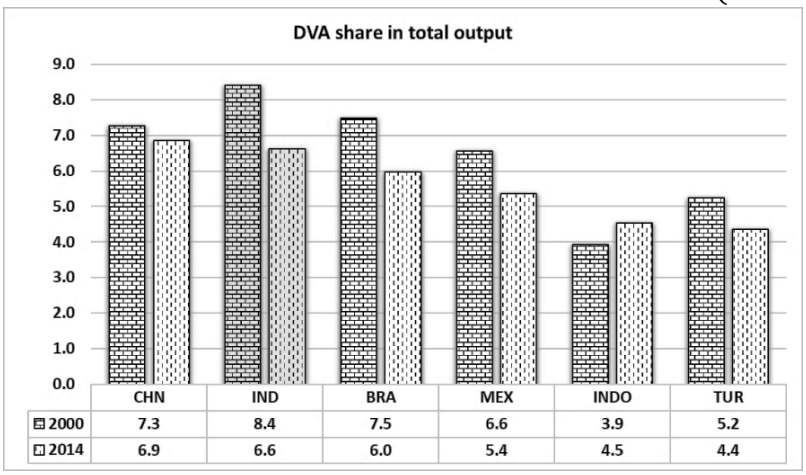
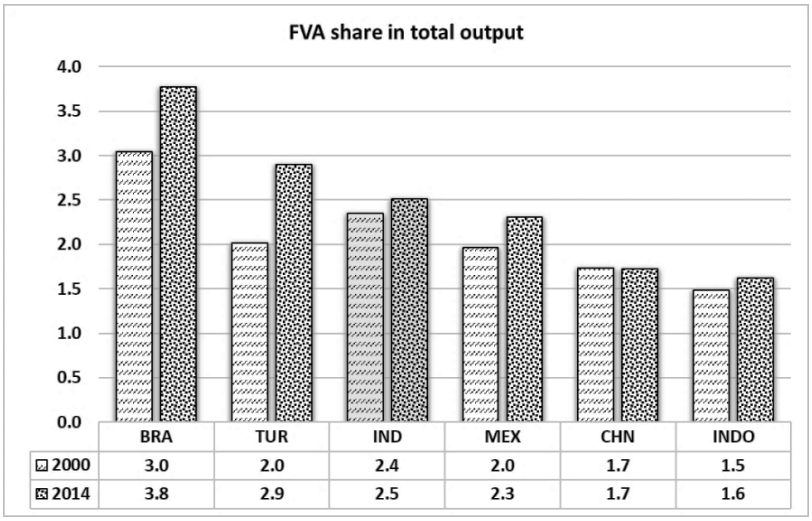


Figure 4.5.3.3b: Shares of DVA and FVA Contents in Total Output of Chemicals: Developing Countries (in Percentage)





Source: Prepared from Appendix 3 tables.

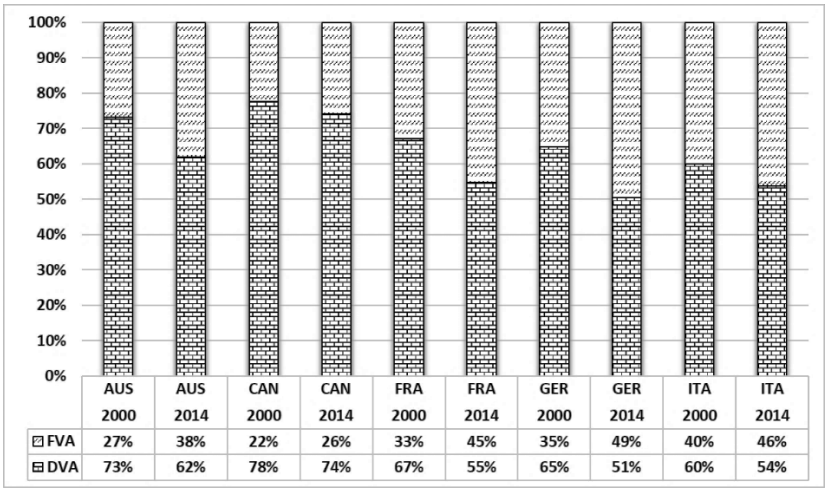
All above-mentioned developed and developing/emerging economies have shown similar movement in terms of the shares of DVA and FVA contents in gross outputs of the respective economies. Increase in FVA shares signifies more preferences/usage of foreign inputs in domestic production whereas lower DVA shares indicates less substitution of domestic production with production process abroad. In the developed countries the decrease in DVA

shares in gross out ranges between 0.1 to 1.4 percentage points whereas for developing countries, the range is little higher and lies between 0.8 to 2.2 percentage points during 2000 to 2014. The FVA shares have increased between 0.8 to 1.4 percentage points in developed economies. In developing countries, only for Turkey, the FVA share has increased by 2.3 percentage points in 2014 over 2000 and for Brazil, Mexico and India this increase is accounted for less than 1 percent in 2014 over 2000.

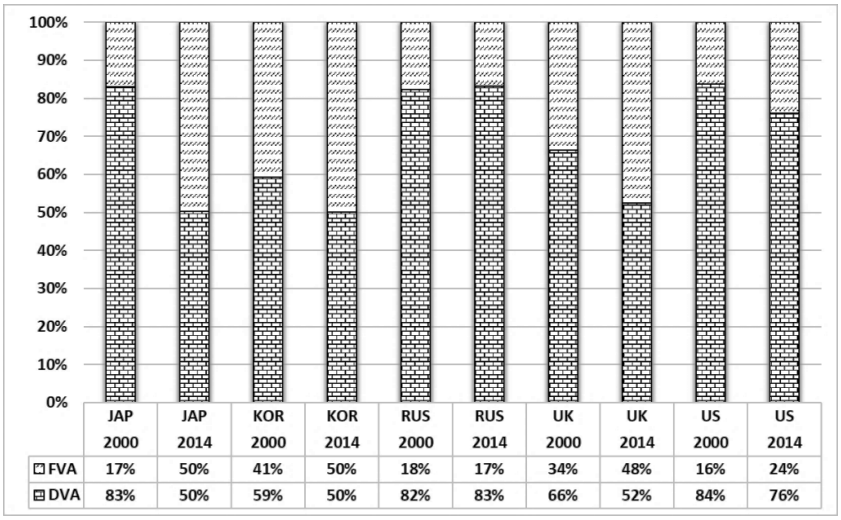
4.5.4 Basic Metals

The shares of foreign content in per unit final demand have increased substantially for all developed countries as figure 4.5.4.1a reveals. For Germany, France, Japan, Korea and UK, these shares are close to 50percent during 2014.

4.5.4.1a. DVA and FVA contents in each unit of final demand of Basic Metals: Developed Countries

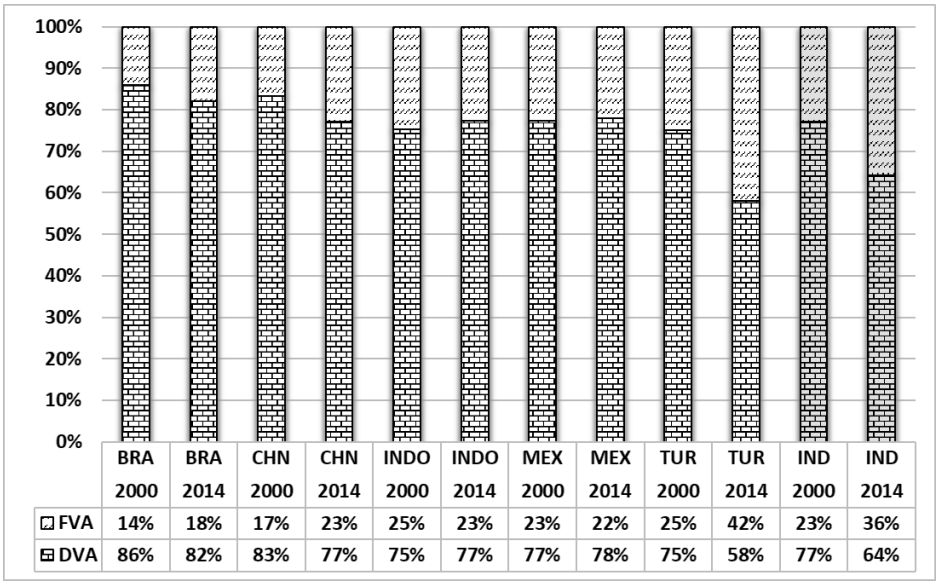


	AUS 2000	AUS 2014	CAN 2000	CAN 2014	FRA 2000	FRA 2014	GER 2000	GER 2014	ITA 2000	ITA 2014
FVA	27%	38%	22%	26%	33%	45%	35%	49%	40%	46%
DVA	73%	62%	78%	74%	67%	55%	65%	51%	60%	54%



	JAP 2000	JAP 2014	KOR 2000	KOR 2014	RUS 2000	RUS 2014	UK 2000	UK 2014	US 2000	US 2014
FVA	17%	50%	41%	50%	18%	17%	34%	48%	16%	24%
DVA	83%	50%	59%	50%	82%	83%	66%	52%	84%	76%

4.5.4.1b. DVA and FVA contents in each unit of final demand of Basic Metals: Developing Countries

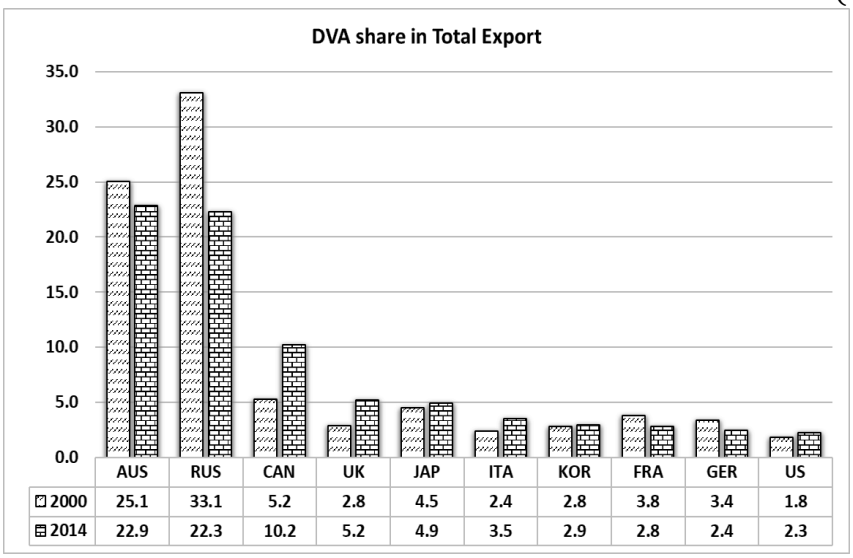


	BRA 2000	BRA 2014	CHN 2000	CHN 2014	INDO 2000	INDO 2014	MEX 2000	MEX 2014	TUR 2000	TUR 2014	IND 2000	IND 2014
FVA	14%	18%	17%	23%	25%	23%	23%	22%	25%	42%	23%	36%
DVA	86%	82%	83%	77%	75%	77%	77%	78%	75%	58%	77%	64%

Source: Prepared from Appendix 3 tables.

In case of developing countries, foreign contents are much less as compared to the developed counterparts. Among the countries, Turkey and India's shares are higher, more than 35percent. But the figures (graph 4.5.4.1b) unit FVA shares have increased for all developing countries also. Using these unit shares, we have calculated the total DVA and FVA shares in gross manufacturing export of this industry. Figures 4.5.4.2a and b show the graphical representation of these estimations.

Figure 4.5.4.2a: Shares of DVA and FVA Contents in Total Export of Basic Metals: Developed Countries (in Percentage)



	AUS	RUS	CAN	UK	JAP	ITA	KOR	FRA	GER	US
2000	25.1	33.1	5.2	2.8	4.5	2.4	2.8	3.8	3.4	1.8
2014	22.9	22.3	10.2	5.2	4.9	3.5	2.9	2.8	2.4	2.3

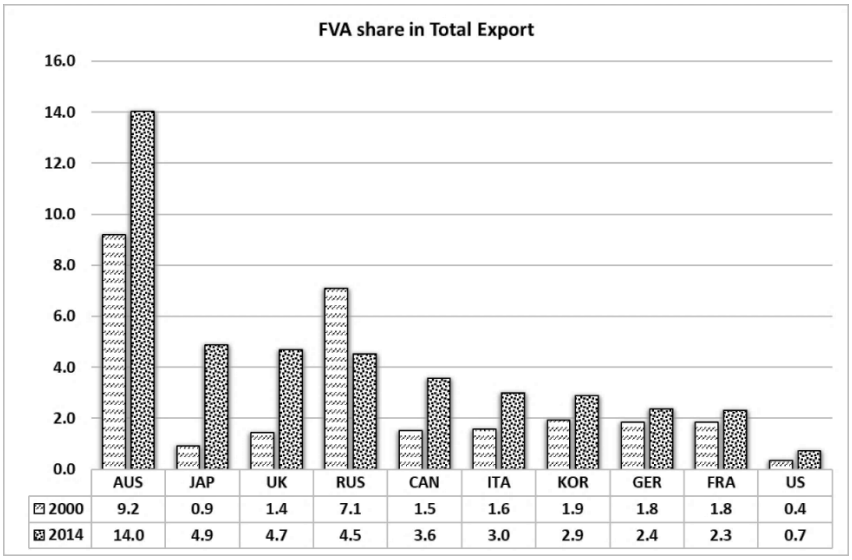
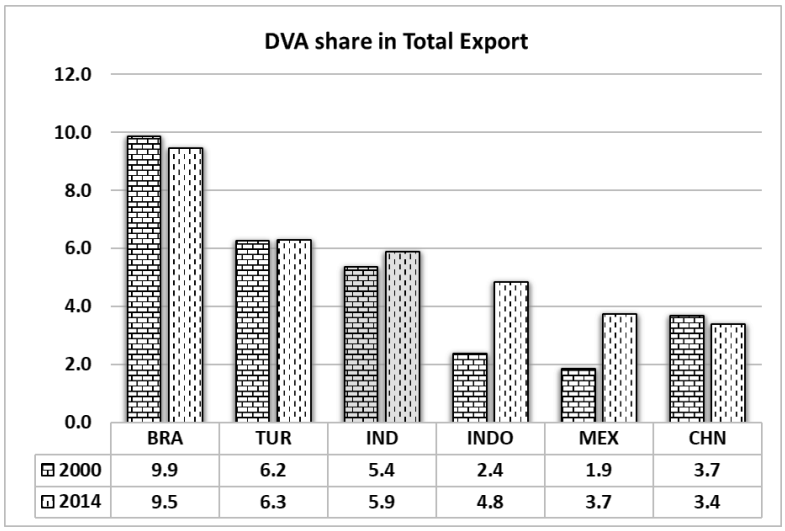
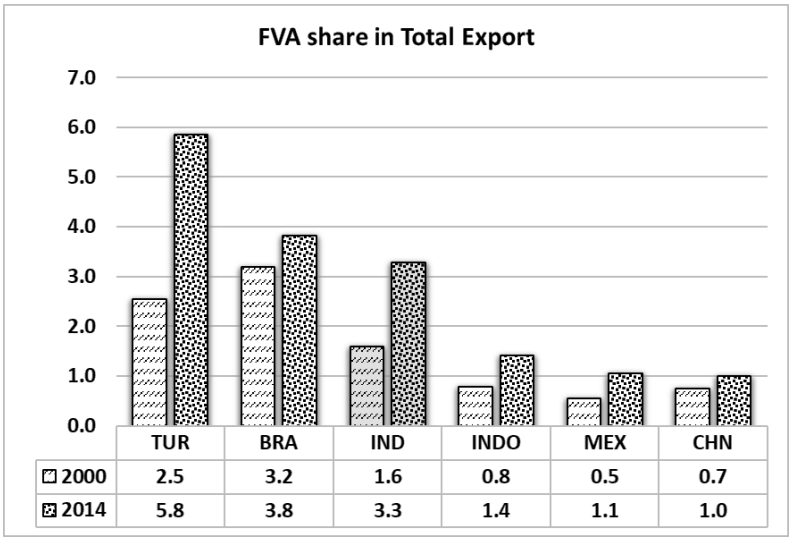


Figure 4.5.4.2b: Shares of DVA and FVA Contents in Total Export of Basic Metals: Developing Countries (in Percentage)





Source: Prepared from Appendix 3 tables.

In case of developed countries, except Russia, the FVA content shares have increased for all countries in 2014 over 2000. For the developing economies also, we find that the shares of FVA contents in total export has increased for all economies that we have considered for our analysis. This indicate their higher backward linkage in global value chain.

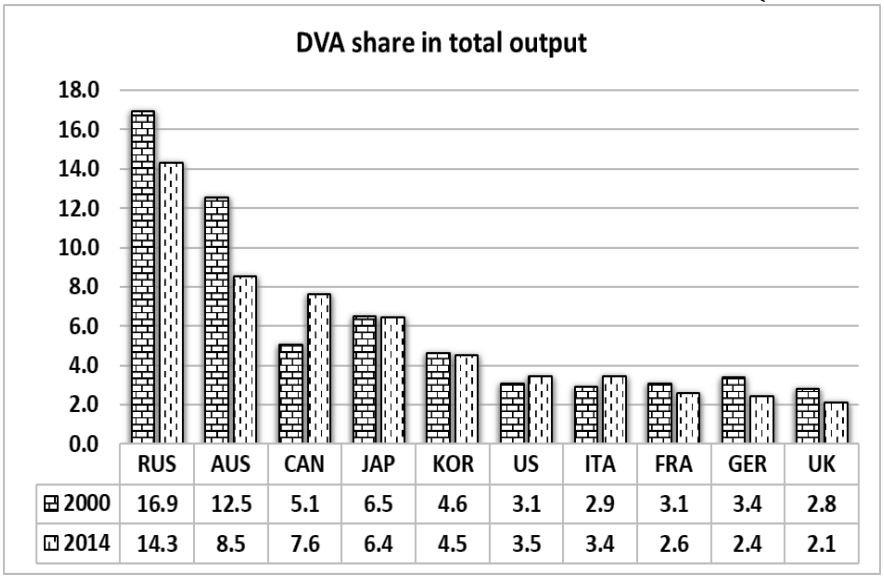
The DVA share of gross export has decreased substantially in Russia by 11 percentage point in 2014 over 2000, which indicates their substantial reduction in forward participation in global production and consumption networks. The FVA share also has decreased by 2.6 percentage point which reveals lower backward linkage of the industry in Russia. In Australia, the DVA share has reduced by 2.2 percentage points but the FVA share has increased marginally by 0.4 percentage points. In the developing/ emerging economies, both the shares have increased. In China the increase is quite marginal after 15 years. From 2000 to 2014, DVA share in China's manufacturing export has increased by 0.1 percentage point and FVA share has increased by 1 percentage point only. For India, this FVA share has increased by 2.3 percentage point and in Turkey it is 3.3 percentage point increase in 2014 over 2000. These indicate increase in backward linkage in GVC. The increase in DVA shares are marginal equal to 0.1 and 0.3 percentage points for Turkey and India respectively in 2014 over 2000. It indicates comparatively slow forward participation in global production and consumption networks.

> Except Russia, the FVA content shares have increased for all developed countries in 2014 over 2000.

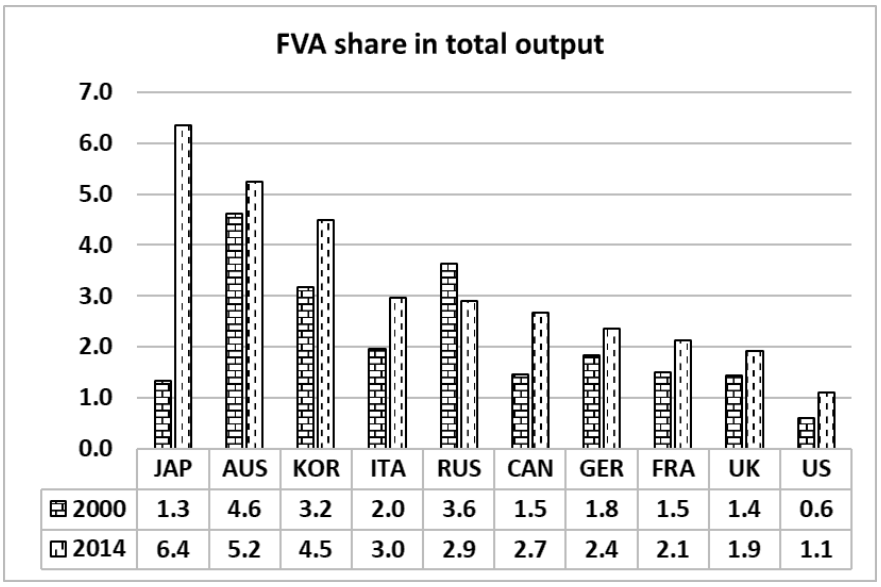
Coming to the DVA and FVA shares in gross manufacturing output of the individual economies, figures 4.5.4.3a and b show the shares of this industry in gross outputs for the above-mentioned economies. Estimation reveals that among developed countries, except Russia and among developing countries, except Indonesia, the shares of FVA contents in the total output have increased for all other economies in 2014 over 2000. Indonesia's unit FVA share has fallen marginally to 23percent in 2014 from 25percent in 2000. This explains the overall fall in the share of foreign input usage in the production process in 2014 over 2000.

> Except Indonesia, the shares of FVA contents in the total output have increased for all other developing economies in 2014 over 2000.

Figure 4.5.4.3a: Shares of DVA and FVA Contents in Total Output of Basic Metals: Developed Countries (in Percentage)

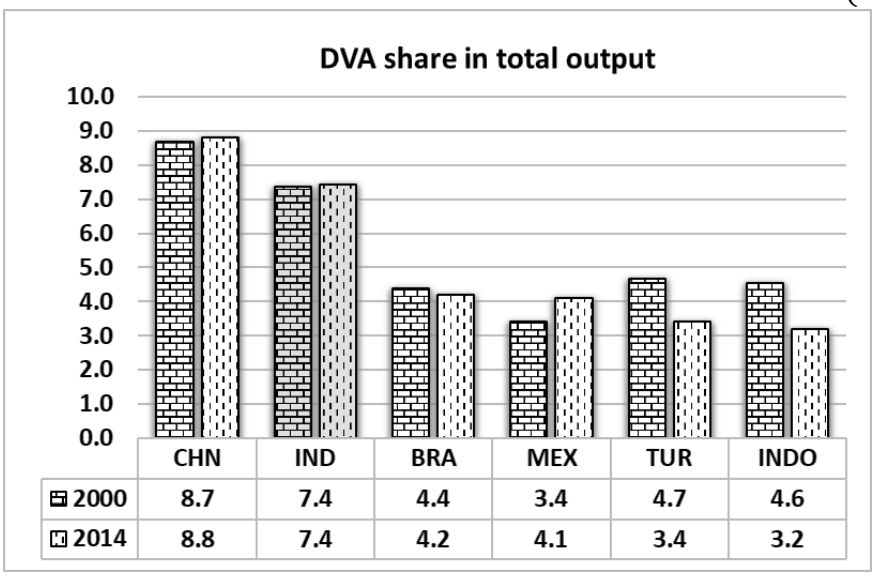


	RUS	AUS	CAN	JAP	KOR	US	ITA	FRA	GER	UK
2000	16.9	12.5	5.1	6.5	4.6	3.1	2.9	3.1	3.4	2.8
2014	14.3	8.5	7.6	6.4	4.5	3.5	3.4	2.6	2.4	2.1

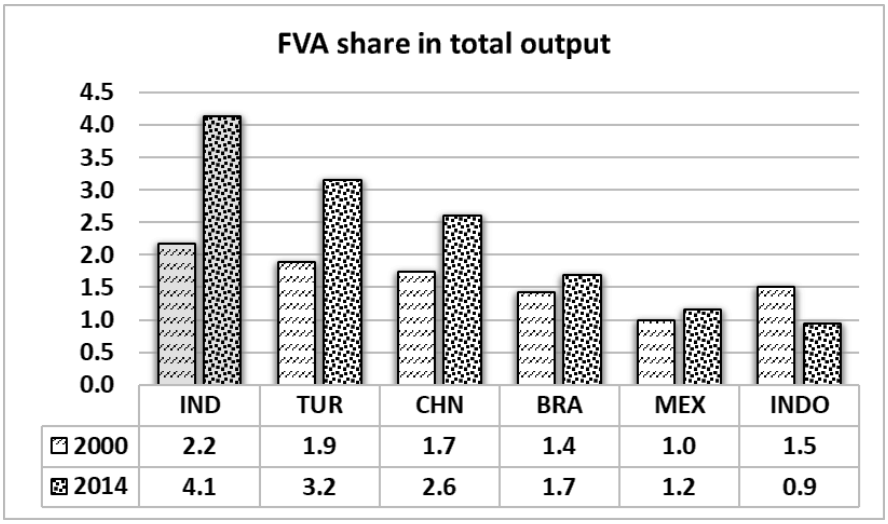


	JAP	AUS	KOR	ITA	RUS	CAN	GER	FRA	UK	US
2000	1.3	4.6	3.2	2.0	3.6	1.5	1.8	1.5	1.4	0.6
2014	6.4	5.2	4.5	3.0	2.9	2.7	2.4	2.1	1.9	1.1

Figure 4.5.4.3b: Shares of DVA and FVA Contents in Total Output of Basic Metals: Developing Countries (in Percentage)



	CHN	IND	BRA	MEX	TUR	INDO
2000	8.7	7.4	4.4	3.4	4.7	4.6
2014	8.8	7.4	4.2	4.1	3.4	3.2



	IND	TUR	CHN	BRA	MEX	INDO
2000	2.2	1.9	1.7	1.4	1.0	1.5
2014	4.1	3.2	2.6	1.7	1.2	0.9

Source: Prepared from Appendix 3 tables.

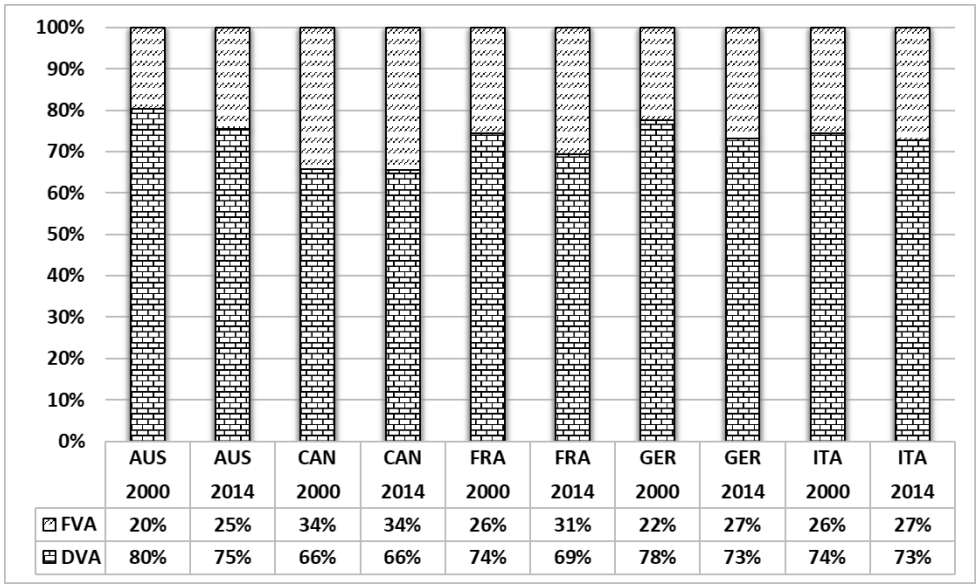
Developed countries viz. Australia and Japan and emerging economies viz. Turkey

and India follow the same pattern in terms of their shares in DVA and FVA contents in their respective economies' gross outputs. The DVA shares in their gross outputs have fallen marginally, except Australia, where the fall is equal to 5 percentage point in 2014 over 2000. It indicates lower substitution of domestic production with global production process. The shares of FVA contents of Australia and Turkey have increased by less than 1 percentage points where as for japan it has increased by 5.1 percentage points. It indicates Japan's higher import intensity in basic metal sector. For India, the share of FVA contents in gross output is lower than Japan but higher than the other countries. It has increased by 2 percentage points in 2014 over 2000. For Canada, both shares have increased by 2.5 and 1.2 percentage points respectively in 2014 over 2000. in china also DVA and FVA shares in gross output have increased by less than 1 percentage points in 2014 over 2000.

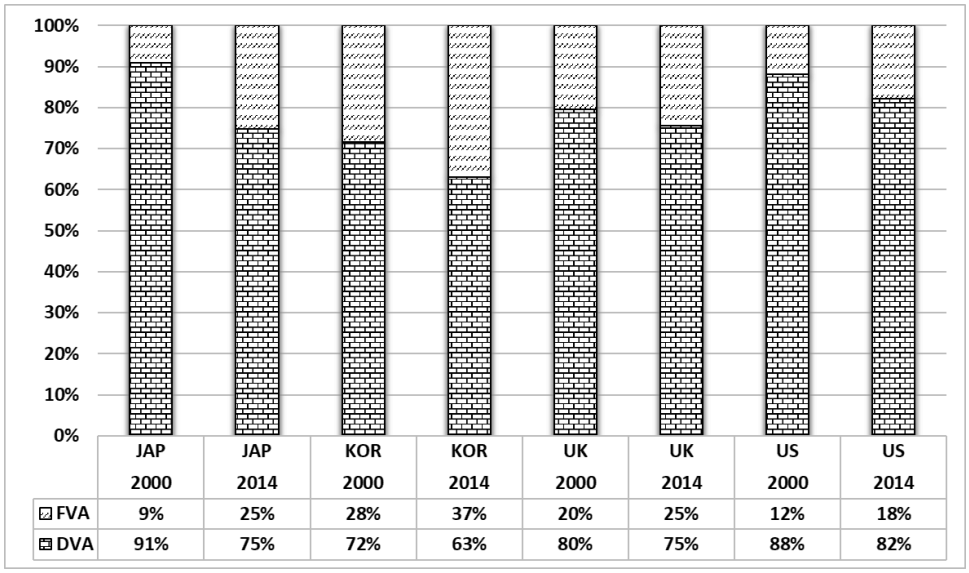
4.5.5 Fabricated Metals

The estimations of import contents in each unit of final demand of Fabricated Metals industry reveal that it has increased in 2014 over 2000 for all developed[11] and developing countries. The shares have substantially increased in Japan and Korea and in Turkey. For Canada and Mexico, it is stagnant at 34percent. Figures 4.5.5.1a and b provide the graphs of these shares across countries.

4.5.5.1a. DVA and FVA contents in each unit of final demand of Fabricated Metals: Developed Countries



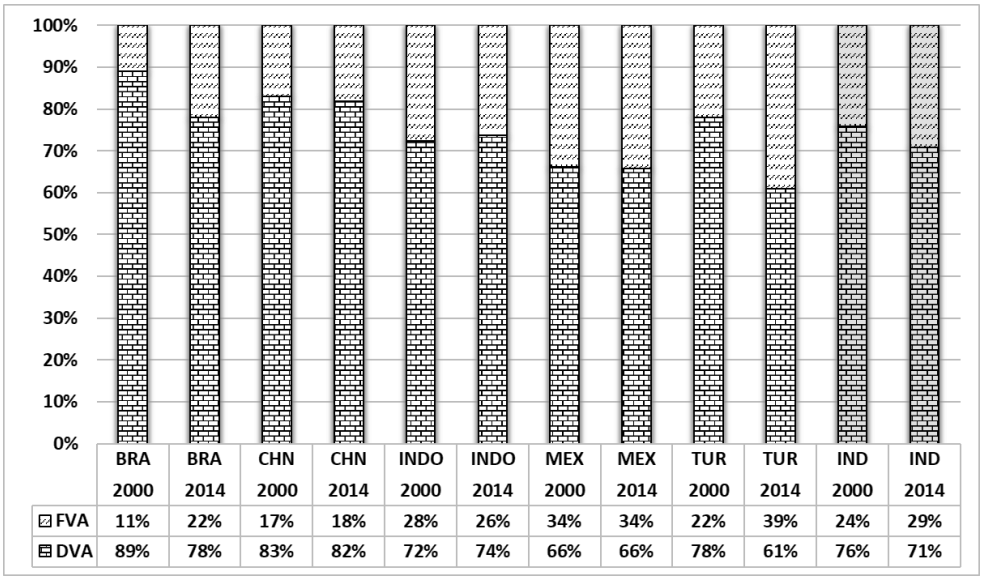
	AUS 2000	AUS 2014	CAN 2000	CAN 2014	FRA 2000	FRA 2014	GER 2000	GER 2014	ITA 2000	ITA 2014
FVA	20%	25%	34%	34%	26%	31%	22%	27%	26%	27%
DVA	80%	75%	66%	66%	74%	69%	78%	73%	74%	73%



	JAP 2000	JAP 2014	KOR 2000	KOR 2014	UK 2000	UK 2014	US 2000	US 2014
FVA	9%	25%	28%	37%	20%	25%	12%	18%
DVA	91%	75%	72%	63%	80%	75%	88%	82%

[11] Russia's imported inputs data for this industry is not available in the I-O matrix. Hence, we did not get the FVA estimates for this industry of Russia.

4.5.5.1b. DVA and FVA contents in each unit of final demand of Fabricated Metals: Developing Countries

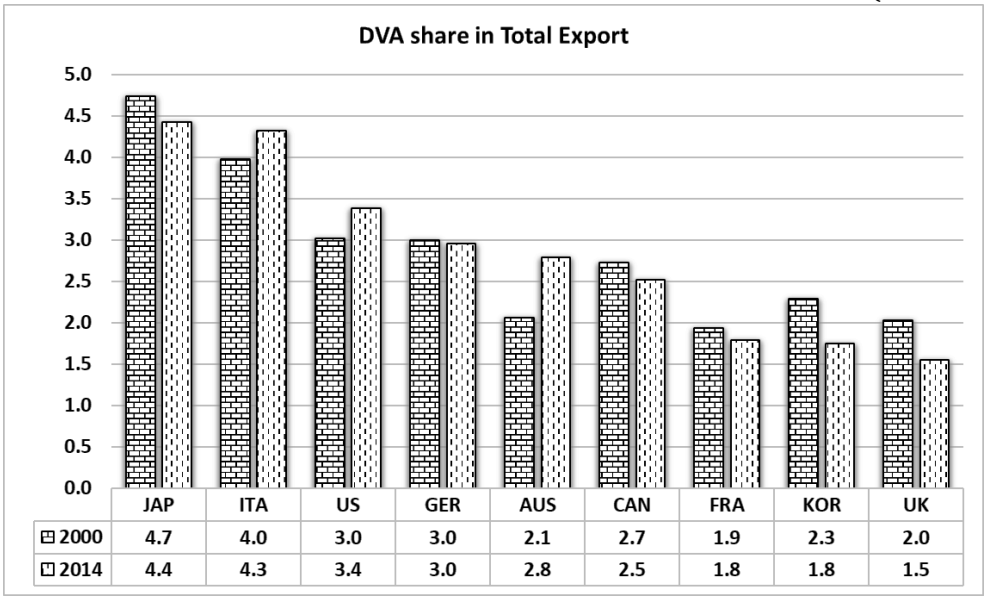


	BRA 2000	BRA 2014	CHN 2000	CHN 2014	INDO 2000	INDO 2014	MEX 2000	MEX 2014	TUR 2000	TUR 2014	IND 2000	IND 2014
FVA	11%	22%	17%	18%	28%	26%	34%	34%	22%	39%	24%	29%
DVA	89%	78%	83%	82%	72%	74%	66%	66%	78%	61%	76%	71%

Source: Prepared from Appendix 3 tables.

Among the developing countries, as mentioned, turkey's foreign content share in their unit level final demand is highest (39percent) followed by Mexico (34percent) and India (29 percent) in 2014. Mexico retained its FVA content share to 34percent over last 14 years where as other countries have increased their foreign input usage and backward linkages. There unit shares have helped us to estimate the shares of DVA and FVA contents in total export of the industry to understand the cross-country position of the industry with respect to its forward and backward linkages to global production and consumption networks. Figures 4.5.5.2a and b are the graphical representation of these shares of developed and developing countries respectively.

Figure 4.5.5.2a: Shares of DVA and FVA Contents in Total Export of Fabricated Metals: Developed Countries (in Percentage)



	JAP	ITA	US	GER	AUS	CAN	FRA	KOR	UK
2000	4.7	4.0	3.0	3.0	2.1	2.7	1.9	2.3	2.0
2014	4.4	4.3	3.4	3.0	2.8	2.5	1.8	1.8	1.5

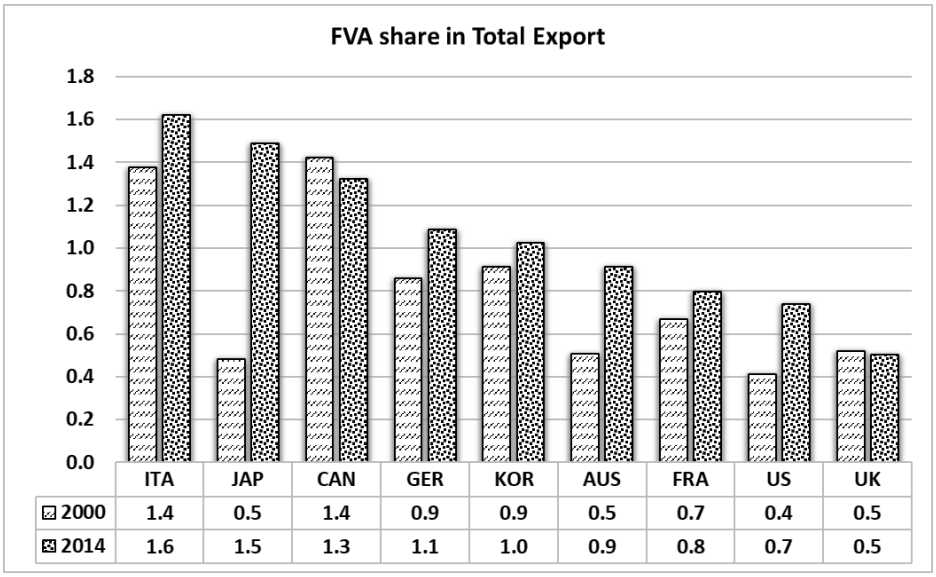
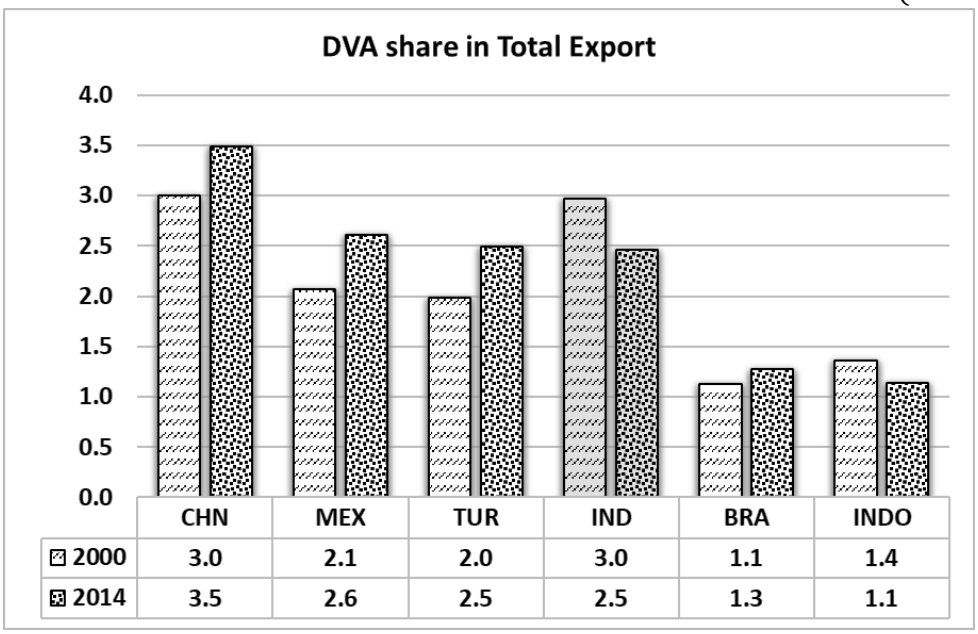
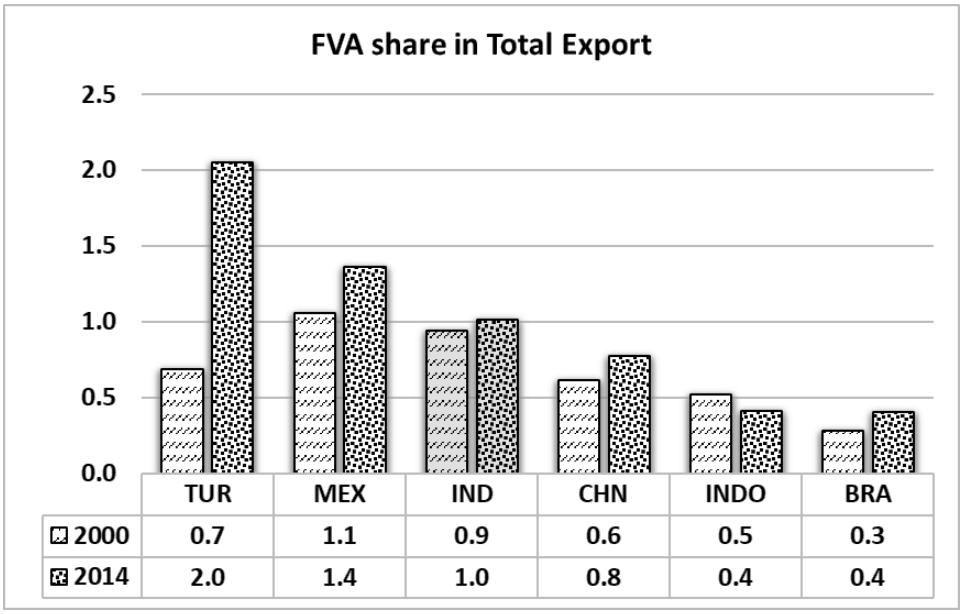


Figure 4.5.5.2b: Shares of DVA and FVA Contents in Total Export of Fabricated Metals: Developing Countries (in Percentage)





	TUR	MEX	IND	CHN	INDO	BRA
2000	0.7	1.1	0.9	0.6	0.5	0.3
2014	2.0	1.4	1.0	0.8	0.4	0.4

Source: Prepared from Appendix 3 tables.

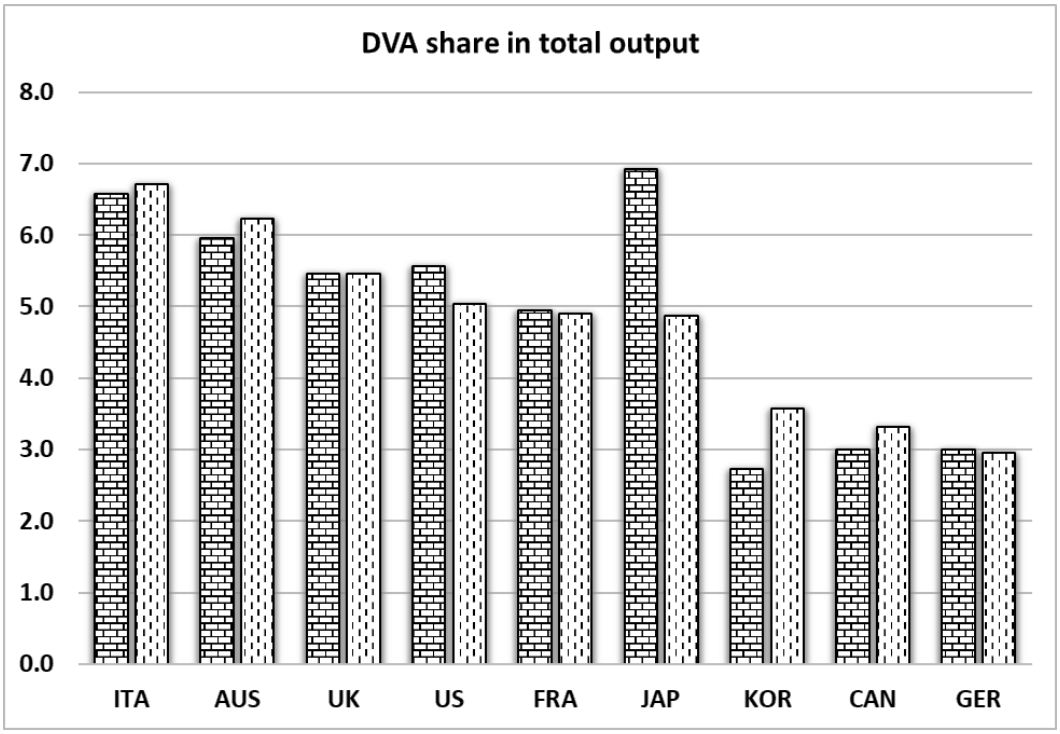
The estimation reveals that for developed countries, overall there is an increase in their FVA content shares in total export with few exceptions. In case of Canada, the share has decreased marginally by 0.1 percentage point and for UK it is stagnant at 0.5percent in 2014 over 2000. In Japanese fabricated metal industry, the foreign content share to their total manufacturing export has increased from 0.5percent to1.5percent in 2014 over 2000. All these reveals larger backward participation in global value chain. For Canada, this industry's forward and backward participation in global production and consumption networks have marginally reduced in 2014 over 2000.

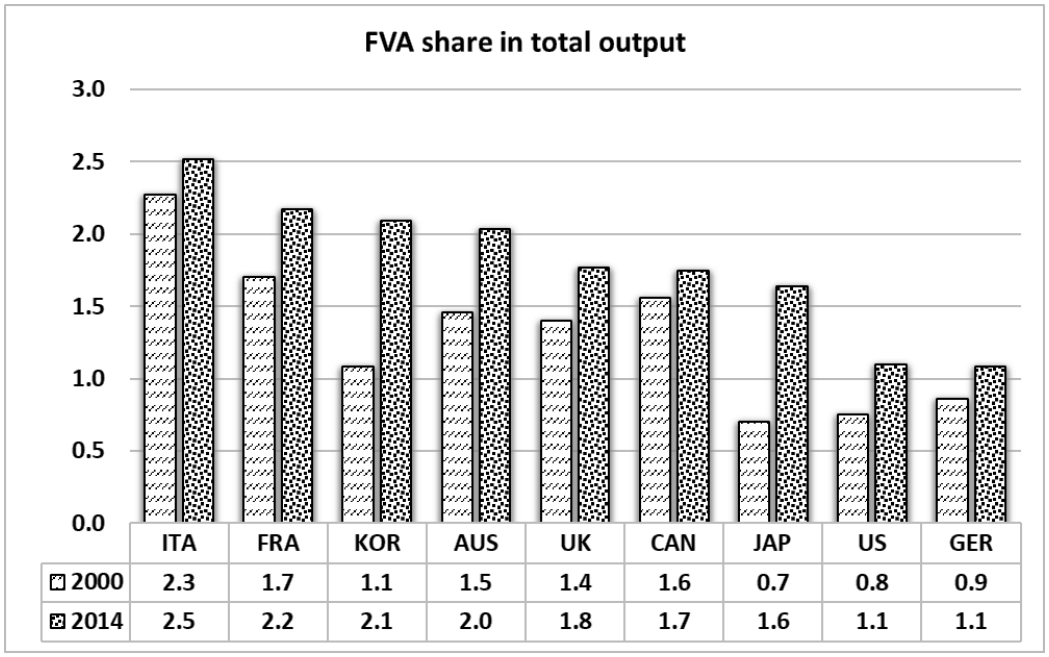
In Basic metal and fabricated metal industries, the shares of foreign content in per unit final demand have increased for all developed and developing countries but with varying degree.

Further, the DVA shares of fabricated metals industry in gross manufacturing export, are less than 3percent and FVA shares are less than 1percent in most of the economies. For Japan, China and US, the DVA shares are lying between 3percent to 4.5percent which has fallen in 2014 over 2000 marginally. Among the emerging economies, India's DVA share in her gross manufacturing export was 3 percent in 2000 which has reduced to 2.46 percent in 2014 (after China, where the shares are 3.9 percent and 3.3 percent respectively). Hence, neither substantial backward linkages nor forward linkages are prominent in this sector for these selected group of countries.

Figures 4.5.5.3a and b show the estimates of shares of DVA and FVA contents in total output of fabricated metals of developed and developing countries respectively.

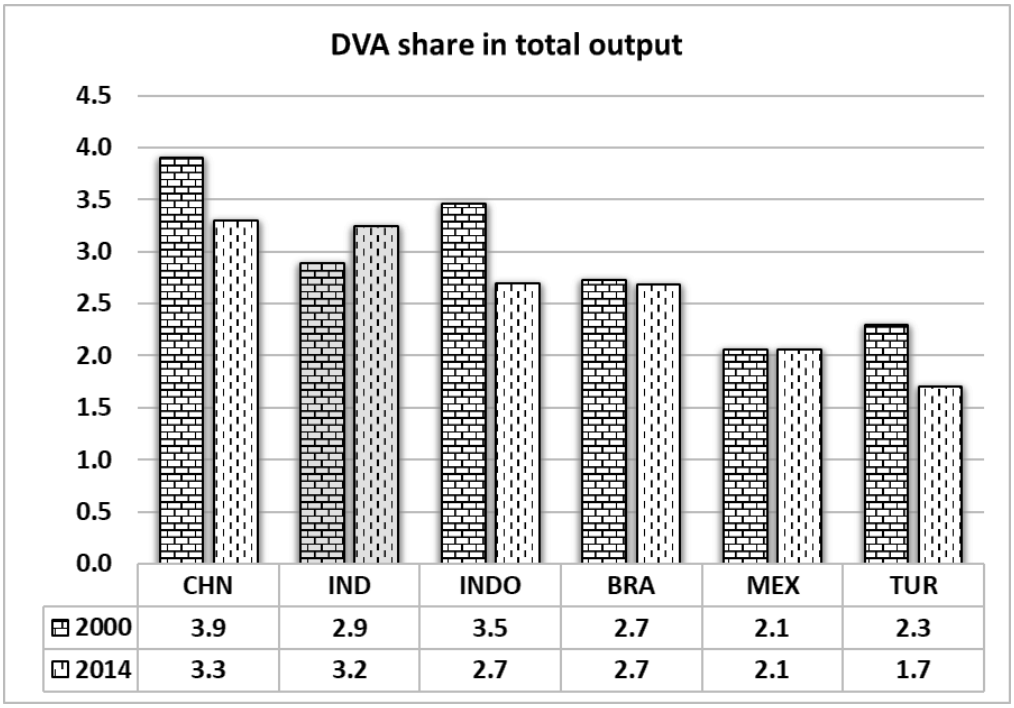
Figure 4.5.5.3a: Shares of DVA and FVA Contents in Total Output of Fabricated Metals: Developed Countries (in Percentage)



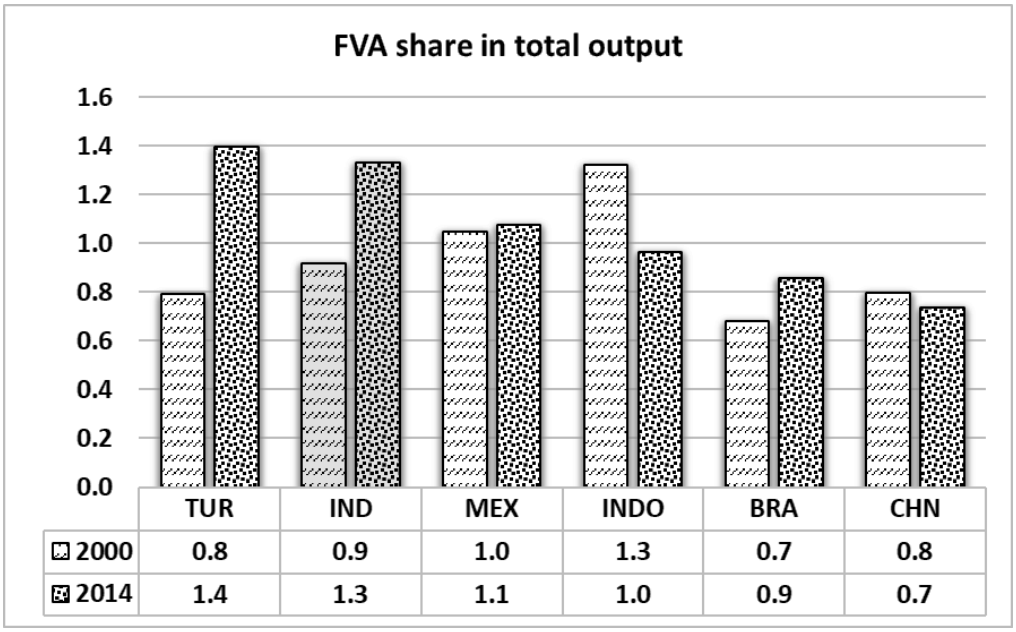


	ITA	FRA	KOR	AUS	UK	CAN	JAP	US	GER
2000	2.3	1.7	1.1	1.5	1.4	1.6	0.7	0.8	0.9
2014	2.5	2.2	2.1	2.0	1.8	1.7	1.6	1.1	1.1

Figure 4.5.5.3b: Shares of DVA and FVA Contents in Total Output of Fabricated Metals: Developing Countries (in Percentage)



	CHN	IND	INDO	BRA	MEX	TUR
2000	3.9	2.9	3.5	2.7	2.1	2.3
2014	3.3	3.2	2.7	2.7	2.1	1.7



	TUR	IND	MEX	INDO	BRA	CHN
2000	0.8	0.9	1.0	1.3	0.7	0.8
2014	1.4	1.3	1.1	1.0	0.9	0.7

Source: Prepared from Appendix 3 tables.

Estimation reveals that FVA contents in gross output have increased for this industry in all developed countries. In developing countries, expect in Indonesia and China, FVA contents have increased. This indicate a change in terms of domestic or foreign inputs use and substitution between domestic production with production process abroad.

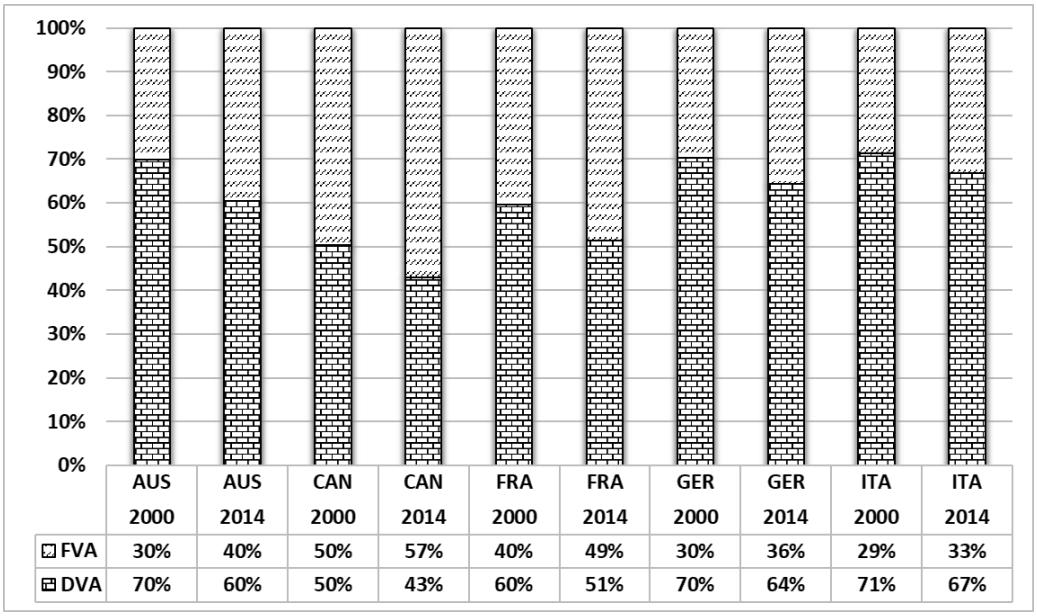
In Japan, we find a fall in DVA content in output along with an increase in FVA content in output. This indicates substitution among domestic and foreign input usage. But for other countries, we cannot vouch for the existence of a substitution among domestic and foreign inputs usage in the production process. Rather, stagnant shares of DVA content along with increase in shares of FVA

contents indicate a possibility of complementarity of these two types of inputs usage in production in most of the developed and developing countries.

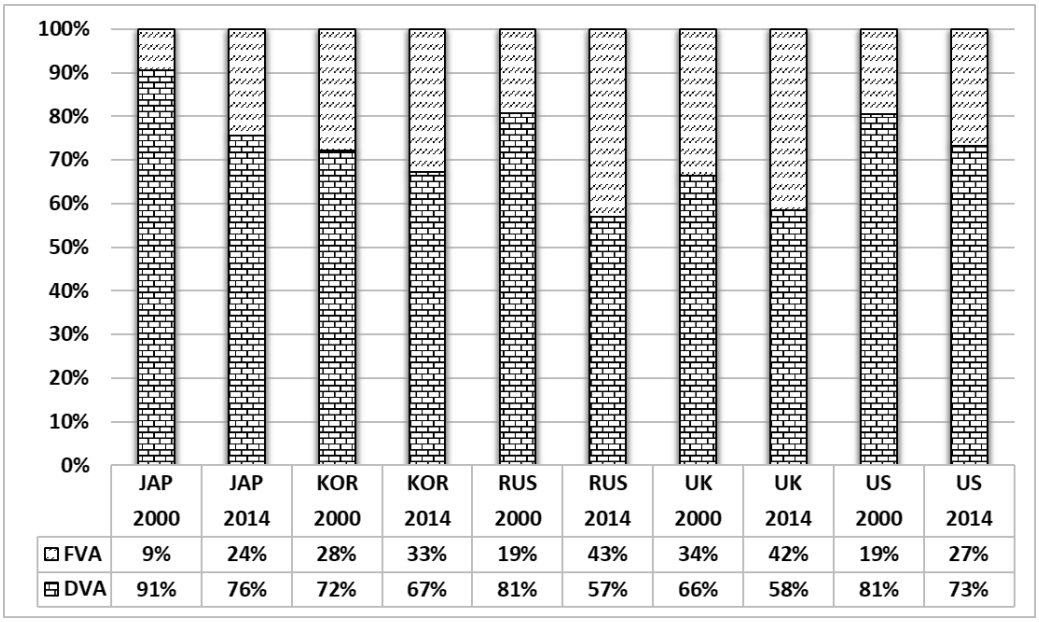
4.5.6 Motor Vehicles

For motor vehicles industry, the FVA contents in each unit of final demand of Motor Vehicles have increased for all developed countries. For Canada, the share is more than the DVA share (57percent) in 2014 which was 50percent in 2000. These estimates are shown in figure 4.5.6.1a below. Estimation reveals that the FVA contents of most of the developed countries are much higher (except US and Japan) than the shares of developing countries.

4.5.6.1a. DVA and FVA contents in each unit of final demand of Motor Vehicles: Developed Countries

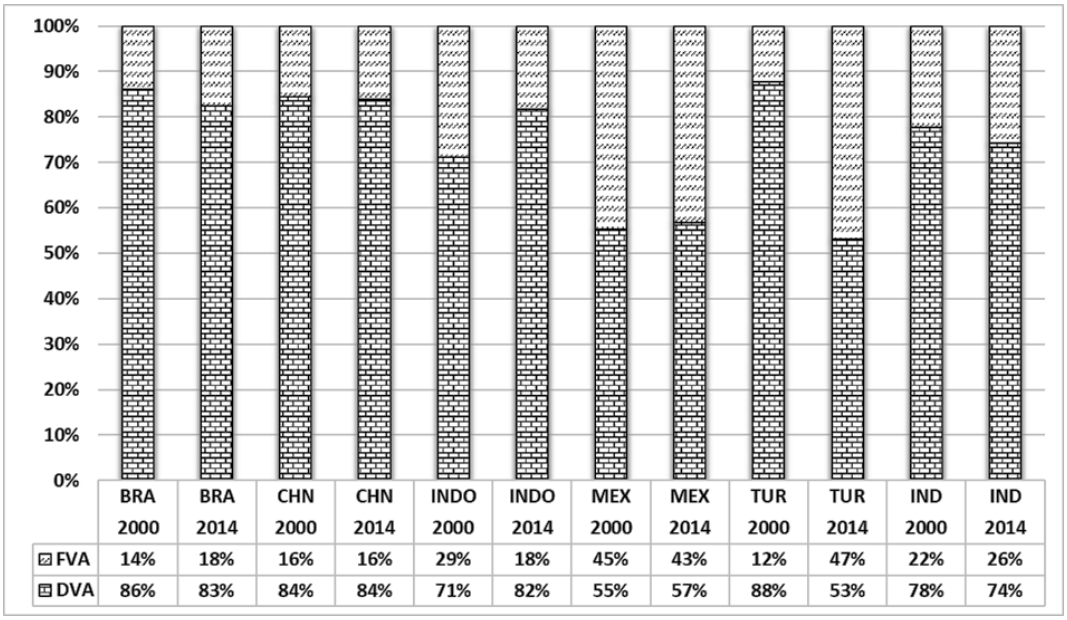


	AUS 2000	AUS 2014	CAN 2000	CAN 2014	FRA 2000	FRA 2014	GER 2000	GER 2014	ITA 2000	ITA 2014
FVA	30%	40%	50%	57%	40%	49%	30%	36%	29%	33%
DVA	70%	60%	50%	43%	60%	51%	70%	64%	71%	67%



	JAP 2000	JAP 2014	KOR 2000	KOR 2014	RUS 2000	RUS 2014	UK 2000	UK 2014	US 2000	US 2014
FVA	9%	24%	28%	33%	19%	43%	34%	42%	19%	27%
DVA	91%	76%	72%	67%	81%	57%	66%	58%	81%	73%

4.5.6.1b. DVA and FVA contents in each unit of final demand of Motor Vehicles: Developing Countries

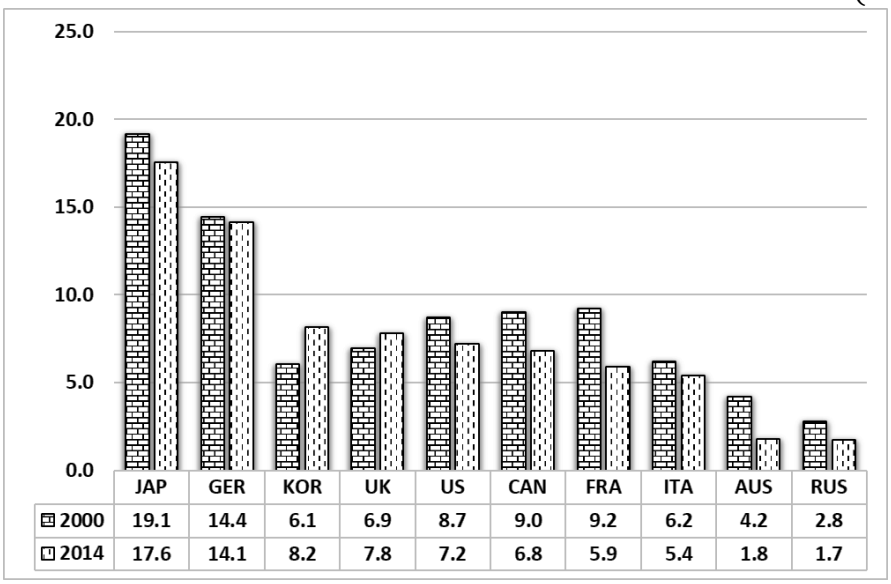


	BRA 2000	BRA 2014	CHN 2000	CHN 2014	INDO 2000	INDO 2014	MEX 2000	MEX 2014	TUR 2000	TUR 2014	IND 2000	IND 2014
FVA	14%	18%	16%	16%	29%	18%	45%	43%	12%	47%	22%	26%
DVA	86%	83%	84%	84%	71%	82%	55%	57%	88%	53%	78%	74%

Source: Prepared from Appendix 3 tables.

For developing countries, Turkey's FVA share is substantially high in 2014 (47percent) as compared to other developing countries. Except Mexico and China, rest of the countries' FVA content has increased in 2014 over 2000. Mexico's share has decreased by 2 percentage points in 2014 over 2000, but still its share is high compare to other developing countries. China's FVA share is stagnant at 16percent during the period. Using these unit shares we have calculated the foreign and domestic value-added shares of this industry to total manufacturing export and output. Figures 4.5.6.2a and b show the Shares of DVA and FVA Contents in Total Export of this industry for developed and developing countries respectively.

Figure 4.5.6.2a: Shares of DVA and FVA Contents in Total Export of Motor Vehicles: Developed Countries (in Percentage)



	JAP	GER	KOR	UK	US	CAN	FRA	ITA	AUS	RUS
2000	19.1	14.4	6.1	6.9	8.7	9.0	9.2	6.2	4.2	2.8
2014	17.6	14.1	8.2	7.8	7.2	6.8	5.9	5.4	1.8	1.7

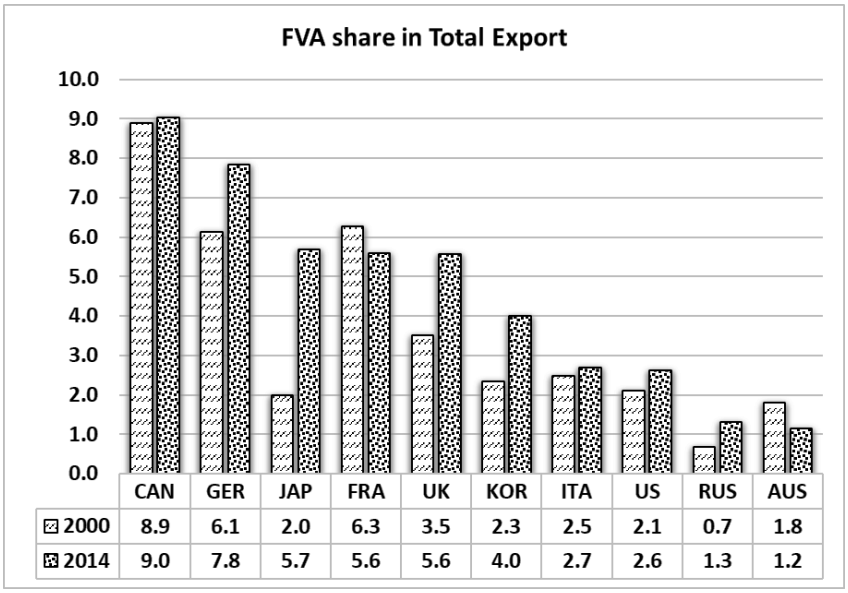
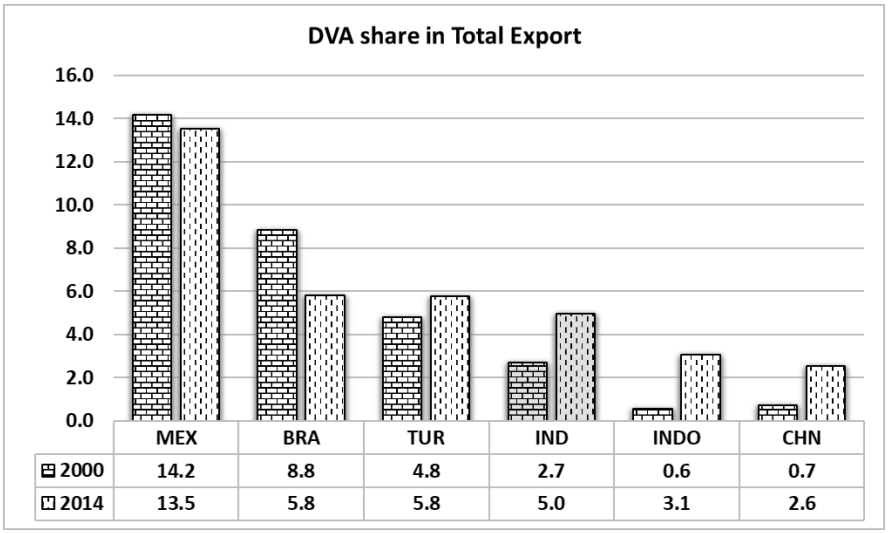
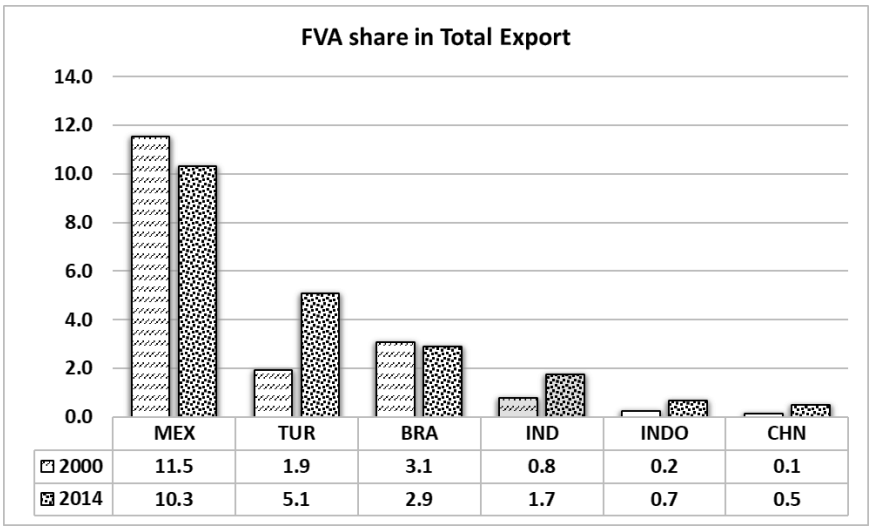


Figure 4.5.6.2b: Shares of DVA and FVA Contents in Total Export of Motor Vehicles: Developing Countries (in Percentage)





Source: Prepared from Appendix 3 tables.

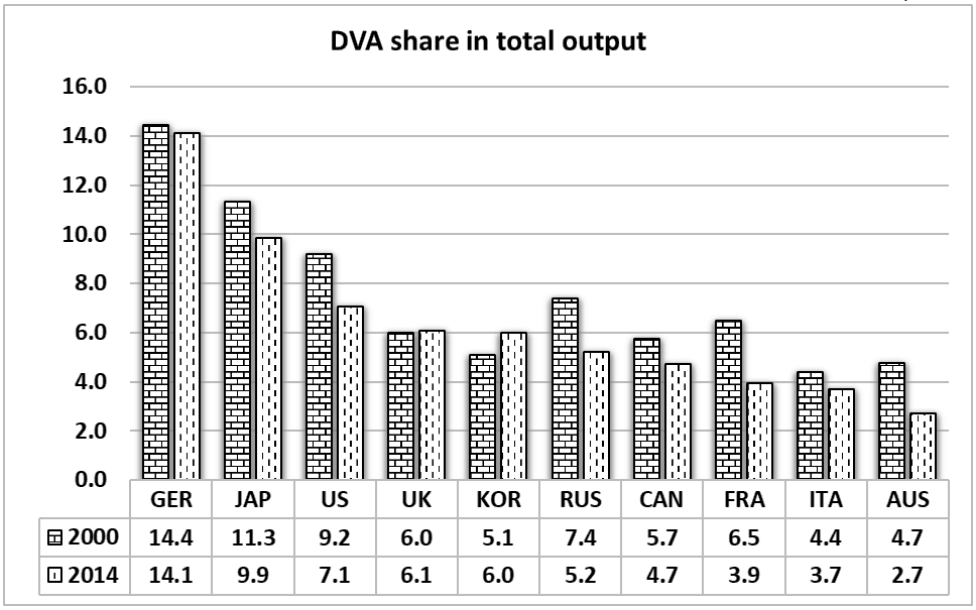
Estimation reveals, the shares of FVA contents in total export has increased for all developed countries which indicates their larger backward linkages in GVC. For the DVA shares, the picture is mixed. For some of the countries, the share has decreased (Japan, US, France, Italy, Australia and Russia). For Germany, it is stagnant to 14.1percent and for S. Korea and UK it has increased marginally. In France and US, the shares of DVA and FVA contents of motor vehicles have decreased. The decrease is quite marginal in US (0.5 percentage points in 2014 over 2000) but in France, the DVA share has reduced by 3.3percent percentage points which indicates a substantial lower forward participation of France's motor vehicles industry in global production and consumption networks. FVA share for the country has reduced marginally by 0.7 percentage point in 2014 over 2000. For the other three developed nations viz. Germany, Italy and Japan, the DVA shares have reduced but FVA shares have increased. Particularly in Japan, the FVA share in gross export has increased by 3.7 percentage point in 2014 over 2000 which reflects a larger backward linkage of the industry.

Larger backward linkages in GVC and relatively more import input intensity is prevalent in Motor vehicles sector across countries.

In the developing countries, the scenario is quite mixed. For India, China and Indonesia, both DVA and FVA shares of industry export to total manufacturing export have increased in 2014 over 2000. But the percentage point changes in FVA shares are lower than the percentage point changes in DVA shares. This indicates that the increase in forward participation in global production and consumption network is higher than the increase in backward linkage in GVC. For Turkey, this is opposite. In Mexico and Brazil, both have decreased.

Now, in terms of its DVA and FVA shares in gross manufacturing output, figures 4.5.6.3a and b represents these shares.

Figure 4.5.6.3a: Shares of DVA and FVA Contents in Total Output of Motor Vehicles: Developed Countries (in Percentage)



	GER	JAP	US	UK	KOR	RUS	CAN	FRA	ITA	AUS
2000	14.4	11.3	9.2	6.0	5.1	7.4	5.7	6.5	4.4	4.7
2014	14.1	9.9	7.1	6.1	6.0	5.2	4.7	3.9	3.7	2.7

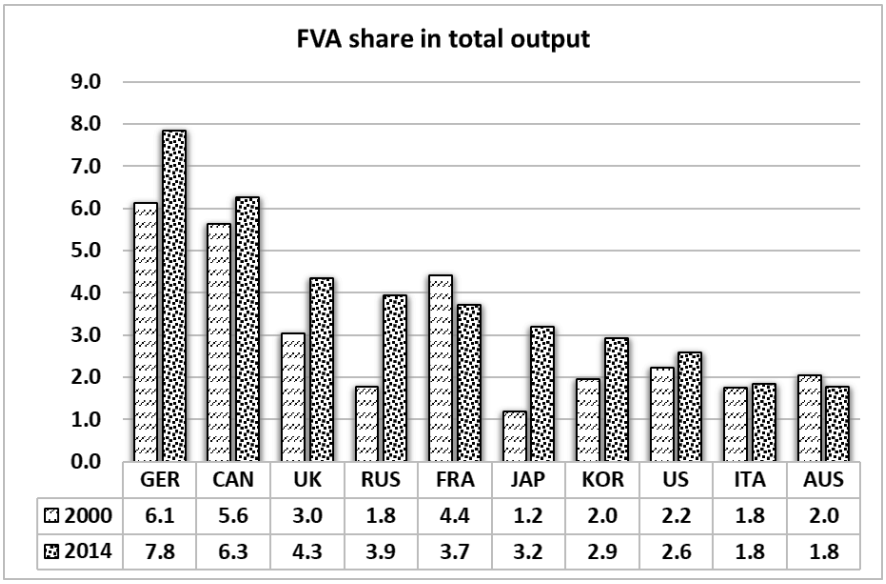
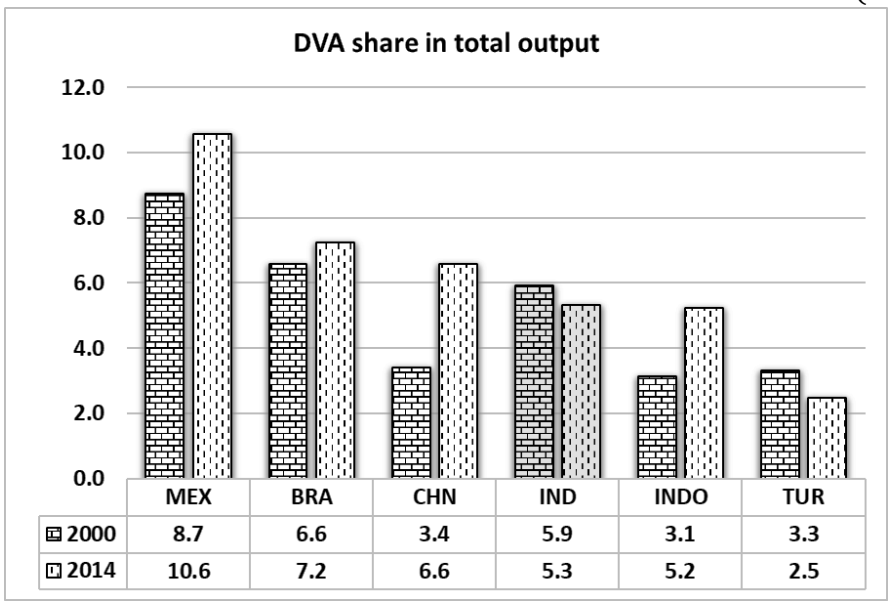
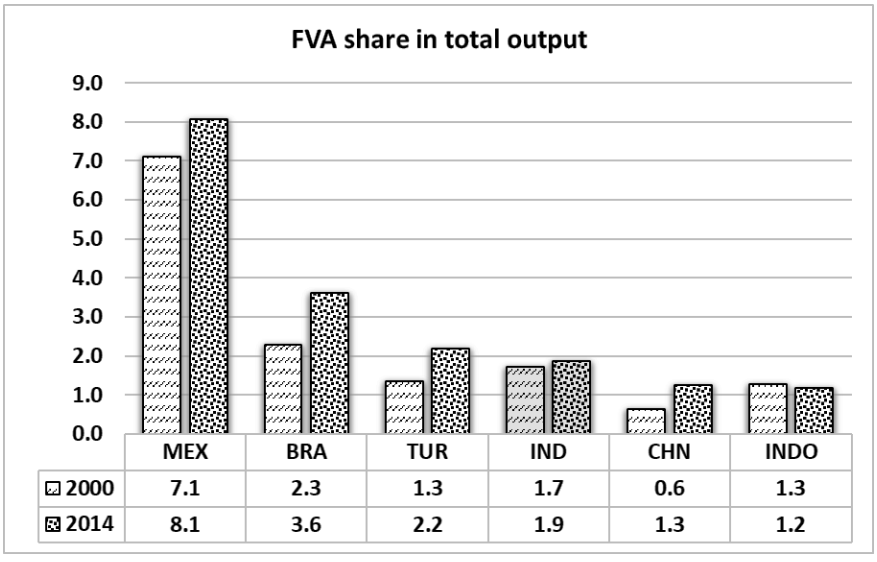


Figure 4.5.6.3b: Shares of DVA and FVA Contents in Total Output of Motor Vehicles: Developing Countries (in Percentage)





Source: Prepared from Appendix 3 tables.

Shares of DVA and FVA contents in gross output in motor vehicle sector have fallen in France by 2.6 and 0.7 percentage points respectively in 2014 over 2000. It indicates that France uses more indigenous inputs and higher substitution towards domestic production over production phases abroad. Except for France, in all other countries, the FVA shares have increased in 2014 over 2000. In developing countries also, the FVA shares have increased in 2014 over 2000. In Canada, Japan, Russia, US and India, the share of DVA contents in gross output have fallen with higher FVA contents in output. This signifies higher substitution towards domestic production process with more imported inputs. Increase in DVA and FVA contents in gross outputs of motor vehicle sectors in Germany, S. Korea, UK, Brazil and Mexico signify that they have substituted domestic production with production process abroad with more foreign inputs.

In the final section 5, we have summarised our study and have discussed the policy implications.

5. CONCLUSION

In conclusion, we first summarize our major findings and then draw some plausible broad policy perspectives.

5.1 Summary of the Findings

This study is purported to examine the twin objectives to measure (1) the domestic and import contents in exports, and, (2) the domestic and import content in output in India's manufacturing. For this, we first of all evaluate the 'foreign value-added content of exports (FVA)', which corresponds to the value-added due to imported intermediate goods. On the other hand, the domestic value-added content (DVA) being used to measure the sectoral contribution to final consumption and for further processing. Similarly, the domestic and foreign value-added content of gross output captures the domestic and imported intermediary inputs as a share of gross domestic production. These measures are sensitive to the degree of vertical integration; hence they are useful to evaluate the effects of international outsourcing.

For our analytical purpose, we have used WIOD database to calculate these measures or indices and have studied the trends of these indices to understand the position of Indian manufacturing in global product sharing network. This study will help us to design appropriate industrial and trade policy for manufacturing sector of India.

WIOD database covered 18 manufacturing industries. In this study, we have covered all of them from 2000 to 2014 for India. For cross country analysis we have confined ourselves to some selected industries based on the finding of India's analysis. In the following table 5.1, we have summarised the growth rates of DVA and FVA contents of export of outputs for the key selected industries in India:

Table 5.1.: Growth directions of DVAs & FVAs of Export and Output of selected 6 Manufacturing industries during 2000-2014

Codes	Industry	DVA-Export	FVA-Export	DVA-output	FVA-output
C10-12	Food, beverages and tobacco	↓	-	-	-

C13-15	Textiles, wearing apparel and leather	↓	↓	↓	↓
C20	Chemicals and chemical products	-	↑	↓	↑
C24	Basic metals	↑	↑	-	↑
C25	Fabricated metal, except machinery and equipment	↓	-	↑	↑
C29	Motor vehicles, trailers and semi-trailers	↑	↑	↓	↑

Source: Authors' compilation from the calculations.

Note:

↑ indicates that growth rate of the concerned variable has increased over time, significant at 1percent or 5percent level of significance (as applicable)

↓ indicates that growth rate of the concerned variable has decreased over time, significant at 1percent or 5percent level of significance (as applicable)

- indicates insignificant growth rate.

Going one step beyond, we have tried to see whether export expansion of manufacturing industries requires import expansion or not. Our regression result reveals that increase in imported inputs' share in manufacturing has a positive impact on export share but its effect is decreasing eventually. The possible reason could be the inconsequential effect of output shares on export shares. Perhaps, a vibrant domestic manufacturing supported by global integration is important to achieve the goals of increasing exports. It is to be emphasized that imported inputs are compliments but not substitute for domestic output. This indicates the requirement of stringent import policy along with export policy.

The country-level analyses reveal the following:

The estimation reveals that the foreign value-added contents in unit level final demand of a country has increased in 2014 over 2000 across all developed and developing countries with a corresponding fall in domestic value-added share. One exception is Canada where the FVA share is stagnant at 34percent during the period. The range of the FVA shares widely varies across countries. For developed countries, the range is 12percent (Japan) to 42.7percent (Russia) in 2000 which has raised to 18percent (US) to 45 percent (Russia) in 2014. For developing economies, in 2000, the range of FVA shares in unit level of final demand is lying between 14percent (Brazil) to 28percent (Mexico) which has increased to 17percent (China)- 31 percent (Mexico). We have used these shares to calculate the FVA shares in total manufacturing export and output of each economies.

Estimation shows that the FVA content shares in total manufacturing export and output have increased for all developed (except Canada) countries in 2014 over 2000. The increment is lying between 5 to 7 percentage points for all developed countries. The range is from 11.3 percent (Japan) to 36.7 percent (S. Korea) in 2000 which has raised to 19.6 percent (USA) to 43.1percent (S. Korea) in 2014. On the contrary, the DVA contents in total manufacturing export has decreased marginally for all developed economies. The range of decrease is lying between 1 – 2 percentage points on an average in 2014 over 2000. This scenario indicates a larger backward

linkage in GVC without much compromising forward participation in global production and consumption networks.

The picture is almost same for the developing economics. Except Mexico, all other countries FVA shares in their total export either have increased or stagnant. Among all, India and Turkey's FVA shares have almost doubled in 2014 from 2000. On the contrary, DVA shares have decreased marginally in all developing countries, which indicate comparatively lesser forward participation in global production and consumption networks. The range of FVA shares in total export was 16percent (India) – 44.3percent (Mexico) in 2000, which has raised to 20.4percent (China) – 43.4percent (Mexico) in 2014.

The increase in FVA shares in total manufacturing outputs of these developing and developed countries are showing almost similar pattern which indicates industries substitution of domestic production with production phases abroad.

Further, in this report we have primarily focused on the six key manufacturing industries viz. Food, Textiles, Chemicals, Basic Metals, Fabricated Metals and Motor Vehicles for cross-country industry level analysis. Food sector shows a very diversified picture across all developed and developing countries. FVA contents in unit level demand has increased or remain same for all developed except Australia and Russia and all developing except Indonesia in 2014 over 2000. These affected their forward and backward participation in global production and consumption networks. The FVA shares in total output of all developing and developed countries (except Russia) has increased in 2014 over 2000 which indicates larger usage of foreign inputs. This is complemented by domestic inputs as their DVA contents in output. Thus, for food sector, domestic and foreign inputs are complementary rather than substitute across all countries.

For textile sector, we find an increase in FVA shares in per unit final demand for all countries, including India in 2014 over 2000. But the estimations of FVA and DVA shares in total export and output show a decrease in 2014 over 2000 across all developing and developed countries. This reveals less substitution possibility in domestic production over production possibility abroad and with lower participation in global production and consumption networks.

For the Basic metal and fabricated metal industries, the shares of foreign content in per unit final demand have increased for all developed and developing countries but with varying degree. The FVA contents in total exports and outputs have increased in majority developing and developed countries for both the industries, which indicate larger backward participation in GVC with more substitution possibility in domestic production over production possibility abroad.

For motor vehicles industry, the FVA contents in each unit of final demand of the industry have increased for all developed countries. For developing countries, except Mexico and China, rest of the countries' FVA content in each unit of final demand has increased in 2014 over 2000. The shares of FVA contents in total export has increased for all developed countries which indicates their larger backward linkages in GVC. Also, the FVA shares in total output have also increased for all developed and developing economies in 2014 over 2000.

Based on this broad picture of Indian manufacturing in the context of their involvement in a global production network, and based on the cross-country analysis, some policy prescription can be suggested. This we have enumerated in our following subsection.

5.2 Policy Prescription

Based on our analysis, the following broad policy prescriptions can be suggested:

- Our study reveals that imported inputs are able to enhance exports through their direct and indirect inputs usage. The cheaper the imported inputs are, the greater will be their effects on exports. Therefore, a further liberalized trade regime may be helpful for the expansion of export growth. Since there is a wide variation in the use of imported inputs across industries, the industries which are more imported input intensive should be encouraged by liberalizing the tariffs and other barriers on their use of imports. Hence, existing import policy should be reviewed to re-look the tariff and non-tariff measures.
- Higher domestic value-added content of export indicates higher forward participation in global production network and producing more final products. Hence, policies are required to be put into place to remove the existing constraints or bottlenecks in the production process to increase the DVA contents in export.
- The regression results indicate that imported inputs by itself cannot trigger export growth if domestic production is not expanding perhaps on a greater scale. In essence, a higher growth in manufacturing not only will generate more employment in the domestic economy but it will also increase exports which will also result in increase in imported inputs.
- Cross-country analysis gives us a picture that the FVA contents in export and output has increased in manufacturing sector across globe. Further, the complementary relation between domestic and imported inputs usage in the economies also tells us that we should have a strong industry-specific import-policy in place to strengthen our backward linkage in GVC.

5.3 Further Extension

Hence, this study can be extended further to derive specific policy concerns:

- The DVA and FVA contents of export can be further disaggregated to calculate the value added of intermediate goods embodied in export. This will help us to analyses our forward and backward chains of a particular industry and which countries are pre-dominant in the GVC of a particular industry. This study is particularly relevant from policy perspective as it will help us to strategize our trade policy more effectively.
- Employment generation is one of the prominent agendas in current policy framework of India. In WIOD database, wages and employment data is available by skill type for 35 industries. Through this database, it is possible to estimate and analyse export related job creation in manufacturing sector of India to understand the job potentials of this sector.

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APPENDIX 1

Detailed methodology:

For a year, the computational International Input-Output table for a country is as follows:

	i / *j*	C10-C12	C13-C15	……..	C31-32	Final Consumption	Export	GO
Domestic	C10-C12	I_{11}^d	I_{12}^d	…….	I_{1n}^d	C_1^d	E_1^d	y_1
	C13-C15	I_{21}^d	I_{22}^d	…….	I_{2n}^d	C_2^d	E_2^d	y_2
	. . .	. . .	. . .	…… …… ……	. . .	…… …… …….	…… …… ……	…… …… ……
	C31-32	I_{n1}^d	I_{n2}^d	……	I_{nn}^d	C_n^d	E_n^d	y_n
Import	C10-C12	I_{11}^m	I_{12}^m	…….	I_{1n}^m	C_1^m	E_1^{re}	M_1
	C13-C15	I_{21}^m	I_{22}^m	…….	I_{2n}^m	C_2^m	E_2^{re}	M_2
	. . .	. . .	. . .	…… …… ……	. . .	…… …… …….	…… …… ……	…… …… ……
	C31-32	I_{n1}^m	I_{n2}^m	……	I_{nn}^m	C_n^m	E_n^{re}	M_n
VA (Value added)		V_1	V_2	……	V_n			
GO (Total output)		y_1	y_2	……	y_n			

Where,

I_{ij}^d : intermediate use of domestically produced of i^{th} industry's inputs in j^{th} industry.

C_i^d: domestic final consumption

E_i^d : export of domestically produced goods

I_{ij}^m : intermediate use of the imported inputs from sector *i* used in j^{th} industry.

C_i^m: final consumption of imported goods.

E_i^{re}: re-export.

M_i: total use of imports of i^{th} industry.

Hummels et al. (2001) have captured the phenomenon of goods and services produced in multiple stages across different countries, with each country carrying out some stages of the production sequence and then exporting the good-in-process to the next country. In this measure not only, they include the value of imports directly contained in the exports, but also the value of inputs which are indirectly used in the production of the exported good, i.e., imported inputs embodied in domestic inputs.

In a vertical specialization chain, imported inputs are used to produce an exported good.
Following Hummels et al. (2001), we consider the following three identities:

i. Total domestic supply equals to use of domestic production for each product (in matrix notation):

$$\begin{pmatrix} I_{11}^d & \dots & I_{1n}^d \\ \dots & \ddots & \dots \\ I_{n1}^d & \dots & I_{nn}^d \end{pmatrix} + \begin{pmatrix} C_1^d \\ \vdots \\ C_n^d \end{pmatrix} + \begin{pmatrix} E_1^d \\ \vdots \\ E_n^d \end{pmatrix} = \begin{pmatrix} y_1 \\ \vdots \\ y_n \end{pmatrix}$$

Or,

$$\begin{pmatrix} d_{11} & \dots & d_{1n} \\ \dots & \ddots & \dots \\ d_{n1} & \dots & d_{nn} \end{pmatrix} \begin{pmatrix} y_1 \\ \vdots \\ y_n \end{pmatrix} + \begin{pmatrix} C_1^d \\ \vdots \\ C_n^d \end{pmatrix} + \begin{pmatrix} E_1^d \\ \vdots \\ E_n^d \end{pmatrix} = \begin{pmatrix} y_1 \\ \vdots \\ y_n \end{pmatrix}$$

Or,

(1) $Y = A_d.Y + Y_d$ with $Y_d = C_d + E_d$

Similarly,

ii. Total imports equal to total use of imported products, i.e.,

$$\begin{pmatrix} m_{11} & \dots & m_{1n} \\ \dots & \ddots & \dots \\ m_{n1} & \dots & m_{nn} \end{pmatrix} \begin{pmatrix} y_1 \\ \vdots \\ y_n \end{pmatrix} + \begin{pmatrix} C_1^m \\ \vdots \\ C_n^m \end{pmatrix} + \begin{pmatrix} E_1^{re} \\ \vdots \\ E_n^{re} \end{pmatrix} = \begin{pmatrix} M_1 \\ \vdots \\ M_n \end{pmatrix}$$

Or,

(2) $M = A_m.Y + Y_m$ where $Y_m = C_m + E_{re}$

iii. Finally, the supply table gives,

$$\begin{pmatrix} 1 \\ \vdots \\ 1 \end{pmatrix} \begin{pmatrix} d_{11} & \dots & d_{n1} \\ \dots & \ddots & \dots \\ d_{1n} & \dots & d_{nn} \end{pmatrix} + \begin{pmatrix} 1 \\ \vdots \\ 1 \end{pmatrix} \begin{pmatrix} m_{11} & \dots & m_{n1} \\ \dots & \ddots & \dots \\ m_{1n} & \dots & m_{nn} \end{pmatrix} + \begin{pmatrix} v_1 \\ \vdots \\ v_n \end{pmatrix} = \begin{pmatrix} 1 \\ \vdots \\ 1 \end{pmatrix}$$

Or, $(1 \quad \dots \quad 1) \begin{pmatrix} d_{11} & \dots & d_{1n} \\ \dots & \ddots & \dots \\ d_{n1} & \dots & d_{nn} \end{pmatrix} + (1 \quad \dots \quad 1) \begin{pmatrix} m_{11} & \dots & m_{1n} \\ \dots & \ddots & \dots \\ m_{n1} & \dots & m_{nn} \end{pmatrix} + (v_1 \quad \dots \quad v_n) = (1 \quad \dots \quad 1)$

Or,

(3) $uA_d + uA_m + A_z = u$

Now, from equation (3), we get additional domestic value-added and foreign value added generated by one additional unit of final demand of domestic products as:

(4) $\text{DVA}^{\text{total}} = A_z(I - A_d)^{-1}$

(5) $\text{FVA}^{\text{total}} = uA_m(I - A_d)^{-1} = u - A_z(I - A_d)^{-1}$

Thus, expression (5) gives us the additional amount of total-foreign value added generated by one additional unit of final demand of domestic products.

The additional amount of direct import content generated by one additional unit of final demand of domestic products can be calculated as:

(6) $\text{Direct\_FVA} = uA_m$

Subtracting the direct content from the total foreign content will give us the indirect foreign content in per unit of final demand of domestic products which is:

(7) $\text{Indirect\_FVA} = \text{FVA}^{\text{total}} - \text{Direct\_FVA}$

Now using expressions (4) to (7) we have calculated the DVA and FVA contents of export and output in manufacturing sector of India. The calculations of the measures are explained below:

a.1. DVA and FVA Contents of Export

The share of domestic value-added content of export ($DVA_{exp_i}^{total}$) to total manufacturing export for i[th] manufacturing industry can be obtained from:

(8) $DVA_{exp_i}^{total} = A_z(I - A_d)^{-1}\frac{E_d}{\sum_i E_d}$

$\forall i$=C10-12, ……., C31-32(all 18 manufacturing industries)

Where,

E_d: *54x1* vector of sectoral export

$\sum_i E_d$: country total export i.e., sum of exports across 18 industries.

$\frac{E_d}{\sum_i E_d}$ is the *54x1* vector of export share to total export.

In a more general way, total direct and indirect input contents of export ($FVA_{exp_i}^{total}$) is computed as:

(9) $FVA_{exp_i}^{total} = uA_m(I - A_d)^{-1}\frac{E_d}{\sum_i E_d}$

$\forall i$=C10-12, ……., C31-32(all 18 manufacturing industries)

$FVA_{exp_i}^{total}$ is the *54x1* vector.

Now, the direct import content or foreign value-added content of export ($Direct\_FVA_{exp_i}$) is:

(10) $Direct\_FVA_{exp_i} = uA_m\frac{E_d}{\sum_i E_d}$

$\forall i$=C10-12, ……., C31-32(all 18 manufacturing industries)

Therefore, the indirect import content of export ($Indirect\_FVA_{exp_i}$)can be obtained by

(11) $Indirect\_FVA_{exp_i} = FVA_{exp_i}^{total} - Direct\_FVA_{exp_i}$

$\forall i$=C10-12, ……., C31-32(all 18 manufacturing industries)

a.2. DVA and FVA Contents of Output

Similarly, the domestic inputs' content in total output ($DVA_{output_i}^{total}$) is

(12) $DVA_{output_i}^{total} = A_z(I - A_d)^{-1}\frac{y}{Y}$

$\forall i$=C10-12, ……., C31-32(all 18 manufacturing industries)

Further, the total foreign content (direct and indirect) in domestic output ($FVA_{output_i}^{total}$) can be calculated as

(13) $FVA_{output_i}^{total} = uA_m(I - A_d)^{-1}\frac{y}{Y}$

$\forall i$=C10-12, ……., C31-32(all 18 manufacturing industries)

Where, $\frac{y}{Y}$: *54x1* vector of output share.

y: *54x1* vector of output.

Y is country total output i.e., sum of outputs across the n sectors.

$FVA_{output_i}^{total}$ is the *54x1* vector of total foreign content in output.

Now, the direct import content or foreign value-added content of output ($Direct\_FVA_{output_i}$) is:

(14) $Direct\_FVA_{output_i} = uA_m\frac{y}{Y}$

$\forall i$=C10-12, ……., C31-32(all 18 manufacturing industries)

Therefore, the indirect import content of export ($Indirect\_FVA_{output_i}$)can be obtained by

(15) $Indirect\_FVA_{output_i} = FVA_{output_i}^{total} - Direct\_FVA_{output_i}$

$\forall i$=C10-12, ……., C31-32(all 18 manufacturing industries)

For the measures at aggregate level, we first have calculated the industry-specific DVA and FVA using expressions (4) to (7). Then the aggregate DVA^{total}, FVA^{total}, Direct_FVA and Indirect_FVA are calculated by taking an average of them. These shares are then used to calculate the domestic and foreign contents of total manufacturing export and output.

APPENDIX 2

Table A2-1: Domestic and Foreign Value-Added Content of Export (in million $)

Year	DVA_{exp}^{total}	FVA_{exp}^{total}	$Direct\_FVA_{exp}$	$Indirect\_FVA_{exp}$
2000	29749.6	5673.8	2871.3	2802.5
2001	29898.5	5912.5	3116.1	2796.4
2002	36156.9	7947.5	4375.2	3572.3
2003	40580.0	8946.2	4993.1	3953.1
2004	50377.2	13769.5	7946.4	5823.1
2005	60009.5	19331.5	11589.2	7742.3
2006	71734.3	29093.3	18628.3	10465.0

2007	72875.9	29855.4	19314.1	10541.3
2008	78849.0	35527.1	23578.8	11948.3
2009	80301.4	30644.5	19546.5	11098.0
2010	105566.7	44249.9	28793.9	15456.0
2011	125925.7	56294.6	36776.1	19518.5
2012	136390.3	63611.6	43612.4	19999.2
2013	161703.7	72531.2	50577.4	21953.8
2014	163503.1	69060.6	47978.1	21082.5

Source: WIOD database, 2016 release. Own calculations.

Table A2-2: Domestic and Foreign Value-Added Content of Gross Output (in million $)

Year	DVA_{output}^{total}	FVA_{output}^{total}	$Direct\_FVA_{output}$	$Indirect\_FVA_{output}$
2000	248373.4	58962.2	34276.6	24685.6
2001	253176.2	58037.2	33140.8	24896.4
2002	274303.6	65575.3	37989.7	27585.6
2003	335786.0	76226.3	43448.2	32778.1
2004	394569.6	107778.9	62630.3	45148.6
2005	442311.9	138064.4	82488.1	55576.3
2006	507825.4	188189.5	115503.7	72685.8
2007	643516.3	237966.0	146169.5	91796.5
2008	698256.9	266323.3	161889.1	104434.2
2009	723161.7	247249.5	150585.0	96664.5
2010	922815.1	331823.0	201746.4	130076.6
2011	1070821.2	411081.2	250967.9	160113.3
2012	993863.6	396950.2	250767.5	146182.7
2013	1003476.1	377549.1	240658.4	136890.7
2014	1074766.0	374322.5	235943.2	138379.3

Source: WIOD database, 2016 release. Own calculations.

Table A2-3: Sectoral Export-to-Output Ratio (in percent)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31-C32
2000	6.9	31.1	11.8	4.1	2.3	0.6	13.7	4.4	9.3	4.9	8.4	11.9	8.7	8.3	7.2	5.3	10.9	21.9
2001	7.2	31.9	9.9	4.2	2.3	0.5	13.9	4.8	10.4	4.8	8.1	12.5	12.0	10.0	8.8	5.3	12.8	19.9
2002	6.9	33.3	11.7	5.5	2.7	4.8	16.4	5.8	12.4	5.7	10.6	13.1	14.5	10.9	9.9	5.9	13.9	24.5
2003	5.2	29.5	10.4	4.2	3.8	7.5	16.0	5.9	11.1	5.5	10.1	12.1	14.0	10.0	9.7	6.5	12.8	22.1
2004	5.3	28.3	8.4	4.4	3.2	10.7	17.9	6.1	11.3	5.2	11.4	11.7	13.0	9.1	10.3	8.2	15.8	20.1
2005	5.6	26.9	7.7	4.9	3.5	13.5	19.2	6.1	12.3	5.7	12.5	11.8	10.6	9.7	11.6	10.5	21.3	20.0
2006	5.9	25.6	7.2	4.8	3.3	19.3	21.4	7.0	12.7	5.6	13.7	11.4	10.5	11.2	13.0	10.6	24.2	16.8
2007	5.3	20.1	6.1	3.4	2.7	17.0	17.4	6.1	10.0	4.3	10.3	8.9	8.1	9.3	10.7	8.9	22.8	13.2
2008	5.4	19.1	5.0	3.4	2.3	19.2	16.3	5.6	9.6	4.1	10.3	9.2	7.7	10.2	11.5	10.1	43.4	11.5
2009	4.4	19.4	5.9	3.6	2.6	14.9	15.5	6.3	8.7	4.2	8.5	8.1	18.6	10.0	10.1	9.2	42.6	15.3
2010	4.7	16.6	6.6	3.9	2.4	18.6	16.4	6.4	9.2	4.3	10.7	8.0	12.6	9.7	9.3	11.2	37.8	17.8
2011	5.6	18.4	7.5	3.8	2.2	18.9	16.1	6.3	10.5	4.7	7.9	9.0	16.3	10.6	10.3	10.0	42.5	20.0
2012	8.8	19.0	6.5	4.5	2.3	26.8	20.4	7.7	12.0	4.8	10.1	10.6	16.4	11.8	12.4	11.9	37.3	14.6
2013	9.8	23.2	6.8	5.6	2.7	32.2	23.2	9.2	13.7	6.1	13.2	12.2	16.7	13.7	14.0	14.3	50.1	15.0
2014	8.9	22.6	6.2	5.2	2.2	29.9	19.9	8.4	12.5	7.0	12.7	12.2	12.0	13.0	13.6	15.0	61.5	13.2
Growth rate	1.4***	-4.1***	-4.5***	1.6***	-1.3	23.8***	2.1***	3.6***	0.8	0.2	1.2	-1.6	2.2***	2.1***	2.8***	6.8***	12.4***	-3.4***

Notes: *p<0.10, **p<0.05, ***p<0.01.

Source: WIOD database, 2016 release. Own calculations.

Table A2-4: Share of DVA in each unit of final demand of domestic products (DVA^{total})

Year	C10-12	C13-15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31-32
2000	0.92	0.88	0.92	0.84	0.82	0.61	0.78	0.81	0.82	0.86	0.77	0.76	0.76	0.78	0.76	0.78	0.77	0.83
2001	0.92	0.88	0.91	0.84	0.82	0.71	0.78	0.81	0.82	0.88	0.78	0.75	0.75	0.77	0.75	0.77	0.75	0.83
2002	0.91	0.87	0.92	0.83	0.82	0.68	0.77	0.80	0.80	0.87	0.79	0.76	0.74	0.78	0.76	0.77	0.73	0.81
2003	0.91	0.88	0.91	0.84	0.82	0.71	0.79	0.81	0.80	0.88	0.80	0.77	0.75	0.79	0.76	0.78	0.71	0.80
2004	0.90	0.86	0.89	0.81	0.80	0.68	0.76	0.78	0.77	0.86	0.76	0.72	0.73	0.75	0.73	0.74	0.68	0.75
2005	0.91	0.85	0.89	0.81	0.79	0.65	0.73	0.76	0.75	0.84	0.73	0.68	0.72	0.73	0.69	0.72	0.66	0.71
2006	0.91	0.85	0.90	0.80	0.78	0.47	0.72	0.76	0.74	0.78	0.68	0.68	0.73	0.73	0.70	0.72	0.57	0.74
2007	0.91	0.85	0.91	0.80	0.79	0.48	0.72	0.76	0.75	0.78	0.67	0.68	0.73	0.72	0.70	0.71	0.65	0.75
2008	0.91	0.85	0.91	0.79	0.78	0.47	0.70	0.74	0.74	0.78	0.66	0.68	0.76	0.74	0.71	0.71	0.53	0.72
2009	0.91	0.86	0.92	0.82	0.81	0.50	0.75	0.78	0.77	0.82	0.70	0.70	0.73	0.75	0.73	0.73	0.63	0.71
2010	0.91	0.86	0.91	0.82	0.80	0.49	0.73	0.77	0.77	0.80	0.69	0.68	0.73	0.73	0.71	0.72	0.69	0.67
2011	0.91	0.85	0.91	0.81	0.79	0.44	0.74	0.78	0.76	0.79	0.68	0.68	0.71	0.72	0.71	0.71	0.69	0.68
2012	0.90	0.86	0.91	0.79	0.79	0.42	0.71	0.76	0.74	0.74	0.59	0.65	0.71	0.71	0.70	0.70	0.67	0.76
2013	0.91	0.87	0.91	0.79	0.80	0.42	0.71	0.77	0.75	0.75	0.61	0.68	0.73	0.73	0.72	0.72	0.69	0.76
2014	0.91	0.87	0.92	0.80	0.80	0.42	0.72	0.78	0.76	0.77	0.64	0.71	0.75	0.76	0.75	0.74	0.68	0.79

Source: WIOD database, 2016 release. Own calculations.

Table A2-5: Domestic Value-Added Content of Sectoral Exports (in million $)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	2725.6	12175.0	837.5	151.0	65.1	105.0	3551.1	169.0	908.6	562.1	1896.8	1051.9	434.4	703.8	771.3	964.7	410.1	2266.5
2001	2812.9	11607.9	589.2	166.3	68.6	107.6	3682.7	186.0	1049.5	600.4	1819.6	1069.9	627.3	882.1	857.6	1010.3	488.9	2271.5
2002	3356.7	12714.0	592.2	230.9	87.1	1228.7	4420.0	227.7	1154.8	717.4	2751.4	1310.7	676.8	882.2	1086.0	1263.3	579.2	2877.8
2003	3154.5	12888.0	582.6	225.8	153.2	2328.4	5030.8	269.3	1212.7	793.9	3528.2	1613.5	816.4	1004.6	1230.2	1707.0	635.9	3404.9
2004	3700.3	14752.1	389.8	273.5	152.3	3837.9	6558.2	327.2	1428.6	814.6	5116.3	1974.3	928.2	1108.7	1618.0	2305.5	853.1	4238.5
2005	4227.2	16094.2	379.5	340.2	183.9	5923.0	7898.0	371.6	1637.2	996.2	6084.4	2140.6	999.3	1524.1	2264.3	2787.9	1081.5	5076.6
2006	5193.2	17943.8	468.7	356.9	190.1	7508.2	9536.7	466.6	2026.1	1153.6	8131.1	2723.0	1241.5	2190.5	2922.5	3231.4	1217.7	5232.8
2007	5793.7	16416.1	628.3	329.9	205.0	8651.2	9318.2	488.3	2022.4	1215.9	8136.4	2812.6	1193.8	2209.2	3254.4	3174.9	1545.4	5480.1
2008	6549.4	15399.2	572.0	345.6	179.5	10068.8	10197.3	531.5	2267.7	1300.2	8571.1	3125.3	1329.7	2815.1	4099.6	3755.8	2537.7	5203.4
2009	5267.5	16577.9	705.0	349.8	196.7	8279.8	9331.3	561.0	2298.9	1357.9	7065.2	2694.7	3067.4	2774.5	3525.5	4208.6	3477.9	8561.9
2010	7378.2	19542.6	913.6	519.2	237.5	13645.8	12528.1	726.7	3117.4	1596.6	11916.6	3541.3	2652.9	3358.1	4402.0	6777.1	4559.7	8153.3
2011	10896.9	22362.0	1101.5	563.3	253.4	16356.1	15804.1	922.5	4011.7	2022.3	10582.1	4813.9	3241.8	3519.6	5289.4	7178.6	6161.4	10845.2
2012	15177.2	23503.2	1623.3	584.3	248.5	16463.4	17929.0	1092.1	4375.1	1867.1	9622.5	4685.1	3150.8	3599.1	5713.7	8180.7	5171.5	13403.7
2013	16840.7	29649.6	1628.9	722.6	297.7	19855.9	20886.4	1343.5	5056.7	2391.3	12908.1	5240.6	3218.3	4411.2	6622.3	10208.5	7067.5	13353.7
2014	16021.9	30459.1	1558.5	713.7	261.0	19376.6	19074.5	1296.8	4872.0	2966.6	13678.7	5726.4	2526.4	4522.1	6988.5	11559.0	9095.2	12806.0

Source: WIOD database, 2016 release. Own calculations.

Table A2-6: Share of Domestic Value-Added Content of Total Exports (in percent)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31-C32
2000	7.69	34.37	2.36	0.43	0.18	0.30	10.02	0.48	2.57	1.59	5.35	2.97	1.23	1.99	2.18	2.72	1.16	6.40
2001	7.85	32.41	1.65	0.46	0.19	0.30	10.28	0.52	2.93	1.68	5.08	2.99	1.75	2.46	2.39	2.82	1.37	6.34
2002	7.61	28.83	1.34	0.52	0.20	2.79	10.02	0.52	2.62	1.63	6.24	2.97	1.53	2.00	2.46	2.86	1.31	6.52
2003	6.37	26.02	1.18	0.46	0.31	4.70	10.16	0.54	2.45	1.60	7.12	3.26	1.65	2.03	2.48	3.45	1.28	6.87
2004	5.77	23.00	0.61	0.43	0.24	5.98	10.22	0.51	2.23	1.27	7.98	3.08	1.45	1.73	2.52	3.59	1.33	6.61
2005	5.33	20.28	0.48	0.43	0.23	7.47	9.95	0.47	2.06	1.26	7.67	2.70	1.26	1.92	2.85	3.51	1.36	6.40
2006	5.15	17.80	0.46	0.35	0.19	7.45	9.46	0.46	2.01	1.14	8.06	2.70	1.23	2.17	2.90	3.20	1.21	5.19
2007	5.64	15.98	0.61	0.32	0.20	8.42	9.07	0.48	1.97	1.18	7.92	2.74	1.16	2.15	3.17	3.09	1.50	5.33
2008	5.73	13.46	0.50	0.30	0.16	8.80	8.92	0.46	1.98	1.14	7.49	2.73	1.16	2.46	3.58	3.28	2.22	4.55
2009	4.75	14.94	0.64	0.32	0.18	7.46	8.41	0.51	2.07	1.22	6.37	2.43	2.76	2.50	3.18	3.79	3.13	7.72
2010	4.92	13.04	0.61	0.35	0.16	9.11	8.36	0.49	2.08	1.07	7.95	2.36	1.77	2.24	2.94	4.52	3.04	5.44
2011	5.98	12.27	0.60	0.31	0.14	8.98	8.67	0.51	2.20	1.11	5.81	2.64	1.78	1.93	2.90	3.94	3.38	5.95
2012	7.59	11.75	0.81	0.29	0.12	8.23	8.96	0.55	2.19	0.93	4.81	2.34	1.58	1.80	2.86	4.09	2.59	6.70
2013	7.19	12.66	0.70	0.31	0.13	8.48	8.92	0.57	2.16	1.02	5.51	2.24	1.37	1.88	2.83	4.36	3.02	5.70
2014	6.89	13.10	0.67	0.31	0.11	8.33	8.20	0.56	2.09	1.28	5.88	2.46	1.09	1.94	3.00	4.97	3.91	5.51
Growth rate	-0.78	-8.03***	-6.61***	-3.79***	-4.77***	18.87***	-1.59***	0.60	-1.71***	-3.33***	-0.51	-2.17***	0.09	-0.38	1.97***	3.57***	9.03***	-0.88**

Notes: *p<0.10, **p<0.05, ***p<0.01.
Source: WIOD database, 2016 release. Own calculations.

Table A2-7: Share of FVA in each unit of final demand of domestic products (FVA^{total})

Year	C10-12	C13-15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31-32
2000	0.08	0.12	0.08	0.16	0.18	0.39	0.22	0.19	0.18	0.14	0.23	0.24	0.24	0.22	0.24	0.22	0.23	0.17
2001	0.08	0.12	0.09	0.16	0.18	0.29	0.22	0.19	0.18	0.12	0.22	0.25	0.25	0.23	0.25	0.23	0.25	0.17
2002	0.09	0.13	0.08	0.17	0.18	0.32	0.23	0.20	0.20	0.13	0.21	0.24	0.26	0.22	0.24	0.23	0.27	0.19
2003	0.09	0.12	0.09	0.16	0.18	0.29	0.21	0.19	0.20	0.12	0.20	0.23	0.25	0.21	0.24	0.22	0.29	0.20
2004	0.10	0.14	0.11	0.19	0.20	0.32	0.24	0.22	0.23	0.14	0.24	0.28	0.27	0.25	0.27	0.26	0.32	0.25
2005	0.09	0.15	0.11	0.19	0.21	0.35	0.27	0.24	0.25	0.16	0.27	0.32	0.28	0.27	0.31	0.28	0.34	0.29
2006	0.09	0.15	0.10	0.20	0.22	0.53	0.28	0.24	0.26	0.22	0.32	0.32	0.27	0.27	0.30	0.28	0.43	0.26
2007	0.09	0.15	0.09	0.20	0.21	0.52	0.28	0.24	0.25	0.22	0.33	0.32	0.27	0.28	0.30	0.29	0.35	0.25
2008	0.09	0.15	0.09	0.21	0.22	0.53	0.30	0.26	0.26	0.22	0.34	0.32	0.24	0.26	0.29	0.29	0.47	0.28
2009	0.09	0.14	0.08	0.18	0.19	0.50	0.25	0.22	0.23	0.18	0.30	0.30	0.27	0.25	0.27	0.27	0.37	0.29
2010	0.09	0.14	0.09	0.18	0.20	0.51	0.27	0.23	0.23	0.20	0.31	0.32	0.27	0.27	0.29	0.28	0.31	0.33
2011	0.09	0.15	0.09	0.19	0.21	0.56	0.26	0.22	0.24	0.21	0.32	0.32	0.29	0.28	0.29	0.29	0.31	0.32
2012	0.10	0.14	0.09	0.21	0.21	0.58	0.29	0.24	0.26	0.26	0.41	0.35	0.29	0.29	0.30	0.30	0.33	0.24
2013	0.09	0.13	0.09	0.21	0.20	0.58	0.29	0.23	0.25	0.25	0.39	0.32	0.27	0.27	0.28	0.28	0.31	0.24
2014	0.09	0.13	0.08	0.20	0.20	0.58	0.28	0.22	0.24	0.23	0.36	0.29	0.25	0.24	0.25	0.26	0.32	0.21

Source: WIOD database, 2016 release. Own calculations.

Table A2-8: Foreign Value-Added Content of Sectoral Exports (in million $)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	241.6	1603.0	68.9	29.3	13.9	67.1	993.8	39.2	194.5	95.1	562.7	334.3	138.1	194.7	241.0	277.6	120.2	458.6
2001	258.9	1596.4	55.9	32.8	14.9	44.5	1017.0	44.7	229.1	83.9	500.5	362.6	207.3	256.8	285.4	294.5	162.6	464.7
2002	337.1	1949.6	54.9	46.1	19.4	570.4	1305.3	58.5	295.2	107.8	718.2	406.9	239.7	244.9	351.3	367.5	219.5	655.4
2003	305.8	1835.1	55.7	43.6	33.3	935.2	1370.1	64.4	296.6	111.7	878.8	495.1	265.9	266.2	388.3	484.3	263.6	852.6
2004	394.7	2402.9	49.4	63.4	38.8	1782.7	2078.7	90.5	415.7	135.2	1588.5	757.4	351.9	361.9	606.2	821.1	402.7	1427.7
2005	443.1	2937.3	46.3	81.2	50.3	3136.0	2876.1	118.0	554.6	184.7	2255.7	1010.8	384.7	557.4	1004.8	1078.7	550.1	2061.5
2006	533.8	3279.8	51.0	90.4	52.4	8566.9	3717.5	149.1	696.1	322.2	3887.1	1277.6	470.2	827.8	1232.2	1248.2	900.0	1791.1
2007	590.8	2939.6	65.9	80.2	53.5	9351.5	3639.3	155.9	680.4	349.4	3962.9	1349.2	441.3	849.9	1422.7	1277.4	829.5	1816.0
2008	645.6	2814.6	59.8	90.6	49.4	11342.5	4367.3	183.5	799.5	368.1	4417.8	1470.9	424.9	1007.4	1683.2	1568.9	2234.2	1999.0
2009	512.2	2604.2	64.8	77.6	47.2	8338.8	3172.9	157.8	686.1	305.7	3050.9	1154.5	1117.6	928.4	1326.2	1557.2	2048.0	3494.4
2010	737.0	3211.7	88.9	115.7	59.3	14032.3	4576.6	217.5	928.5	408.5	5471.4	1652.9	980.7	1213.3	1820.2	2650.1	2065.6	4020.0
2011	1102.2	3816.0	109.3	135.9	66.8	20472.6	5584.3	265.3	1274.4	542.8	4970.3	2275.2	1312.3	1346.3	2184.8	2932.8	2800.6	5102.7
2012	1668.4	3843.4	158.0	159.5	66.0	22993.3	7474.0	337.3	1502.5	663.8	6642.4	2490.9	1282.3	1463.9	2507.2	3585.4	2507.8	4265.4
2013	1712.8	4535.0	158.8	194.7	76.7	27142.8	8344.8	394.9	1654.0	804.2	8224.3	2468.1	1203.0	1606.3	2523.2	3969.5	3248.6	4269.6
2014	1574.7	4429.6	144.4	182.1	63.9	26420.7	7243.6	368.2	1544.1	891.0	7620.5	2351.0	823.1	1459.3	2342.7	4028.4	4187.8	3385.6

Source: WIOD database, 2016 release. Own calculations.

Table A2-9: Share of Foreign Value-Added Content of Total Exports (in percent)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31-C32
2000	0.68	4.53	0.19	0.08	0.04	0.19	2.81	0.11	0.55	0.27	1.59	0.94	0.39	0.55	0.68	0.78	0.34	1.29
2001	0.72	4.46	0.16	0.09	0.04	0.12	2.84	0.12	0.64	0.23	1.40	1.01	0.58	0.72	0.80	0.82	0.45	1.30
2002	0.76	4.42	0.12	0.10	0.04	1.29	2.96	0.13	0.67	0.24	1.63	0.92	0.54	0.56	0.80	0.83	0.50	1.49
2003	0.62	3.71	0.11	0.09	0.07	1.89	2.77	0.13	0.60	0.23	1.77	1.00	0.54	0.54	0.78	0.98	0.53	1.72
2004	0.62	3.75	0.08	0.10	0.06	2.78	3.24	0.14	0.65	0.21	2.48	1.18	0.55	0.56	0.95	1.28	0.63	2.23
2005	0.56	3.70	0.06	0.10	0.06	3.95	3.62	0.15	0.70	0.23	2.84	1.27	0.48	0.70	1.27	1.36	0.69	2.60
2006	0.53	3.25	0.05	0.09	0.05	8.50	3.69	0.15	0.69	0.32	3.86	1.27	0.47	0.82	1.22	1.24	0.89	1.78
2007	0.58	2.86	0.06	0.08	0.05	9.10	3.54	0.15	0.66	0.34	3.86	1.31	0.43	0.83	1.38	1.24	0.81	1.77
2008	0.56	2.46	0.05	0.08	0.04	9.92	3.82	0.16	0.70	0.32	3.86	1.29	0.37	0.88	1.47	1.37	1.95	1.75
2009	0.46	2.35	0.06	0.07	0.04	7.52	2.86	0.14	0.62	0.28	2.75	1.04	1.01	0.84	1.20	1.40	1.85	3.15
2010	0.49	2.14	0.06	0.08	0.04	9.37	3.05	0.15	0.62	0.27	3.65	1.10	0.65	0.81	1.21	1.77	1.38	2.68
2011	0.60	2.09	0.06	0.07	0.04	11.24	3.06	0.15	0.70	0.30	2.73	1.25	0.72	0.74	1.20	1.61	1.54	2.80
2012	0.83	1.92	0.08	0.08	0.03	11.50	3.74	0.17	0.75	0.33	3.32	1.25	0.64	0.73	1.25	1.79	1.25	2.13
2013	0.73	1.94	0.07	0.08	0.03	11.59	3.56	0.17	0.71	0.34	3.51	1.05	0.51	0.69	1.08	1.69	1.39	1.82
2014	0.68	1.90	0.06	0.08	0.03	11.36	3.11	0.16	0.66	0.38	3.28	1.01	0.35	0.63	1.01	1.73	1.80	1.46
Growth Rate	-0.22	-7.28^{***}	-6.62^{***}	-1.64^{**}	-3.59^{**}	28.22^{***}	1.09^{*}	2.15^{***}	0.98^{**}	3.05^{***}	6.06^{***}	0.9	0.85	1.72^{*}	3.34^{**}	6.02^{***}	11.55^{***}	2.69

Notes: *p<0.10, **p<0.05, ***p<0.01.

Source: WIOD database, 2016 release. Own calculations.

Table A2-10: Share of Direct Foreign Value-Added Content of Total Export (in percent)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	0.32	1.92	0.13	0.05	0.02	0.17	1.42	0.05	0.23	0.11	1.01	0.55	0.23	0.28	0.39	0.34	0.16	0.73
2001	0.36	2.08	0.11	0.05	0.02	0.10	1.50	0.06	0.29	0.08	0.87	0.64	0.35	0.39	0.48	0.36	0.25	0.70
2002	0.36	2.13	0.08	0.06	0.02	1.05	1.59	0.07	0.32	0.09	0.97	0.55	0.35	0.30	0.47	0.37	0.29	0.83
2003	0.30	1.75	0.08	0.05	0.03	1.46	1.48	0.07	0.28	0.08	1.04	0.59	0.33	0.29	0.47	0.44	0.33	1.00
2004	0.28	1.75	0.05	0.05	0.03	2.19	1.78	0.07	0.31	0.08	1.50	0.72	0.34	0.31	0.57	0.61	0.39	1.34
2005	0.24	1.77	0.04	0.06	0.03	3.05	2.06	0.08	0.35	0.09	1.77	0.81	0.29	0.39	0.78	0.71	0.50	1.60
2006	0.19	1.31	0.03	0.05	0.03	7.73	1.93	0.07	0.31	0.15	2.47	0.69	0.25	0.40	0.67	0.58	0.73	0.90
2007	0.21	1.15	0.04	0.04	0.02	8.30	1.85	0.07	0.30	0.17	2.50	0.71	0.22	0.40	0.76	0.60	0.57	0.88
2008	0.18	0.94	0.03	0.04	0.02	9.17	2.05	0.08	0.31	0.16	2.50	0.63	0.17	0.39	0.73	0.64	1.65	0.94
2009	0.17	0.89	0.03	0.03	0.02	6.78	1.49	0.07	0.28	0.12	1.74	0.56	0.57	0.40	0.64	0.66	1.41	1.75
2010	0.19	0.78	0.03	0.04	0.02	8.48	1.57	0.07	0.27	0.12	2.31	0.59	0.33	0.38	0.62	0.80	0.83	1.77
2011	0.21	0.73	0.03	0.03	0.02	10.06	1.49	0.06	0.29	0.13	1.70	0.68	0.39	0.35	0.61	0.73	0.91	1.76
2012	0.33	0.69	0.04	0.04	0.01	10.93	2.05	0.08	0.32	0.20	2.42	0.69	0.34	0.34	0.64	0.83	0.75	1.09
2013	0.29	0.73	0.04	0.05	0.01	11.06	2.00	0.08	0.31	0.21	2.56	0.55	0.27	0.31	0.52	0.76	0.85	0.98
2014	0.27	0.72	0.04	0.04	0.01	10.79	1.72	0.08	0.30	0.22	2.29	0.51	0.18	0.28	0.48	0.77	1.20	0.72
Growth Rate	-2.14	-9.46***	-8.40***	-2.43**	-5.17***	29.60***	1.23*	1.51**	0.51	6.54***	7.14***	-0.39	-0.63	0.28	1.63	6.03***	12.60***	2.35

Notes: *p<0.10, **p<0.05, ***p<0.01.

Source: WIOD database, 2016 release. Own calculations.

Table A2-11: Share of Indirect Foreign Value-Added Content of Total Export (in percent)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	0.37	2.60	0.06	0.04	0.02	0.02	1.39	0.06	0.31	0.16	0.58	0.40	0.16	0.27	0.29	0.44	0.17	0.57
2001	0.36	2.38	0.05	0.04	0.02	0.03	1.34	0.06	0.35	0.15	0.53	0.38	0.23	0.33	0.32	0.46	0.21	0.59
2002	0.40	2.29	0.04	0.05	0.02	0.24	1.37	0.06	0.35	0.15	0.65	0.37	0.19	0.26	0.33	0.46	0.21	0.66
2003	0.32	1.95	0.04	0.04	0.03	0.42	1.28	0.06	0.32	0.14	0.74	0.41	0.20	0.25	0.32	0.54	0.20	0.72
2004	0.33	2.00	0.02	0.04	0.03	0.59	1.46	0.07	0.34	0.13	0.97	0.46	0.21	0.25	0.38	0.67	0.24	0.88
2005	0.32	1.93	0.02	0.05	0.03	0.91	1.57	0.07	0.35	0.15	1.08	0.46	0.20	0.31	0.48	0.65	0.20	1.00
2006	0.34	1.94	0.02	0.04	0.03	0.76	1.76	0.08	0.38	0.17	1.38	0.58	0.22	0.43	0.55	0.66	0.16	0.87
2007	0.37	1.71	0.03	0.04	0.03	0.80	1.69	0.08	0.37	0.17	1.36	0.60	0.21	0.43	0.62	0.64	0.24	0.88
2008	0.39	1.52	0.02	0.04	0.02	0.75	1.77	0.08	0.39	0.16	1.36	0.65	0.20	0.49	0.75	0.74	0.31	0.81
2009	0.29	1.46	0.03	0.04	0.02	0.73	1.37	0.07	0.34	0.15	1.01	0.48	0.44	0.44	0.56	0.74	0.43	1.39
2010	0.30	1.36	0.03	0.04	0.02	0.89	1.48	0.08	0.35	0.15	1.34	0.51	0.32	0.43	0.59	0.96	0.55	0.91
2011	0.39	1.37	0.03	0.04	0.02	1.18	1.57	0.08	0.41	0.17	1.03	0.57	0.33	0.39	0.58	0.88	0.63	1.04
2012	0.50	1.23	0.03	0.04	0.02	0.57	1.69	0.09	0.43	0.13	0.90	0.56	0.30	0.39	0.61	0.97	0.51	1.05
2013	0.44	1.21	0.03	0.04	0.02	0.53	1.56	0.09	0.39	0.13	0.95	0.50	0.24	0.37	0.56	0.94	0.54	0.84
2014	0.40	1.19	0.03	0.04	0.01	0.57	1.39	0.08	0.37	0.16	0.98	0.50	0.17	0.35	0.53	0.96	0.60	0.73
Growth Rate	1.22	-5.73***	-3.59*	-0.76	-2.1	17.61**	0.92*	2.77***	1.38***	-0.15	3.93***	2.58***	2.8	3.15***	5.37***	6.02***	10.03***	3.00**

Notes: *p<0.10, **p<0.05, ***p<0.01.

Source: WIOD database, 2016 release. Own calculations.

Table A2-12: Domestic Value-Added Content of Sectoral Outputs (in million $)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	39392.6	39109.9	7072.6	3725.6	2864.7	17194.5	25830.1	3813.3	9818.3	11584.7	22590.0	8872.7	4987.1	8460.0	10702.4	18234.7	3773.6	10346.3
2001	38895.0	36427.5	5976.7	3919.2	3011.5	22923.0	26450.0	3867.3	10128.1	12403.6	22570.3	8579.7	5231.4	8858.8	9695.9	19015.9	3829.3	11392.9
2002	48434.5	38193.5	5059.1	4229.1	3240.1	25392.9	26891.2	3939.4	9350.5	12601.7	25965.2	9974.0	4653.9	8105.9	10972.8	21375.2	4157.7	11766.9
2003	60966.1	43759.7	5628.4	5335.7	4084.2	31243.8	31386.6	4580.5	10944.0	14344.5	34818.2	13283.7	5841.1	10059.4	12708.1	26397.4	4977.9	15426.7
2004	69226.3	52204.5	4668.0	6190.1	4747.1	35798.4	36613.6	5369.2	12656.4	15718.9	44731.2	16911.4	7133.9	12189.0	15671.1	28208.3	5400.0	21132.0
2005	75398.3	59828.0	4954.3	6886.8	5232.9	43884.6	41134.5	6052.8	13310.1	17490.5	48619.2	18070.1	9384.8	15639.1	19456.7	26524.2	5066.8	25378.1
2006	87434.3	70203.3	6468.6	7489.8	5748.3	38841.9	44606.2	6678.1	15996.0	20510.1	59410.6	23857.8	11858.9	19499.8	22525.0	30433.1	5040.5	31222.9
2007	109959.4	81588.1	10373.9	9747.2	7506.8	51002.8	53601.8	8030.7	20291.0	27952.6	78719.4	31578.3	14653.3	23818.6	30548.6	35756.0	6779.8	41607.9
2008	121949.9	80678.9	11439.9	10077.2	7792.0	52458.8	62740.7	9468.7	23687.7	32031.3	82828.7	34069.5	17294.5	27618.9	35706.9	37363.8	5853.4	45196.2
2009	120308.6	85539.0	11865.1	9713.6	7476.3	55707.7	60140.9	8939.8	26342.4	32508.3	82696.4	33088.8	16456.6	27645.9	34962.5	45554.7	8161.7	56053.5
2010	158636.5	117510.4	13810.8	13151.4	10055.1	73444.6	76453.7	11418.8	33855.3	37544.8	111121.6	44126.5	20973.0	34677.0	47480.4	60594.2	12053.7	45907.3
2011	194695.6	121695.3	14643.4	14726.2	11301.5	86484.5	98411.7	14701.9	38363.4	43401.4	133603.6	53224.0	19943.5	33301.9	51593.2	72070.9	14502.0	54157.3
2012	172502.4	123590.6	25083.9	12907.7	10930.5	61374.4	87852.6	14206.4	36376.2	39254.2	94909.9	44364.4	19255.7	30555.2	46144.3	68807.2	13848.2	91899.9
2013	171850.4	127666.8	23934.7	12881.5	10950.5	61735.0	90042.9	14659.0	36806.5	39226.3	97528.5	42924.6	19303.6	32160.9	47409.5	71384.9	14113.3	88897.4
2014	180882.4	134838.7	25226.1	13670.2	11609.4	64872.2	95835.1	15501.3	38918.2	42297.7	107595.2	46969.2	20988.4	34802.9	51452.1	77143.6	14800.8	97362.4

Source: WIOD database, 2016 release. Own calculations.

Table A2-13: Share of Domestic Value-Added Content of Gross Output (in percent)

YEAR	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	12.82	12.73	2.30	1.21	0.93	5.59	8.40	1.24	3.19	3.77	7.35	2.89	1.62	2.75	3.48	5.93	1.23	3.37
2001	12.50	11.71	1.92	1.26	0.97	7.37	8.50	1.24	3.25	3.99	7.25	2.76	1.68	2.85	3.12	6.11	1.23	3.66
2002	14.25	11.24	1.49	1.24	0.95	7.47	7.91	1.16	2.75	3.71	7.64	2.93	1.37	2.38	3.23	6.29	9.43	26.68
2003	14.80	10.62	1.37	1.30	0.99	7.58	7.62	1.11	2.66	3.48	8.45	3.22	1.42	2.44	3.08	6.41	1.21	3.74
2004	13.78	10.39	0.93	1.23	0.94	7.13	7.29	1.07	2.52	3.13	8.90	3.37	1.42	2.43	3.12	5.62	1.07	4.21
2005	12.99	10.31	0.85	1.19	0.90	7.56	7.09	1.04	2.29	3.01	8.38	3.11	1.62	2.69	3.35	4.57	0.87	4.37
2006	12.56	10.09	0.93	1.08	0.83	5.58	6.41	0.96	2.30	2.95	8.54	3.43	1.70	2.80	3.24	4.37	0.72	4.49
2007	12.47	9.26	1.18	1.11	0.85	5.79	6.08	0.91	2.30	3.17	8.93	3.58	1.66	2.70	3.47	4.06	0.77	4.72
2008	12.64	8.36	1.19	1.04	0.81	5.44	6.50	0.98	2.46	3.32	8.59	3.53	1.79	2.86	3.70	3.87	0.61	4.69
2009	12.40	8.81	1.22	1.00	0.77	5.74	6.20	0.92	2.71	3.35	8.52	3.41	1.70	2.85	3.60	4.69	0.84	5.78
2010	12.64	9.37	1.10	1.05	0.80	5.85	6.09	0.91	2.70	2.99	8.86	3.52	1.67	2.76	3.78	4.83	0.96	3.66
2011	13.14	8.21	0.99	0.99	0.76	5.84	6.64	0.99	2.59	2.93	9.02	3.59	1.35	2.25	3.48	4.86	0.98	3.65
2012	12.40	8.89	1.80	0.93	0.79	4.41	6.32	1.02	2.62	2.82	6.82	3.19	1.38	2.20	3.32	4.95	1.00	6.61
2013	12.44	9.24	1.73	0.93	0.79	4.47	6.52	1.06	2.67	2.84	7.06	3.11	1.40	2.33	3.43	5.17	1.02	6.44
2014	12.48	9.31	1.74	0.94	0.80	4.48	6.61	1.07	2.69	2.92	7.43	3.24	1.45	2.40	3.55	5.32	1.02	6.72
Growth Rate	-0.62**	-2.37***	-0.51	-2.48***	-1.82***	-3.36***	-2.05***	-1.35**	-0.77	-2.03***	-0.13	0.97*	-0.51	-0.85*	0.78**	-1.64**	-5.38	0.48

Notes: *p<0.10, **p<0.05, ***p<0.01.

Source: WIOD database, 2016 release. Own calculations.

Table A2-14: Foreign Value-Added Content of Sectoral Outputs (in million $)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	3491.1	5149.4	582.2	722.6	610.5	10990.3	7228.7	885.5	2102.2	1960.4	6701.9	2819.8	1585.4	2340.6	3344.6	5247.7	1105.7	2093.5
2001	3579.4	5009.7	567.3	772.5	653.9	9479.1	7304.3	930.4	2211.3	1732.6	6208.2	2907.8	1728.9	2579.2	3225.9	5542.3	1273.6	2330.9
2002	4863.9	5856.7	468.7	843.5	722.8	11787.8	7941.3	1011.6	2390.0	1892.8	6778.0	3096.2	1647.9	2249.9	3549.7	6218.8	1576.0	2679.8
2003	5909.3	6230.9	537.8	1029.7	888.8	12549.1	8548.0	1095.7	2676.8	2017.5	8672.0	4076.3	1902.2	2665.2	4011.1	7489.5	2063.4	3862.9
2004	7384.9	8503.5	591.2	1435.1	1210.2	16628.5	11605.0	1484.4	3682.7	2608.9	13888.0	6487.7	2704.7	3978.9	5871.7	10046.7	2548.8	7118.0
2005	7903.9	10918.9	604.6	1644.8	1432.5	23235.5	14979.4	1923.0	4508.8	3243.5	18025.0	8532.4	3612.7	5719.9	8633.9	10263.0	2577.1	10305.5
2006	8988.0	12831.8	703.5	1896.2	1584.6	44318.8	17387.9	2133.6	5496.0	5728.1	28401.3	11194.1	4491.3	7368.8	9497.2	11755.3	3725.7	10687.2
2007	11213.0	14609.8	1087.8	2370.3	1960.0	55131.6	20934.5	2563.6	6826.0	8032.6	38340.5	15148.6	5417.0	9163.2	13354.4	14386.2	3639.1	13787.9
2008	12020.3	14746.0	1195.4	2641.2	2144.4	59094.8	26870.6	3268.3	8351.2	9069.0	42692.5	16034.9	5526.8	9883.6	14660.3	15607.4	5153.4	17363.1
2009	11697.4	13437.2	1091.3	2154.1	1795.5	56104.7	20449.6	2515.0	7862.1	7318.5	35710.7	14175.9	5995.9	9250.6	13152.1	16855.2	4806.2	22877.2
2010	15846.0	19312.0	1343.4	2930.7	2509.1	75524.5	27928.9	3417.8	10083.7	9607.0	51020.2	20595.8	7753.1	12528.9	19632.5	23694.6	5460.4	22634.4
2011	19693.1	20767.0	1453.3	3552.5	2978.8	108250.7	34773.3	4228.6	12186.5	11649.2	62752.6	25155.7	8073.3	12738.5	21310.7	29444.6	6591.6	25481.1
2012	18962.3	20210.5	2440.9	3524.1	2901.6	85717.6	36622.9	4388.0	12492.2	13956.0	65515.9	23587.3	7836.7	12428.4	20248.5	30156.7	6715.2	29245.2
2013	17478.3	19526.9	2333.8	3470.7	2820.8	84390.8	35975.1	4308.7	12038.8	13191.2	62139.8	20216.0	7215.7	11710.9	18063.7	27757.6	6487.2	28423.1
2014	17777.3	19609.4	2336.9	3487.9	2840.6	88455.4	36393.7	4401.2	12334.4	12703.1	59942.3	19283.2	6837.9	11231.1	17247.9	26885.1	6815.0	25740.2

Source: WIOD database, 2016 release. Own calculations.

Table A2-15: Share of Foreign Value-Added Content of Gross Output (in percent)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	1.14	1.68	0.19	0.24	0.20	3.58	2.35	0.29	0.68	0.64	2.18	0.92	0.52	0.76	1.09	1.71	0.36	0.68
2001	1.15	1.61	0.18	0.25	0.21	3.05	2.35	0.30	0.71	0.56	1.99	0.93	0.56	0.83	1.04	1.78	0.41	0.75
2002	1.43	1.72	0.14	0.25	0.21	3.47	2.34	0.30	0.70	0.56	1.99	0.91	0.48	0.66	1.04	1.83	3.57	6.08
2003	1.43	1.51	0.13	0.25	0.22	3.05	2.07	0.27	0.65	0.49	2.10	0.99	0.46	0.65	0.97	1.82	0.50	0.94
2004	1.47	1.69	0.12	0.29	0.24	3.31	2.31	0.30	0.73	0.52	2.76	1.29	0.54	0.79	1.17	2.00	0.51	1.42
2005	1.36	1.88	0.10	0.28	0.25	4.00	2.58	0.33	0.78	0.56	3.11	1.47	0.62	0.99	1.49	1.77	0.44	1.78
2006	1.29	1.84	0.10	0.27	0.23	6.37	2.50	0.31	0.79	0.82	4.08	1.61	0.65	1.06	1.36	1.69	0.54	1.54
2007	1.27	1.66	0.12	0.27	0.22	6.25	2.37	0.29	0.77	0.91	4.35	1.72	0.61	1.04	1.51	1.63	0.41	1.56
2008	1.25	1.53	0.12	0.27	0.22	6.13	2.79	0.34	0.87	0.94	4.43	1.66	0.57	1.02	1.52	1.62	0.53	1.80
2009	1.21	1.38	0.11	0.22	0.19	5.78	2.11	0.26	0.81	0.75	3.68	1.46	0.62	0.95	1.36	1.74	0.50	2.36
2010	1.26	1.54	0.11	0.23	0.20	6.02	2.23	0.27	0.80	0.77	4.07	1.64	0.62	1.00	1.56	1.89	0.44	1.80
2011	1.33	1.40	0.10	0.24	0.20	7.30	2.35	0.29	0.82	0.79	4.23	1.70	0.54	0.86	1.44	1.99	0.44	1.72
2012	1.36	1.45	0.18	0.25	0.21	6.16	2.63	0.32	0.90	1.00	4.71	1.70	0.56	0.89	1.46	2.17	0.48	2.10
2013	1.27	1.41	0.17	0.25	0.20	6.11	2.60	0.31	0.87	0.96	4.50	1.46	0.52	0.85	1.31	2.01	0.47	2.06
2014	1.23	1.35	0.16	0.24	0.20	6.10	2.51	0.30	0.85	0.88	4.14	1.33	0.47	0.78	1.19	1.86	0.47	1.78
Growth Rate	-0.06	-1.61***	-0.52	-0.33	-0.64	5.99***	0.63*	0.2	1.92***	4.36***	6.44***	4.04***	0.25	1.25	2.16**	0.81**	-2.87	4.05

Notes: *p<0.10, **p<0.05, ***p<0.01.

Source: WIOD database, 2016 release. Own calculations.

Table A2-16: Share of Direct Foreign Value-Added Content of Gross Output (in percent)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	0.53	0.71	0.13	0.13	0.10	3.14	1.19	0.14	0.29	0.27	1.39	0.53	0.31	0.38	0.62	0.74	0.17	0.38
2001	0.58	0.75	0.13	0.14	0.11	2.37	1.24	0.15	0.33	0.20	1.24	0.59	0.34	0.45	0.62	0.78	0.22	0.41
2002	0.68	0.83	0.09	0.14	0.11	2.82	1.26	0.15	0.33	0.21	1.19	0.54	0.31	0.36	0.62	0.82	2.10	3.40
2003	0.69	0.72	0.09	0.14	0.11	2.36	1.11	0.14	0.30	0.18	1.23	0.59	0.29	0.35	0.58	0.82	0.31	0.55
2004	0.67	0.79	0.08	0.16	0.12	2.61	1.27	0.15	0.35	0.20	1.68	0.79	0.33	0.43	0.70	0.96	0.31	0.86
2005	0.59	0.90	0.07	0.16	0.13	3.09	1.47	0.18	0.39	0.21	1.93	0.93	0.37	0.55	0.92	0.92	0.32	1.09
2006	0.45	0.74	0.06	0.14	0.11	5.80	1.31	0.15	0.35	0.39	2.61	0.87	0.34	0.51	0.75	0.79	0.44	0.78
2007	0.46	0.67	0.07	0.13	0.10	5.70	1.24	0.14	0.35	0.45	2.82	0.93	0.32	0.50	0.84	0.79	0.29	0.78
2008	0.39	0.58	0.07	0.14	0.10	5.66	1.50	0.16	0.39	0.48	2.86	0.82	0.26	0.45	0.75	0.75	0.45	0.97
2009	0.45	0.52	0.06	0.11	0.08	5.22	1.10	0.12	0.36	0.34	2.32	0.78	0.35	0.46	0.72	0.82	0.38	1.31
2010	0.48	0.56	0.06	0.11	0.09	5.45	1.15	0.13	0.35	0.35	2.57	0.88	0.31	0.46	0.80	0.86	0.26	1.19
2011	0.47	0.49	0.05	0.11	0.09	6.54	1.14	0.13	0.34	0.33	2.63	0.92	0.30	0.41	0.74	0.90	0.26	1.08
2012	0.54	0.52	0.10	0.13	0.09	5.86	1.44	0.15	0.39	0.61	3.44	0.94	0.30	0.42	0.75	1.00	0.29	1.07
2013	0.51	0.53	0.10	0.14	0.09	5.83	1.46	0.15	0.39	0.59	3.28	0.77	0.28	0.39	0.63	0.90	0.29	1.11
2014	0.49	0.51	0.09	0.13	0.09	5.80	1.39	0.15	0.38	0.51	2.89	0.67	0.24	0.34	0.56	0.83	0.31	0.88
Growth Rate	-1.98**	-3.80***	-2.3	-1.12**	-2.22***	7.38***	0.77	-0.44	1.45***	7.85***	7.52***	2.75**	-1.23**	-0.19	0.45	0.82*	-1.82	3.71

Notes: *p<0.10, **p<0.05, ***p<0.01.

Source: WIOD database, 2016 release. Own calculations.

Table A2-17: Share of Indirect Foreign Value-Added Content of Gross Output (in percent)

Year	C10-C12	C13-C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31_C32
2000	0.61	0.96	0.06	0.10	0.09	0.43	1.16	0.15	0.39	0.37	0.80	0.38	0.21	0.38	0.47	0.97	0.19	0.30
2001	0.57	0.86	0.05	0.11	0.10	0.68	1.11	0.15	0.39	0.36	0.75	0.35	0.22	0.38	0.41	1.00	0.19	0.34
2002	0.75	0.89	0.05	0.11	0.10	0.65	1.08	0.14	0.37	0.35	0.80	0.37	0.17	0.30	0.43	1.01	1.47	2.68
2003	0.74	0.80	0.04	0.11	0.10	0.68	0.96	0.13	0.35	0.31	0.87	0.40	0.18	0.30	0.39	1.00	0.19	0.39
2004	0.80	0.90	0.03	0.13	0.12	0.70	1.04	0.14	0.38	0.32	1.09	0.50	0.21	0.36	0.47	1.04	0.19	0.56
2005	0.77	0.98	0.03	0.13	0.12	0.92	1.11	0.16	0.39	0.35	1.18	0.54	0.26	0.43	0.57	0.84	0.13	0.69
2006	0.84	1.10	0.04	0.13	0.12	0.57	1.19	0.16	0.44	0.43	1.47	0.73	0.30	0.55	0.62	0.90	0.10	0.76
2007	0.82	0.99	0.05	0.14	0.12	0.55	1.14	0.15	0.43	0.46	1.53	0.79	0.30	0.53	0.68	0.84	0.12	0.78
2008	0.86	0.95	0.06	0.14	0.12	0.46	1.29	0.18	0.48	0.46	1.56	0.84	0.31	0.57	0.77	0.87	0.08	0.83
2009	0.75	0.86	0.05	0.12	0.10	0.56	1.01	0.13	0.45	0.41	1.36	0.68	0.27	0.50	0.64	0.92	0.12	1.04
2010	0.78	0.98	0.05	0.12	0.11	0.57	1.08	0.14	0.45	0.42	1.49	0.76	0.30	0.53	0.76	1.03	0.17	0.61
2011	0.86	0.92	0.04	0.13	0.11	0.77	1.20	0.16	0.48	0.45	1.60	0.78	0.25	0.45	0.70	1.09	0.18	0.64
2012	0.82	0.93	0.08	0.12	0.12	0.30	1.19	0.17	0.51	0.40	1.27	0.76	0.27	0.47	0.71	1.17	0.20	1.03
2013	0.76	0.88	0.07	0.11	0.11	0.28	1.14	0.16	0.49	0.36	1.22	0.69	0.24	0.46	0.67	1.11	0.18	0.95
2014	0.73	0.84	0.07	0.11	0.11	0.31	1.12	0.16	0.47	0.37	1.24	0.66	0.23	0.43	0.63	1.03	0.16	0.90
Growth Rate	1.38*	-0.06	2.51	0.56	0.85*	-4.62**	0.46	0.81**	2.32***	1.15*	4.31***	5.72***	2.20***	2.68***	4.19***	0.81*	-4.39	4.36

Notes: *p<0.10, **p<0.05, ***p<0.01.

Source: WIOD database, 2016 release. Own calculations.

APPENDIX 3

Table A3-1: DVA and FVA contents in each unit of final demand of manufacturing: Developed Countries

	2000		2014		2000		2014		2000		2014	
	AUS				CAN				FRA			
Industry Codes	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA
C10-C12	0.85	0.15	0.86	0.14	0.83	0.17	0.81	0.19	0.82	0.18	0.75	0.25
C13-C15	0.68	0.32	0.79	0.21	0.65	0.35	0.69	0.31	0.67	0.33	0.56	0.44
C16	0.83	0.17	0.85	0.15	0.68	0.32	0.71	0.29	0.78	0.22	0.73	0.27
C17	0.76	0.24	0.78	0.22	0.69	0.31	0.70	0.30	0.69	0.31	0.63	0.37
C18	0.81	0.19	0.81	0.19	0.78	0.22	0.78	0.22	0.77	0.23	0.73	0.27
C19	0.65	0.35	0.59	0.41	0.54	0.46	0.59	0.41	0.30	0.70	0.23	0.77
C20	0.70	0.30	0.72	0.28	0.66	0.34	0.66	0.34	0.62	0.38	0.53	0.47
C21	0.83	0.17	0.78	0.22	0.78	0.22	0.66	0.34	0.83	0.17	0.75	0.25
C22	0.73	0.27	0.70	0.30	0.55	0.45	0.59	0.41	0.71	0.29	0.63	0.37
C23	0.81	0.19	0.80	0.20	0.77	0.23	0.79	0.21	0.77	0.23	0.71	0.29
C24	0.73	0.27	0.62	0.38	0.78	0.22	0.74	0.26	0.67	0.33	0.55	0.45
C25	0.80	0.20	0.75	0.25	0.66	0.34	0.66	0.34	0.74	0.26	0.69	0.31
C26	0.77	0.23	0.80	0.20	0.58	0.42	0.66	0.34	0.68	0.32	0.69	0.31
C27	0.72	0.28	0.70	0.30	0.53	0.47	0.56	0.44	0.66	0.34	0.59	0.41
C28	0.77	0.23	0.71	0.29	0.61	0.39	0.64	0.36	0.69	0.31	0.64	0.36
C29	0.70	0.30	0.60	0.40	0.50	0.50	0.43	0.57	0.60	0.40	0.51	0.49
C30	0.73	0.27	0.71	0.29	0.59	0.41	0.57	0.43	0.53	0.47	0.52	0.48
C31_C32	0.78	0.22	0.76	0.24	0.63	0.37	0.62	0.38	0.76	0.24	0.70	0.30

Industry Codes	2000		2014		2000		2014		2000		2014	
	GER				ITA				JAP			
	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA
C10-C12	0.77	0.23	0.69	0.31	0.76	0.24	0.75	0.25	0.94	0.06	0.86	0.14
C13-C15	0.65	0.35	0.61	0.39	0.75	0.25	0.75	0.25	0.91	0.09	0.82	0.18
C16	0.75	0.25	0.69	0.31	0.75	0.25	0.75	0.25	0.86	0.14	0.81	0.19
C17	0.67	0.33	0.62	0.38	0.69	0.31	0.68	0.32	0.91	0.09	0.81	0.19
C18	0.79	0.21	0.73	0.27	0.78	0.22	0.77	0.23	0.95	0.05	0.90	0.10
C19	0.44	0.56	0.20	0.80	0.35	0.65	0.26	0.74	0.63	0.37	0.38	0.62
C20	0.69	0.31	0.57	0.43	0.63	0.37	0.49	0.51	0.86	0.14	0.59	0.41
C21	0.81	0.19	0.77	0.23	0.82	0.18	0.64	0.36	0.94	0.06	0.87	0.13
C22	0.72	0.28	0.63	0.37	0.69	0.31	0.66	0.34	0.90	0.10	0.76	0.24
C23	0.80	0.20	0.73	0.27	0.74	0.26	0.70	0.30	0.89	0.11	0.72	0.28
C24	0.65	0.35	0.51	0.49	0.60	0.40	0.54	0.46	0.83	0.17	0.50	0.50
C25	0.78	0.22	0.73	0.27	0.74	0.26	0.73	0.27	0.91	0.09	0.75	0.25
C26	0.69	0.31	0.71	0.29	0.66	0.34	0.67	0.33	0.88	0.12	0.76	0.24
C27	0.76	0.24	0.69	0.31	0.68	0.32	0.64	0.36	0.89	0.11	0.72	0.28
C28	0.75	0.25	0.68	0.32	0.74	0.26	0.71	0.29	0.90	0.10	0.79	0.21
C29	0.70	0.30	0.64	0.36	0.71	0.29	0.67	0.33	0.91	0.09	0.76	0.24
C30	0.66	0.34	0.64	0.36	0.76	0.24	0.69	0.31	0.88	0.12	0.76	0.24
C31_C32	0.78	0.22	0.74	0.26	0.77	0.23	0.75	0.25	0.91	0.09	0.80	0.20

Industry Codes	2000		2014		2000		2014		2000		2014		2000		2014	
	KOR				RUS				UK				US			
	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA
C10-C12	0.78	0.22	0.70	0.30	0.78	0.22	0.79	0.21	0.77	0.23	0.76	0.24	0.91	0.09	0.87	0.13
C13-C15	0.70	0.30	0.67	0.33	0.63	0.37	0.63	0.37	0.76	0.24	0.79	0.21	0.86	0.14	0.84	0.16
C16	0.72	0.28	0.67	0.33	0.87	0.13	0.83	0.17	0.74	0.26	0.69	0.31	0.85	0.15	0.83	0.17
C17	0.73	0.27	0.68	0.32	0.84	0.16	0.81	0.19	0.72	0.28	0.71	0.29	0.88	0.12	0.82	0.18
C18	0.77	0.23	0.71	0.29	0.00	1.00	0.00	1.00	0.81	0.19	0.78	0.22	0.90	0.10	0.87	0.13
C19	0.23	0.77	0.18	0.82	0.84	0.16	0.82	0.18	0.61	0.39	0.42	0.58	0.70	0.30	0.70	0.30
C20	0.59	0.41	0.51	0.49	0.75	0.25	0.75	0.25	0.68	0.32	0.60	0.40	0.88	0.12	0.84	0.16
C21	0.73	0.27	0.66	0.34	0.00	1.00	0.00	1.00	0.81	0.19	0.81	0.19	0.88	0.12	0.84	0.16
C22	0.70	0.30	0.62	0.38	0.72	0.28	0.67	0.33	0.75	0.25	0.70	0.30	0.87	0.13	0.80	0.20
C23	0.68	0.32	0.60	0.40	0.84	0.16	0.83	0.17	0.79	0.21	0.69	0.31	0.89	0.11	0.85	0.15
C24	0.59	0.41	0.50	0.50	0.82	0.18	0.83	0.17	0.66	0.34	0.52	0.48	0.84	0.16	0.76	0.24
C25	0.72	0.28	0.63	0.37	0.00	1.00	0.00	1.00	0.80	0.20	0.75	0.25	0.88	0.12	0.82	0.18
C26	0.61	0.39	0.60	0.40	0.80	0.20	0.79	0.21	0.60	0.40	0.68	0.32	0.85	0.15	0.89	0.11
C27	0.68	0.32	0.65	0.35	0.00	1.00	0.00	1.00	0.73	0.27	0.65	0.35	0.85	0.15	0.81	0.19
C28	0.72	0.28	0.66	0.34	0.79	0.21	0.75	0.25	0.74	0.26	0.69	0.31	0.86	0.14	0.80	0.20
C29	0.72	0.28	0.67	0.33	0.81	0.19	0.57	0.43	0.66	0.34	0.58	0.42	0.81	0.19	0.73	0.27
C30	0.70	0.30	0.62	0.38	0.00	1.00	0.00	1.00	0.76	0.24	0.62	0.38	0.84	0.16	0.78	0.22
C31_C32	0.78	0.22	0.67	0.33	0.83	0.17	0.75	0.25	0.75	0.25	0.77	0.23	0.90	0.10	0.86	0.14

Source: Authors' calculation from WIOD database

Table A3-2: DVA and FVA contents in each unit of final demand of manufacturing: Developing Countries

Industry Codes	2000		2014		2000		2014		2000		2014	
	BRA				CHN				INDO			
	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA
C10-C12	0.91	0.09	0.89	0.11	0.92	0.08	0.92	0.08	0.87	0.13	0.89	0.11
C13-C15	0.91	0.09	0.87	0.13	0.82	0.18	0.89	0.11	0.72	0.28	0.70	0.30
C16	0.93	0.07	0.91	0.09	0.86	0.14	0.86	0.14	0.86	0.14	0.88	0.12
C17	0.88	0.12	0.86	0.14	0.85	0.15	0.83	0.17	0.71	0.29	0.78	0.22
C18	0.90	0.10	0.88	0.12	0.86	0.14	0.86	0.14	0.78	0.22	0.77	0.23
C19	0.76	0.24	0.68	0.32	0.84	0.16	0.74	0.26	0.87	0.13	0.87	0.13
C20	0.84	0.16	0.77	0.23	0.81	0.19	0.80	0.20	0.73	0.27	0.74	0.26
C21	0.93	0.07	0.90	0.10	0.89	0.11	0.90	0.10	0.73	0.27	0.79	0.21
C22	0.83	0.17	0.81	0.19	0.81	0.19	0.82	0.18	0.68	0.32	0.72	0.28
C23	0.90	0.10	0.86	0.14	0.87	0.13	0.84	0.16	0.81	0.19	0.80	0.20
C24	0.86	0.14	0.82	0.18	0.83	0.17	0.77	0.23	0.75	0.25	0.77	0.23
C25	0.89	0.11	0.86	0.14	0.83	0.17	0.82	0.18	0.72	0.28	0.74	0.26
C26	0.68	0.32	0.69	0.31	0.68	0.32	0.70	0.30	0.73	0.27	0.58	0.42
C27	0.85	0.15	0.82	0.18	0.81	0.19	0.79	0.21	0.69	0.31	0.63	0.37
C28	0.86	0.14	0.81	0.19	0.84	0.16	0.82	0.18	0.56	0.44	0.49	0.51
C29	0.86	0.14	0.81	0.19	0.84	0.16	0.84	0.16	0.71	0.29	0.82	0.18
C30	0.87	0.13	0.74	0.26	0.81	0.19	0.81	0.19	0.67	0.33	0.75	0.25
C31_C32	0.89	0.11	0.85	0.15	0.87	0.13	0.88	0.12	0.82	0.18	0.79	0.21

Industry Codes	2000		2014		2000		2014		2000		2014	
	MEX				TUR				IND			
	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA	DVA	FVA
C10-C12	0.86	0.14	0.82	0.18	0.88	0.12	0.80	0.20	0.92	0.08	0.91	0.09
C13-C15	0.71	0.29	0.73	0.27	0.83	0.17	0.75	0.25	0.88	0.12	0.87	0.13
C16	0.85	0.15	0.87	0.13	0.81	0.19	0.72	0.28	0.92	0.08	0.92	0.08
C17	0.70	0.30	0.71	0.29	0.80	0.20	0.72	0.28	0.84	0.16	0.80	0.20
C18	0.76	0.24	0.75	0.25	0.85	0.15	0.79	0.21	0.82	0.18	0.80	0.20
C19	0.87	0.13	0.76	0.24	0.61	0.39	0.72	0.28	0.61	0.39	0.42	0.58
C20	0.77	0.23	0.70	0.30	0.76	0.24	0.66	0.34	0.78	0.22	0.72	0.28
C21	0.88	0.12	0.81	0.19	1.00	0.00	1.00	0.00	0.81	0.19	0.78	0.22
C22	0.71	0.29	0.63	0.37	0.76	0.24	0.61	0.39	0.82	0.18	0.76	0.24
C23	0.88	0.12	0.87	0.13	0.81	0.19	0.80	0.20	0.86	0.14	0.77	0.23
C24	0.77	0.23	0.78	0.22	0.75	0.25	0.58	0.42	0.77	0.23	0.64	0.36
C25	0.66	0.34	0.66	0.34	0.78	0.22	0.61	0.39	0.76	0.24	0.71	0.29
C26	0.37	0.63	0.28	0.72	0.70	0.30	0.56	0.44	0.76	0.24	0.75	0.25
C27	0.53	0.47	0.51	0.49	0.79	0.21	0.64	0.36	0.78	0.22	0.76	0.24
C28	0.68	0.32	0.66	0.34	0.81	0.19	0.66	0.34	0.76	0.24	0.75	0.25
C29	0.55	0.45	0.57	0.43	0.75	0.25	0.58	0.42	0.78	0.22	0.74	0.26
C30	0.67	0.33	0.65	0.35	0.85	0.15	0.76	0.24	0.77	0.23	0.68	0.32
C31_C32	0.67	0.33	0.67	0.33	0.78	0.22	0.62	0.38	0.83	0.17	0.79	0.21

Source: Authors' calculation from WIOD database

Table A3-3 Shares of DVA and FVA contents in aggregate manufacturing export of developed countries (in percentage)

	DVA-export				FVA_export			
Country	2000	2005	2010	2014	2000	2005	2010	2014
AUS	75.6	77.0	75.4	72.3	24.4	23.0	24.6	27.7
CAN	62.1	62.3	64.4	63.2	37.5	38.1	35.4	36.9
FRA	65.8	64.1	60.7	59.4	34.2	35.9	39.3	40.6
GER	71.2	69.7	65.5	64.6	28.8	30.3	34.5	35.4
ITA	71.4	69.9	66.7	66.6	28.6	30.1	33.3	33.4
RUS	80.7	80.0	82.7	79.5	19.3	20.0	17.3	20.5
JAP	88.7	84.0	79.2	71.0	11.3	16.0	20.8	29.0
KOR	63.3	63.5	56.8	56.9	36.7	36.5	43.2	43.1
UK	70.0	68.7	62.8	65.0	30.0	31.3	37.2	35.0
US	85.2	83.3	82.7	80.4	14.8	16.7	17.3	19.6

Source: Authors' calculation from WIOD database

Table A3-4 Shares of DVA and FVA contents in aggregate manufacturing export of developing countries (in percentage)

	DVA-export				FVA_export			
Country	2000	2005	2010	2014	2000	2005	2010	2014
BRA	84.7	81.5	83.6	80.6	15.3	18.5	16.4	19.4
CHN	79.7	71.6	75.3	79.6	20.3	28.4	24.7	20.4
INDO	76.6	76.8	79.4	77.3	23.4	23.2	20.6	22.7
MEX	55.7	55.3	54.0	56.6	44.3	44.7	46.0	43.4
TUR	86.5	75.5	74.3	72.1	15.5	26.5	27.7	29.9

Source: Authors' calculation from WIOD database

Table A3-5 Shares of DVA and FVA contents in aggregate manufacturing output of developed countries (in percentage)

	DVA_output				FVA_output			
Country	2000	2005	2010	2014	2000	2005	2010	2014
AUS	76.3	77.2	77.3	74.4	23.7	22.8	22.7	25.6
CAN	65.5	65.6	67.1	65.3	34.5	34.4	32.9	34.7
FRA	68.1	66.2	62.9	61.3	31.9	33.8	37.1	38.7
GER	72.0	69.7	65.1	64.1	28.0	30.3	34.9	35.9
ITA	70.8	69.5	66.7	66.0	29.2	30.5	33.3	34.0
RUS	80.0	78.8	80.4	77.4	20.0	21.2	19.6	22.6
JAP	88.6	83.2	78.4	71.0	11.4	16.8	21.6	29.0
KOR	64.2	63.9	57.2	57.7	35.8	36.1	42.8	42.3
UK	72.3	70.2	64.9	67.8	27.7	29.8	35.1	32.2
US	85.5	82.6	82.3	80.7	14.5	17.4	17.7	19.3

Source: Authors' calculation from WIOD database

Table A3-6 DVA and FVA contents in aggregate manufacturing output of developing countries (in percentage)

	DVA_output				FVA_output			
Country	2000	2005	2010	2014	2000	2005	2010	2014
BRA	83.8	80.8	82.2	78.1	16.2	19.2	17.8	21.9
CHN	82.9	75.5	78.1	81.7	17.1	24.5	21.9	18.3
INDO	78.2	77.1	82.4	80.0	21.8	22.9	17.6	20.0
MEX	68.6	69.3	67.5	67.2	31.4	30.7	32.5	32.8
TUR	84.5	77.2	76.3	73.9	15.5	22.8	23.7	26.1

Source: Authors' calculation from WIOD database

Table: A3-7 DVA and FVA contents in manufacturing export of developed countries (in percentage)

AUSTRALIA	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	19.9	21.7	19.4	23.9	3.6	3.8	3.1	4.0
C13-C15	4.1	2.8	1.7	2.2	1.9	0.8	0.6	0.6
C16	1.2	1.4	1.0	1.7	0.3	0.3	0.2	0.3
C17	0.9	1.0	1.1	1.2	0.3	0.3	0.3	0.3
C18	0.2	0.1	0.2	0.4	0.0	0.0	0.0	0.1
C19	3.6	3.2	2.2	2.0	1.9	1.6	0.9	1.4
C20	2.7	2.6	3.8	4.2	1.1	1.1	1.4	1.6
C21	1.5	2.2	1.7	1.1	0.3	0.4	0.4	0.3
C22	1.1	1.2	1.1	1.1	0.4	0.4	0.4	0.5
C23	0.7	0.6	0.5	0.5	0.2	0.1	0.1	0.1
C24	25.1	24.9	30.5	22.9	9.2	9.3	13.1	14.0
C25	2.1	2.2	2.6	2.8	0.5	0.6	0.7	0.9
C26	3.1	2.5	1.9	1.7	0.9	0.7	0.5	0.4
C27	1.3	1.1	0.9	0.6	0.5	0.4	0.4	0.3
C28	2.0	2.2	2.1	1.8	0.6	0.6	0.7	0.7
C29	4.2	5.0	2.8	1.8	1.8	1.9	1.1	1.2
C30	1.5	1.4	0.9	1.4	0.6	0.5	0.3	0.6
C31_C32	0.8	1.0	1.1	1.2	0.2	0.3	0.3	0.4

CANADA	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	4.0	4.6	5.3	5.4	0.8	0.9	1.1	1.3
C13-C15	1.9	1.5	1.1	1.1	1.0	0.7	0.5	0.5
C16	4.0	4.2	2.6	2.9	1.9	1.8	0.9	1.2
C17	4.8	4.2	3.1	2.8	2.2	1.8	1.1	1.2
C18	1.1	1.0	1.0	1.2	0.3	0.3	0.2	0.3
C19	1.5	3.1	4.1	3.8	1.3	2.4	2.8	2.6
C20	2.5	3.0	3.8	3.5	1.3	1.7	1.7	1.8
C21	0.7	1.3	2.1	2.2	0.2	0.6	1.0	1.1
C22	3.3	3.8	3.7	3.6	2.7	2.9	2.6	2.5
C23	1.1	0.9	0.8	0.8	0.3	0.3	0.2	0.2
C24	5.2	6.6	10.4	10.2	1.5	2.3	3.5	3.6
C25	2.7	2.7	2.5	2.5	1.4	1.6	1.4	1.3
C26	5.2	3.6	4.2	3.3	3.7	2.2	2.2	1.7
C27	2.0	1.6	1.5	1.4	1.8	1.2	1.2	1.1
C28	4.0	4.2	4.2	4.4	2.5	2.5	2.4	2.5
C29	9.0	8.1	6.6	6.8	8.9	9.5	8.6	9.0
C30	4.3	3.5	4.4	4.2	2.9	3.1	2.5	3.1
C31_C32	4.8	4.4	3.0	3.1	2.8	2.3	1.5	1.9

FRANCE	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	6.3	6.2	7.0	7.4	1.4	1.4	2.1	2.5

C13-C15	3.5	2.8	2.6	2.6	1.7	2.0	2.1	2.1
C16	0.5	0.4	0.3	0.3	0.1	0.1	0.1	0.1
C17	1.5	1.3	1.2	1.0	0.7	0.6	0.7	0.6
C18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C19	0.7	0.8	1.0	0.8	1.6	2.6	2.6	2.8
C20	6.7	6.8	6.5	6.7	4.1	4.7	5.5	6.0
C21	2.8	3.8	4.6	4.4	0.6	0.8	1.5	1.5
C22	2.1	2.2	2.1	2.1	0.9	1.0	1.2	1.2
C23	1.1	1.0	0.8	0.8	0.3	0.3	0.3	0.3
C24	3.8	4.0	3.4	2.8	1.8	2.2	2.6	2.3
C25	1.9	1.9	2.0	1.8	0.7	0.7	0.8	0.8
C26	9.2	6.8	5.2	4.5	4.2	2.4	2.4	2.1
C27	3.4	3.1	2.9	2.7	1.8	1.7	1.9	1.9
C28	5.9	6.2	5.9	6.1	2.7	2.9	3.1	3.4
C29	9.2	9.7	6.6	5.9	6.3	7.3	5.7	5.6
C30	5.4	5.2	6.7	7.3	4.8	4.4	5.9	6.7
C31_C32	1.7	1.8	1.8	2.1	0.5	0.6	0.7	0.9

GERMANY	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	3.1	3.3	3.8	4.0	0.9	1.1	1.5	1.8
C13-C15	2.5	2.0	1.5	1.3	1.4	1.1	1.0	0.8
C16	0.5	0.6	0.5	0.4	0.2	0.2	0.2	0.2
C17	1.6	1.5	1.4	1.2	0.8	0.7	0.8	0.7
C18	0.2	0.2	0.2	0.2	0.0	0.1	0.1	0.1
C19	0.6	0.8	0.5	0.5	0.8	1.4	1.5	2.1
C20	6.9	6.2	6.5	6.1	3.2	3.0	4.2	4.5
C21	1.9	3.0	2.8	2.8	0.4	0.7	0.8	0.8
C22	2.5	2.6	2.6	2.6	1.0	1.1	1.4	1.5
C23	1.3	1.1	1.1	1.0	0.3	0.3	0.4	0.4
C24	3.4	3.5	2.8	2.4	1.8	2.2	2.7	2.4
C25	3.0	3.0	2.9	3.0	0.9	1.0	1.1	1.1
C26	8.2	6.9	4.9	4.6	3.7	2.9	2.2	1.8
C27	5.2	4.9	5.0	4.7	1.6	1.8	2.2	2.1
C28	10.9	11.0	11.2	11.0	3.6	4.1	5.2	5.1
C29	14.4	14.6	13.2	14.1	6.1	6.8	7.1	7.8
C30	2.7	2.4	2.4	2.3	1.4	1.2	1.4	1.3
C31_C32	2.3	2.2	2.3	2.4	0.6	0.7	0.8	0.8

ITALY	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	3.9	4.36	5.37	5.8	1.2	1.36	1.61	1.9
C13-C15	11.7	10	8.47	8.9	3.9	3.25	2.72	3.0
C16	0.8	0.64	0.59	0.5	0.3	0.2	0.2	0.2
C17	1.1	1.07	1.13	1.1	0.5	0.47	0.52	0.5
C18	0.2	0.15	0.18	0.2	0.0	0.04	0.06	0.0
C19	0.8	1.12	1.16	0.8	1.4	2.55	2.77	2.3

C20	3.9	3.89	3.31	3.1	2.3	2.42	3.12	3.3
C21	2.3	2.94	2.88	3.4	0.5	0.79	1.49	1.9
C22	2.8	2.77	2.52	2.5	1.2	1.32	1.37	1.3
C23	2.7	2.35	2.02	1.8	0.9	0.87	0.8	0.8
C24	2.4	3.17	3.86	3.5	1.6	2.35	3.16	3.0
C25	4.0	4.47	4.3	4.3	1.4	1.62	1.61	1.6
C26	3.7	2.98	2.01	1.9	1.9	1.33	1.15	0.9
C27	4.2	4.32	3.95	3.5	1.9	1.97	2.19	2.0
C28	12.4	13	13.1	13.6	4.4	4.67	5.39	5.7
C29	6.2	5.69	5.25	5.4	2.5	2.73	2.74	2.7
C30	3.0	2.4	2.69	2.3	0.9	0.82	1.03	1.0
C31_C32	5.5	4.56	3.89	3.9	1.6	1.36	1.32	1.3

RUSSIA	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	0.9	1.0	1.4	2.1	0.2	0.2	0.3	0.6
C13-C15	0.6	0.4	0.2	0.3	0.3	0.2	0.1	0.2
C16	1.7	2.2	2.4	2.1	0.3	0.4	0.4	0.5
C17	5.0	3.7	3.4	4.7	1.0	0.8	0.7	1.1
C18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C19	10.4	16.6	24.1	26.2	2.0	3.4	4.6	5.9
C20	11.0	9.5	11.5	10.2	3.6	3.3	3.3	3.4
C21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C22	0.3	0.3	0.3	0.4	0.1	0.1	0.1	0.2
C23	0.5	0.5	0.4	0.5	0.1	0.1	0.1	0.1
C24	33.1	33.3	30.1	22.3	7.1	6.9	5.1	4.5
C25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C26	2.4	1.9	1.9	2.6	0.6	0.5	0.4	0.7
C27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C28	11.8	8.1	5.6	5.4	3.2	2.4	1.3	1.8
C29	2.8	2.3	1.2	1.7	0.7	1.5	0.7	1.3
C30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C31_C32	0.2	0.2	0.2	0.9	0.0	0.1	0.1	0.3

JAPAN	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	0.4	0.4	0.5	0.6	0.0	0.0	0.1	0.1
C13-C15	1.2	0.9	0.7	0.7	0.1	0.1	0.1	0.1
C16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C17	0.5	0.4	0.5	0.5	0.0	0.0	0.1	0.1
C18	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
C19	0.4	0.6	0.9	1.0	0.2	0.7	1.2	1.6
C20	6.0	5.9	6.1	5.4	1.0	1.8	2.4	3.7
C21	0.5	0.5	0.7	0.6	0.0	0.0	0.1	0.1
C22	2.1	2.8	3.4	3.0	0.2	0.5	0.7	1.0
C23	1.1	1.1	1.4	1.1	0.1	0.2	0.3	0.4
C24	4.5	5.4	6.2	4.9	0.9	1.7	3.8	4.9

C25	4.7	4.8	4.5	4.4	0.5	0.7	1.0	1.5
C26	22.5	17.7	14.7	13.1	3.1	3.4	3.1	4.1
C27	10.3	8.9	7.1	6.2	1.2	1.6	1.7	2.4
C28	10.8	9.3	8.6	7.9	1.2	1.4	1.5	2.1
C29	19.1	20.3	18.6	17.6	2.0	2.9	3.6	5.7
C30	3.2	3.6	4.0	3.1	0.4	0.8	0.9	1.0
C31_C32	1.4	1.2	1.1	1.0	0.1	0.2	0.2	0.2

S. KOREA	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	0.9	0.7	0.7	0.8	0.3	0.2	0.3	0.3
C13-C15	9.5	4.2	2.5	2.9	4.1	1.8	1.2	1.4
C16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C17	0.8	0.6	0.4	0.4	0.3	0.2	0.2	0.2
C18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C19	1.3	1.3	1.3	1.7	4.4	4.6	6.5	7.8
C20	4.6	5.5	5.4	5.7	3.2	3.9	5.0	5.4
C21	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
C22	1.4	1.4	0.9	1.0	0.6	0.7	0.6	0.6
C23	0.4	0.3	0.2	0.3	0.2	0.2	0.1	0.2
C24	2.8	3.2	3.1	2.9	1.9	2.3	3.4	2.9
C25	2.3	2.1	1.8	1.8	0.9	1.0	1.2	1.0
C26	22.4	23.4	18.8	17.4	14.1	12.5	12.7	11.5
C27	2.4	2.8	2.7	3.3	1.1	1.2	1.6	1.8
C28	3.1	4.0	4.2	4.3	1.2	1.6	2.3	2.2
C29	6.1	8.9	7.6	8.2	2.3	4.0	3.8	4.0
C30	3.4	4.1	6.6	5.8	1.5	1.9	4.1	3.5
C31_C32	1.7	1.0	0.2	0.2	0.5	0.3	0.1	0.1

UK	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	5.0	4.9	5.5	5.7	1.5	1.6	1.9	1.8
C13-C15	4.2	3.5	1.7	2.0	1.3	1.3	0.5	0.5
C16	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
C17	0.9	0.8	0.7	0.6	0.3	0.3	0.3	0.2
C18	0.6	0.7	0.4	0.3	0.2	0.2	0.1	0.1
C19	1.9	2.5	2.6	1.8	1.2	2.4	3.0	2.4
C20	7.0	7.4	6.5	5.5	3.3	4.1	5.5	3.8
C21	3.7	5.5	7.0	5.4	0.9	1.4	1.5	1.2
C22	2.0	2.0	1.9	2.0	0.7	0.8	1.0	0.9
C23	1.0	0.9	0.7	0.6	0.3	0.3	0.3	0.3
C24	2.8	3.2	2.7	5.2	1.4	2.2	3.1	4.7
C25	2.0	2.0	1.5	1.5	0.5	0.6	0.7	0.5
C26	12.0	8.0	5.3	4.7	8.0	4.2	3.2	2.2
C27	3.6	2.7	2.6	2.6	1.4	1.3	1.6	1.4
C28	7.9	8.0	7.4	7.7	2.8	3.0	3.7	3.4
C29	6.9	7.2	6.6	7.8	3.5	4.7	5.6	5.6

C30	6.0	6.3	6.8	8.6	1.9	2.0	4.2	5.2
C31_C32	2.2	2.9	2.7	2.7	0.7	0.9	1.0	0.8

US	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	4.6	4.6	5.6	6.3	0.5	0.6	0.7	0.9
C13-C15	2.6	2.0	1.3	1.0	0.4	0.4	0.2	0.2
C16	0.7	0.6	0.5	0.5	0.1	0.1	0.1	0.1
C17	2.2	2.1	2.2	1.9	0.3	0.4	0.4	0.4
C18	0.4	0.4	0.4	0.4	0.0	0.1	0.0	0.1
C19	1.5	2.9	5.8	8.4	0.7	1.4	2.9	3.7
C20	7.6	9.3	10.1	9.5	1.1	1.8	1.8	1.8
C21	3.0	4.0	4.2	3.4	0.4	0.8	0.7	0.6
C22	2.4	2.3	2.2	2.3	0.4	0.5	0.5	0.6
C23	1.1	0.9	0.8	0.9	0.1	0.1	0.1	0.2
C24	1.8	2.5	2.9	2.3	0.4	0.6	0.9	0.7
C25	3.0	2.8	2.9	3.4	0.4	0.5	0.6	0.7
C26	21.1	15.2	12.0	9.6	3.7	2.0	1.0	1.1
C27	3.2	2.9	2.6	2.5	0.5	0.6	0.5	0.6
C28	10.3	10.2	10.2	8.3	1.7	2.1	2.2	2.1
C29	8.7	8.6	7.0	7.2	2.1	2.6	2.5	2.6
C30	8.0	8.6	8.5	9.5	1.5	1.6	1.5	2.6
C31_C32	3.0	3.6	3.5	3.1	0.3	0.5	0.5	0.5

Source: Authors' calculation from WIOD database

Table: A3-8 DVA and FVA contents in manufacturing export of developing countries (in percentage)

BRA	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	13.9	17.1	23.9	23.7	3.4	4.4	6.3	6.9
C13-C15	6.3	4.3	2.9	3.0	1.7	1.3	0.9	1.0
C16	2.5	2.4	1.2	1.3	0.5	0.6	0.3	0.3
C17	4.1	2.5	3.8	3.7	1.3	0.9	1.3	1.4
C18	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C19	1.8	3.2	2.9	2.6	1.4	2.7	2.0	3.0
C20	5.3	4.6	5.4	4.9	2.1	2.5	2.6	3.1
C21	0.5	0.5	0.8	0.8	0.1	0.1	0.2	0.2
C22	1.5	1.3	1.6	1.4	0.7	0.6	0.6	0.7
C23	1.6	1.6	1.3	1.3	0.4	0.5	0.4	0.4
C24	9.9	9.7	8.7	9.5	3.2	3.8	3.4	3.8
C25	1.1	1.1	1.3	1.3	0.3	0.3	0.4	0.4
C26	3.2	2.4	1.2	0.6	2.9	2.3	0.9	0.5
C27	1.9	1.7	1.7	1.5	0.7	0.7	0.7	0.7
C28	4.3	4.5	4.1	4.0	1.3	1.7	1.5	1.7
C29	8.8	10.3	8.6	5.8	3.1	4.3	3.3	2.9
C30	2.5	1.5	1.6	2.0	0.8	1.0	0.9	1.3

C31_C32	5.3	2.7	2.7	3.2	1.4	0.8	0.8	1.1

CHN	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	3.7	2.7	2.5	2.5	0.3	0.3	0.3	0.2
C13-C15	21.0	15.5	13.7	13.3	4.5	3.9	2.3	1.6
C16	0.7	0.7	0.7	0.8	0.1	0.2	0.1	0.1
C17	0.6	0.2	0.3	0.5	0.1	0.1	0.1	0.1
C18	0.5	0.2	0.1	0.2	0.1	0.0	0.0	0.0
C19	1.1	0.7	0.8	1.0	0.2	0.3	0.4	0.4
C20	3.5	3.3	3.5	3.9	0.8	1.2	1.1	1.0
C21	0.7	0.7	1.0	0.9	0.1	0.1	0.1	0.1
C22	3.7	2.6	2.2	2.5	0.9	1.0	0.7	0.6
C23	1.4	1.2	1.5	2.0	0.2	0.3	0.3	0.4
C24	3.7	3.4	2.9	3.4	0.7	1.0	0.9	1.0
C25	3.0	2.9	2.9	3.5	0.6	0.8	0.8	0.8
C26	16.2	19.1	19.8	19.6	7.6	13.9	11.1	8.5
C27	7.2	6.0	7.5	8.8	1.7	2.1	2.4	2.3
C28	3.7	4.8	7.8	7.7	0.7	1.5	2.2	1.7
C29	0.7	1.3	2.2	2.6	0.1	0.4	0.5	0.5
C30	1.5	1.4	3.0	2.2	0.3	0.5	0.9	0.5
C31_C32	6.7	4.9	3.0	4.2	1.0	0.8	0.5	0.6

INDO	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	7.9	11.3	16.8	19.6	1.2	1.7	1.7	2.5
C13-C15	14.1	11.9	9.3	9.3	5.4	3.7	3.3	4.1
C16	6.4	4.2	2.4	2.7	1.0	0.6	0.3	0.4
C17	3.8	3.3	3.8	3.1	1.6	1.0	0.9	0.9
C18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C19	13.9	13.5	11.5	8.3	2.0	2.3	1.4	1.2
C20	4.1	4.4	5.2	5.9	1.5	1.8	1.5	2.1
C21	0.3	0.4	0.9	1.0	0.1	0.2	0.2	0.3
C22	3.3	4.6	7.1	6.6	1.5	2.1	2.1	2.5
C23	1.3	1.1	0.7	0.5	0.3	0.2	0.1	0.1
C24	2.4	3.8	6.7	4.8	0.8	1.6	1.7	1.4
C25	1.4	1.7	0.9	1.1	0.5	0.7	0.3	0.4
C26	8.1	6.8	4.9	3.9	3.0	2.7	3.3	2.8
C27	2.3	2.4	2.7	2.6	1.0	1.1	1.5	1.5
C28	2.8	2.2	0.9	0.7	2.2	1.7	0.8	0.8
C29	0.6	1.2	2.1	3.1	0.2	0.7	0.4	0.7
C30	0.4	0.8	0.9	0.7	0.2	0.4	0.4	0.2
C31_C32	3.4	3.1	2.6	3.4	0.8	0.7	0.6	0.9

MEX	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	2.1	2.8	3.8	4.4	0.4	0.5	0.8	1.0

C13-C15	6.8	4.4	2.5	2.4	2.8	1.9	0.9	0.9
C16	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
C17	0.5	0.5	0.5	0.6	0.2	0.2	0.2	0.2
C18	0.2	0.4	0.1	0.1	0.1	0.1	0.0	0.0
C19	0.7	1.4	1.8	1.7	0.1	0.3	0.5	0.5
C20	2.0	2.4	3.1	3.0	0.6	0.8	1.1	1.3
C21	0.5	0.6	0.6	0.6	0.1	0.1	0.1	0.1
C22	1.9	1.8	1.3	1.7	0.8	0.8	0.7	1.0
C23	1.2	1.3	1.2	1.2	0.2	0.2	0.2	0.2
C24	1.9	2.8	4.8	3.7	0.5	0.7	1.3	1.1
C25	2.1	2.6	2.2	2.6	1.1	1.2	1.1	1.4
C26	11.1	8.7	6.6	6.0	18.8	19.4	19.9	15.6
C27	5.4	4.8	5.0	4.6	4.8	4.3	5.2	4.4
C28	1.8	3.1	5.4	5.3	0.9	1.6	3.2	2.7
C29	14.2	13.7	11.1	13.5	11.5	10.6	8.8	10.3
C30	0.6	0.7	0.8	1.7	0.3	0.3	0.4	0.9
C31_C32	2.4	3.1	3.0	3.3	1.2	1.6	1.6	1.6

TUR	DVA_export				FVA_export			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	6.6	5.4	5.4	6.2	1.3	1.2	1.4	2.0
C13-C15	32.6	20.6	16.1	15.5	8.5	7.0	5.9	6.4
C16	0.3	0.4	0.5	0.6	0.1	0.2	0.2	0.3
C17	0.5	0.6	0.8	0.9	0.2	0.2	0.4	0.5
C18	0.2	0.2	0.3	0.3	0.0	0.1	0.1	0.1
C19	0.7	1.4	1.6	2.1	0.7	2.1	2.2	1.4
C20	3.3	2.2	2.8	2.8	1.3	1.3	1.7	1.9
C22	2.2	2.2	2.7	2.8	0.8	1.3	1.7	2.2
C23	3.4	2.7	2.7	2.3	1.0	1.2	1.2	0.8
C24	6.2	5.8	7.8	6.3	2.5	4.7	6.3	5.8
C25	2.0	2.2	2.6	2.5	0.7	1.4	1.7	2.0
C26	2.7	2.9	1.5	1.1	1.4	2.0	0.8	1.0
C27	1.9	2.0	2.5	2.3	0.6	1.0	1.3	1.5
C28	4.1	4.5	5.4	5.6	1.2	2.2	2.7	3.4
C29	4.8	8.3	7.9	5.8	1.9	6.5	6.2	5.1
C30	2.2	1.5	1.0	0.9	0.5	0.5	0.4	0.4
C31_C32	2.7	2.7	2.9	4.1	0.9	1.6	1.7	3.1

Source: Authors' calculation from WIOD database

Table: A3-9 DVA and FVA contents in manufacturing output of developed countries (in percentage)

AUSTRALIA	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	18.3	18.4	20.1	22.6	3.3	3.2	3.2	3.8
C13-C15	1.6	1.9	1.5	1.3	0.8	0.5	0.6	0.3
C16	2.6	2.7	2.4	2.4	0.6	0.5	0.4	0.4

C17	1.9	1.9	1.9	2.0	0.6	0.5	0.5	0.6
C18	2.0	2.0	1.9	2.0	0.5	0.4	0.4	0.5
C19	5.6	5.7	5.2	4.6	3.0	2.8	2.1	3.1
C20	3.8	3.8	3.9	3.7	1.6	1.6	1.5	1.4
C21	1.5	1.5	2.0	2.4	0.3	0.3	0.5	0.7
C22	3.0	3.1	2.7	2.4	1.1	1.1	1.0	1.0
C23	3.3	3.3	3.6	3.9	0.8	0.8	0.8	1.0
C24	12.5	12.5	12.3	8.5	4.6	4.7	5.3	5.2
C25	5.9	5.9	5.9	6.2	1.5	1.5	1.6	2.0
C26	1.8	1.9	1.8	1.5	0.6	0.5	0.5	0.4
C27	1.5	1.5	1.5	1.3	0.6	0.6	0.6	0.6
C28	2.8	2.8	2.9	3.1	0.8	0.8	1.0	1.3
C29	4.7	4.9	3.9	2.7	2.0	1.9	1.6	1.8
C30	1.9	1.9	2.2	2.4	0.7	0.6	0.7	1.0
C31_C32	1.6	1.6	1.6	1.4	0.5	0.4	0.5	0.4

CANADA	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	11.9	12.7	12.3	11.9	2.5	2.5	2.6	2.8
C13-C15	1.3	0.9	0.8	0.7	0.7	0.5	0.3	0.3
C16	2.7	2.7	2.7	2.4	1.3	1.2	0.9	1.0
C17	3.6	3.3	3.3	2.8	1.6	1.4	1.2	1.2
C18	2.7	2.5	2.1	1.9	0.8	0.6	0.5	0.5
C19	3.9	6.1	7.1	7.8	3.2	4.7	4.8	5.4
C20	2.4	2.7	3.1	2.9	1.2	1.5	1.4	1.5
C21	1.8	1.9	1.7	1.5	0.5	0.9	0.8	0.8
C22	2.5	2.8	2.9	2.3	2.0	2.1	2.0	1.6
C23	1.7	2.0	2.1	2.0	0.5	0.5	0.5	0.5
C24	5.1	5.4	7.1	7.6	1.5	1.8	2.4	2.7
C25	3.0	3.2	3.2	3.3	1.6	1.9	1.8	1.7
C26	3.7	2.3	2.2	2.1	2.7	1.3	1.2	1.1
C27	1.7	1.0	0.9	0.9	1.5	0.8	0.7	0.7
C28	3.0	3.1	3.0	3.5	1.9	1.8	1.7	1.9
C29	5.7	4.7	4.5	4.7	5.6	5.4	5.9	6.3
C30	3.2	2.5	2.5	2.2	2.2	2.2	1.4	1.6
C31_C32	5.6	5.8	5.8	4.9	3.2	3.0	2.8	3.0

FRANCE	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	15.3	15.8	16.5	16.8	3.5	3.7	4.8	5.6
C13-C15	3.0	2.0	1.3	1.3	1.4	1.4	1.0	1.0
C16	1.2	1.2	1.1	1.1	0.3	0.4	0.4	0.4
C17	2.1	1.8	1.6	1.5	0.9	0.9	1.0	0.9
C18	1.5	1.4	1.2	1.0	0.4	0.4	0.4	0.4
C19	1.7	1.5	1.9	1.6	3.9	5.0	5.1	5.4
C20	5.3	4.9	5.0	5.2	3.2	3.3	4.2	4.6
C21	2.5	3.0	2.9	2.7	0.5	0.6	0.9	0.9

C22	3.1	3.3	2.8	2.8	1.3	1.5	1.6	1.6
C23	2.6	2.7	2.5	2.4	0.8	0.9	0.9	1.0
C24	3.1	3.1	3.0	2.6	1.5	1.7	2.2	2.1
C25	4.9	5.1	5.3	4.9	1.7	2.0	2.2	2.2
C26	4.9	3.3	2.6	2.2	2.2	1.2	1.3	1.0
C27	2.3	2.0	1.9	1.7	1.2	1.1	1.3	1.2
C28	3.9	3.9	3.3	3.5	1.7	1.9	1.8	1.9
C29	6.5	6.4	4.7	3.9	4.4	4.8	4.1	3.7
C30	2.4	2.9	3.6	4.4	2.2	2.4	3.2	4.1
C31_C32	2.0	1.9	1.7	1.6	0.6	0.6	0.7	0.7

GERMANY	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	8.2	7.8	7.4	7.4	2.4	2.5	3.0	3.2
C13-C15	1.5	1.1	0.9	0.8	0.8	0.6	0.6	0.5
C16	1.2	1.1	1.0	0.9	0.4	0.4	0.4	0.4
C17	1.7	1.5	1.5	1.4	0.8	0.8	0.9	0.8
C18	1.6	1.3	1.0	0.9	0.4	0.4	0.4	0.3
C19	1.4	1.4	1.1	0.9	1.8	2.8	3.0	3.6
C20	5.6	5.1	5.0	4.5	2.6	2.5	3.2	3.4
C21	1.7	2.1	2.0	2.0	0.4	0.5	0.5	0.6
C22	3.0	3.0	2.8	2.7	1.2	1.3	1.5	1.6
C23	2.6	2.0	1.9	1.9	0.7	0.6	0.6	0.7
C24	3.2	3.6	3.0	2.9	1.7	2.2	3.0	2.9
C25	5.6	5.3	5.2	5.3	1.6	1.7	1.9	1.9
C26	4.3	3.7	3.1	3.0	1.9	1.5	1.4	1.2
C27	5.2	4.7	4.3	4.1	1.6	1.7	1.9	1.9
C28	9.1	9.3	8.9	9.3	3.0	3.4	4.1	4.3
C29	12.4	13.2	12.4	12.4	5.2	6.1	6.7	6.9
C30	1.2	1.2	1.4	1.5	0.6	0.7	0.8	0.8
C31_C32	2.5	2.3	2.3	2.1	0.7	0.7	0.8	0.7

ITALY	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	10.0	10.1	10.8	11.1	3.2	3.2	3.2	3.7
C13-C15	8.8	7.5	6.9	7.0	2.9	2.4	2.2	2.3
C16	1.9	1.8	1.5	1.3	0.6	0.6	0.5	0.4
C17	1.7	1.5	1.6	1.7	0.8	0.7	0.8	0.8
C18	1.5	1.4	1.2	1.0	0.4	0.4	0.4	0.3
C19	1.6	1.7	1.8	1.6	2.9	3.8	4.4	4.6
C20	3.6	3.4	2.9	2.9	2.1	2.1	2.8	3.0
C21	1.7	1.8	1.8	1.8	0.4	0.5	0.9	1.0
C22	3.2	3.1	2.9	3.0	1.5	1.5	1.6	1.6
C23	3.4	3.6	3.0	2.5	1.2	1.3	1.2	1.1
C24	2.9	3.3	3.5	3.4	2.0	2.5	2.8	3.0
C25	6.6	7.2	7.0	6.7	2.3	2.6	2.6	2.5
C26	2.0	1.9	1.7	1.7	1.0	0.9	1.0	0.8

C27	3.1	3.2	3.1	2.6	1.4	1.5	1.7	1.5
C28	8.6	8.6	8.3	9.0	3.0	3.1	3.4	3.8
C29	4.4	3.8	3.7	3.7	1.8	1.8	1.9	1.8
C30	1.8	1.8	1.9	1.8	0.6	0.6	0.7	0.8
C31_C32	3.9	3.7	3.4	3.2	1.1	1.1	1.1	1.1

RUSSIA	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	17.4	13.2	14.4	12.8	4.8	3.3	3.5	3.4
C13-C15	2.0	1.3	0.9	0.9	1.1	0.6	0.5	0.5
C16	2.0	1.6	1.4	1.3	0.3	0.3	0.2	0.3
C17	2.9	2.8	2.8	2.7	0.6	0.6	0.6	0.6
C18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C19	7.6	15.9	18.0	19.1	1.5	3.3	3.4	4.3
C20	5.8	5.2	5.6	5.6	1.9	1.8	1.6	1.9
C21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C22	1.5	1.5	1.9	1.9	0.6	0.6	0.8	0.9
C23	3.5	3.6	3.4	3.4	0.7	0.7	0.6	0.7
C24	16.9	17.2	15.4	14.3	3.6	3.6	2.6	2.9
C25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C26	3.5	3.8	4.0	3.7	0.9	1.0	0.9	1.0
C27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C28	4.6	5.9	5.5	5.0	1.2	1.8	1.3	1.6
C29	7.4	5.2	5.4	5.2	1.8	3.3	3.0	3.9
C30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C31_C32	4.9	1.6	1.5	1.4	1.0	0.4	0.4	0.5

JAPAN	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	12.0	10.7	11.3	10.7	0.8	1.1	1.3	1.7
C13-C15	2.4	1.5	1.1	1.2	0.2	0.2	0.2	0.3
C16	0.9	0.7	0.6	0.6	0.2	0.1	0.1	0.1
C17	2.7	2.3	2.2	2.0	0.3	0.3	0.4	0.5
C18	2.3	1.9	1.7	1.6	0.1	0.1	0.1	0.2
C19	2.5	2.7	2.5	2.3	1.5	2.9	3.4	3.8
C20	5.6	5.3	5.6	4.7	0.9	1.6	2.2	3.2
C21	2.1	2.1	2.2	2.4	0.1	0.2	0.3	0.3
C22	4.0	3.8	3.7	3.4	0.4	0.6	0.8	1.1
C23	2.5	2.0	1.9	1.6	0.3	0.3	0.4	0.6
C24	6.5	8.0	7.5	6.4	1.3	2.5	4.6	6.4
C25	6.9	6.1	5.4	4.9	0.7	0.9	1.1	1.6
C26	11.4	8.6	7.9	7.1	1.6	1.6	1.7	2.2
C27	5.7	4.8	4.4	3.6	0.7	0.8	1.1	1.4
C28	5.8	6.1	5.0	5.2	0.6	0.9	0.9	1.4
C29	11.3	13.0	12.1	9.9	1.2	1.9	2.4	3.2
C30	1.6	1.6	2.1	1.9	0.2	0.4	0.5	0.6
C31_C32	2.5	1.9	1.4	1.5	0.3	0.3	0.2	0.4

S.KOREA	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	6.7	5.4	4.1	4.4	1.9	1.6	1.8	1.9
C13-C15	5.2	3.4	3.0	3.3	2.2	1.4	1.5	1.6
C16	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1
C17	1.4	1.2	0.9	0.8	0.5	0.4	0.5	0.4
C18	0.7	0.6	0.5	0.4	0.2	0.2	0.2	0.2
C19	1.5	1.4	1.2	1.4	5.0	4.8	5.9	6.6
C20	6.6	6.7	5.9	6.2	4.6	4.8	5.5	5.9
C21	1.6	1.6	1.5	1.5	0.6	0.6	0.7	0.8
C22	1.2	1.1	0.9	0.8	0.5	0.5	0.5	0.5
C23	0.8	0.7	0.6	0.6	0.4	0.4	0.4	0.4
C24	4.6	5.1	4.7	4.5	3.2	3.7	5.1	4.5
C25	2.7	3.9	3.4	3.6	1.1	1.8	2.2	2.1
C26	13.0	13.5	11.9	11.3	8.2	7.2	8.0	7.5
C27	3.8	3.7	3.3	3.2	1.7	1.7	1.9	1.7
C28	4.5	4.9	4.5	4.5	1.7	2.0	2.5	2.4
C29	5.1	5.8	5.8	6.0	2.0	2.6	2.9	2.9
C30	3.5	4.1	3.9	4.0	1.5	1.9	2.4	2.4
C31_C32	0.8	0.7	0.9	0.9	0.2	0.2	0.4	0.4

UK	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	12.7	13.4	13.4	14.3	3.9	4.3	4.7	4.5
C13-C15	2.9	2.0	1.8	2.0	0.9	0.7	0.5	0.5
C16	1.1	1.2	1.1	1.0	0.4	0.5	0.5	0.5
C17	2.1	1.8	1.8	1.8	0.8	0.7	0.9	0.7
C18	2.9	2.8	2.0	1.8	0.7	0.7	0.6	0.5
C19	2.3	2.5	2.9	2.4	1.4	2.4	3.4	3.3
C20	5.5	6.2	5.1	4.3	2.6	3.4	4.3	3.0
C21	2.5	3.1	4.7	3.8	0.6	0.8	1.0	0.9
C22	3.6	3.5	2.9	3.4	1.2	1.4	1.5	1.4
C23	2.4	2.4	2.2	2.4	0.6	0.8	1.0	1.1
C24	2.8	2.4	2.0	2.1	1.4	1.7	2.2	1.9
C25	5.5	5.6	4.7	5.5	1.4	1.6	2.1	1.8
C26	5.4	3.7	3.1	3.4	3.6	1.9	1.9	1.6
C27	2.4	2.1	1.8	1.8	0.9	1.0	1.2	1.0
C28	5.5	4.8	4.0	4.8	2.0	1.8	2.0	2.2
C29	6.0	6.0	5.1	6.1	3.0	3.9	4.3	4.3
C30	3.8	3.8	3.4	3.9	1.2	1.2	2.1	2.4
C31_C32	2.9	3.0	2.7	2.9	1.0	1.0	1.0	0.9

US	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	11.9	12.3	14.3	13.7	1.2	1.5	1.9	2.0
C13-C15	3.1	2.0	1.2	1.3	0.5	0.4	0.2	0.3

C16	1.9	2.0	1.2	1.3	0.3	0.4	0.2	0.3
C17	3.4	2.8	2.8	2.6	0.5	0.5	0.5	0.6
C18	2.3	1.9	1.5	1.2	0.3	0.2	0.2	0.2
C19	3.8	6.4	8.0	9.2	1.6	3.2	4.0	4.0
C20	6.7	7.5	8.6	8.1	1.0	1.5	1.5	1.5
C21	2.6	3.2	3.6	2.9	0.4	0.6	0.6	0.6
C22	3.6	3.4	3.0	3.0	0.6	0.7	0.7	0.8
C23	2.0	2.0	1.6	1.6	0.3	0.3	0.3	0.3
C24	3.1	3.4	3.6	3.5	0.6	0.8	1.1	1.1
C25	5.6	5.1	4.9	5.0	0.8	0.9	1.0	1.1
C26	10.6	7.4	6.8	5.6	1.9	1.0	0.6	0.7
C27	2.5	1.9	1.8	1.7	0.4	0.4	0.3	0.4
C28	5.9	5.2	5.2	5.2	1.0	1.1	1.1	1.3
C29	9.2	8.4	6.2	7.1	2.2	2.6	2.2	2.6
C30	3.2	3.6	4.2	4.4	0.6	0.7	0.8	1.2
C31_C32	4.1	4.2	3.7	3.3	0.5	0.6	0.5	0.5

Source: Authors' calculation from WIOD database

Table: A3-10 DVA and FVA contents in manufacturing output of developing countries (in percentage)

BRA	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	14.9	15.0	16.0	16.7	3.6	3.8	4.2	4.8
C13-C15	6.5	4.5	4.5	4.1	1.7	1.3	1.4	1.4
C16	1.2	1.1	0.9	0.8	0.2	0.3	0.2	0.2
C17	2.9	2.1	2.1	1.9	0.9	0.8	0.7	0.7
C18	0.9	0.7	0.7	0.6	0.2	0.2	0.2	0.2
C19	6.0	6.2	6.6	5.8	4.6	5.3	4.7	6.4
C20	7.5	6.5	6.3	6.0	3.0	3.5	3.1	3.8
C21	2.0	1.8	1.7	1.6	0.3	0.4	0.3	0.4
C22	2.7	2.6	2.6	2.5	1.2	1.2	1.1	1.3
C23	2.5	2.0	2.5	2.5	0.6	0.6	0.7	0.8
C24	4.4	5.4	4.6	4.2	1.4	2.1	1.8	1.7
C25	2.7	3.4	2.9	2.7	0.7	1.0	0.9	0.9
C26	2.1	1.7	1.9	1.8	1.9	1.7	1.4	1.6
C27	2.6	2.2	2.1	1.9	1.0	0.9	0.9	0.9
C28	3.1	3.2	3.6	3.5	1.0	1.2	1.3	1.5
C29	6.6	7.9	8.6	7.2	2.3	3.3	3.3	3.6
C30	0.9	0.9	1.1	1.0	0.3	0.6	0.6	0.6
C31_C32	4.4	3.4	3.6	3.5	1.1	1.0	1.0	1.2

CHN	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	9.1	8.1	9.1	10.5	0.8	1.0	1.0	0.9
C13-C15	10.1	7.7	7.2	7.1	2.2	1.9	1.2	0.9
C16	2.1	1.9	1.9	2.2	0.3	0.4	0.4	0.4

C17	1.8	1.7	1.3	1.2	0.3	0.5	0.3	0.2
C18	1.2	0.9	0.6	0.6	0.2	0.2	0.1	0.1
C19	2.2	2.9	4.1	4.0	0.4	1.1	1.7	1.4
C20	7.3	6.3	6.1	6.9	1.7	2.4	1.9	1.7
C21	1.9	1.5	1.4	1.7	0.2	0.3	0.2	0.2
C22	3.8	2.9	2.7	2.7	0.9	1.1	0.8	0.6
C23	5.3	3.6	4.1	4.7	0.8	0.9	1.0	0.9
C24	8.7	10.5	8.7	8.8	1.7	3.2	2.8	2.6
C25	3.9	2.7	2.8	3.3	0.8	0.8	0.7	0.7
C26	5.9	7.7	6.9	7.0	2.8	5.5	3.9	3.0
C27	4.6	4.1	5.2	5.3	1.1	1.4	1.7	1.4
C28	7.1	6.5	6.5	6.1	1.4	2.0	1.8	1.4
C29	3.4	3.6	6.7	6.6	0.6	1.1	1.6	1.3
C30	1.3	1.3	2.0	2.0	0.3	0.4	0.6	0.5
C31_C32	3.2	1.8	0.9	1.0	0.5	0.3	0.1	0.1

INDO	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	23.3	19.5	28.2	28.9	3.5	2.9	2.8	3.7
C13-C15	7.8	7.3	5.0	4.6	3.0	2.3	1.7	2.0
C16	3.0	2.4	2.9	2.6	0.5	0.3	0.3	0.3
C17	3.9	3.4	3.7	3.0	1.6	1.1	0.8	0.8
C18	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0
C19	9.3	10.7	10.6	9.9	1.4	1.8	1.3	1.5
C20	3.9	4.1	4.4	4.5	1.5	1.7	1.3	1.6
C21	1.5	1.6	1.8	1.8	0.6	0.6	0.4	0.5
C22	3.2	3.5	4.6	3.5	1.5	1.6	1.4	1.3
C23	1.9	2.4	2.8	2.8	0.5	0.5	0.6	0.7
C24	4.6	5.1	3.2	3.2	1.5	2.1	0.8	0.9
C25	3.5	3.4	2.7	2.7	1.3	1.4	0.9	1.0
C26	3.2	2.9	2.4	2.4	1.2	1.2	1.6	1.7
C27	2.1	2.1	1.7	1.7	0.9	0.9	0.9	1.0
C28	1.3	1.7	1.2	1.1	1.0	1.3	1.1	1.1
C29	3.1	4.1	5.1	5.2	1.3	2.4	1.0	1.2
C30	0.3	0.4	0.3	0.4	0.1	0.2	0.1	0.1
C31_C32	2.1	2.1	1.7	1.5	0.5	0.5	0.4	0.4

MEX	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	16.8	18.1	18.3	18.0	2.8	3.0	3.8	4.0
C13-C15	4.6	3.3	2.7	2.4	1.9	1.4	1.0	0.9
C16	0.9	0.7	0.6	0.6	0.2	0.1	0.1	0.1
C17	1.6	1.5	1.5	1.4	0.7	0.6	0.6	0.5
C18	0.6	0.5	0.5	0.4	0.2	0.2	0.2	0.1
C19	4.3	6.4	7.8	7.5	0.6	1.2	2.0	2.3
C20	6.6	7.1	5.9	5.4	2.0	2.4	2.2	2.3
C21	2.4	2.2	1.9	1.3	0.3	0.3	0.4	0.3

C22	2.4	2.2	1.9	2.0	1.0	1.0	1.0	1.2
C23	3.1	3.1	2.7	2.4	0.4	0.4	0.4	0.4
C24	3.4	4.4	4.5	4.1	1.0	1.2	1.2	1.2
C25	2.1	2.2	2.1	2.1	1.0	1.0	1.1	1.1
C26	4.9	3.6	2.6	2.4	8.2	7.9	7.7	6.1
C27	2.2	2.0	1.9	1.8	1.9	1.8	2.0	1.7
C28	1.4	1.6	2.1	2.1	0.7	0.8	1.2	1.1
C29	8.7	7.7	8.0	10.6	7.1	6.0	6.3	8.1
C30	0.4	0.4	0.3	0.7	0.2	0.2	0.2	0.4
C31_C32	2.3	2.3	2.3	2.3	1.1	1.2	1.2	1.1

TUR	DVA_output				FVA_output			
Ind.	2000	2005	2010	2014	2000	2005	2010	2014
C10-C12	17.1	16.7	16.2	15.4	3.3	3.7	4.2	5.0
C13-C15	21.2	19.9	19.5	18.9	5.5	6.8	7.2	7.8
C16	0.9	0.8	0.8	0.8	0.3	0.3	0.3	0.4
C17	1.7	1.6	1.5	1.5	0.5	0.7	0.7	0.7
C18	1.4	1.3	1.3	1.3	0.3	0.4	0.4	0.4
C19	2.1	1.6	1.7	2.5	2.0	2.5	2.4	1.6
C20	5.2	4.6	4.5	4.4	2.0	2.7	2.7	2.9
C22	2.7	2.4	2.3	2.1	1.0	1.4	1.5	1.7
C23	3.6	3.2	3.2	3.5	1.0	1.4	1.4	1.2
C24	4.7	3.6	3.6	3.4	1.9	2.9	2.9	3.2
C25	2.3	1.9	1.9	1.7	0.8	1.2	1.2	1.4
C26	1.6	1.4	1.5	1.2	0.8	0.9	0.8	1.1
C27	1.8	1.6	1.6	1.4	0.6	0.8	0.8	1.0
C28	4.0	3.4	3.4	3.2	1.1	1.7	1.7	1.9
C29	3.3	2.6	2.6	2.5	1.3	2.0	2.1	2.2
C30	0.5	0.4	0.4	0.4	0.1	0.1	0.1	0.2
C31_C32	2.5	2.1	2.1	1.9	0.8	1.2	1.2	1.4

Source: Authors' calculation from WIOD database