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Why manufacturing resurgence will mean more services, not less

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Why Manufacturing Resurgence Will Mean More Services, Not Less

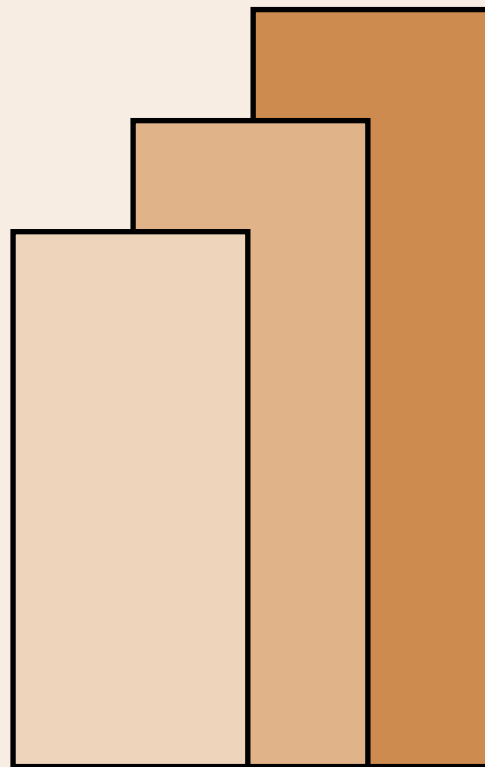
Ramonette B. Serafica

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Why manufacturing resurgence will mean more services, not less

by Ramonette B. Serafica¹

Abstract

Services are critical inputs in manufacturing production and this is likely to intensify with the advent of new technologies. Based on the trade in value added data of the OECD, the share of services embodied in Philippine manufacturing exports is among the lowest in the region. Moreover, value added from ‘ICT services’ and ‘Other business services’ seem inadequate compared to patterns observed in other countries while the share of ‘Wholesale and Retail services’ is significantly high. To sustain manufacturing resurgence, reliable, good quality, and affordable services are essential. Thus, the government should vigorously undertake structural reforms particularly in services needed by producers and exporters. Improving the regulatory regime for services trade is especially crucial to enable manufacturing firms to participate and move up GVCs.

Key words: services, manufacturing, trade, value added

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I. Introduction

Under the Comprehensive National Industrial Strategy (CNIS) the government is pursuing the Manufacturing Resurgence Program (MRP), which aims to rebuild the existing capacity of industries, strengthen new ones, and maintain the competitiveness of industries with comparative advantage. It also seeks to build up agriculture-based manufacturing industries that generate employment, and support small-holder farmers and agri-cooperatives through product development, value-adding, and integration to big enterprises for marketing and financing purposes.² Started by the previous administration, the new government has indicated that it will continue efforts to boost the manufacturing sector as well as revive agriculture and other sectors. With the focus on the manufacturing sector, the question arises as to whether attention should still be given to the services sector. Already accounting for 57 percent of GDP in 2015 (PSA 2016a), there are views both in academic and policy circles that a rebalancing of the economy is needed although it is not clear how this would occur.

To inform policy discussions and the formulation of additional strategies to implement the MRP which is currently planned to be implemented until 2025, this paper will examine the role of services in manufacturing production and trade. Key concepts and trends will first be presented. Next, patterns of services utilization in Philippine manufacturing and in other countries will be examined. Implications of the MRP for services reform will then be discussed in order to better align the strategies under the CNIS.

II. The evolving role of services in manufacturing

A. Services in the production process

Intuitively, it is not difficult to appreciate how services affect the manufacturing industry. Any firm can attest to the importance of access to financial services for business operations and expansion or how inefficient transport services adversely disrupt supply chains. Because services are invisible however, it is not easy to quantify or understand the extent of their significance.

Consider a jacket made in China which could be sold in the United States for USD425. According to Low (2013), only 9 percent of the retail price is associated with making the jacket (i.e. manufacturing costs including labor and materials), with the remainder due to “invisible” assets. Upstream sources of value are likely to include design, intellectual

² <http://industry.gov.ph/manufacturing-resurgence-program/>

property, branding, etc. whereas downstream elements include advertising, marketing and retailing. In electronic goods, IHS Technology estimates that only a one-third or USD236 of the USD749 retail price of Apple iPhone 6s Plus goes to the making and assembly of the smartphone components with the rest going to other costs which include shipping and warehousing, research and development and marketing.³ Another example which highlights the value of services in manufacturing is the case of modern cars. With sophisticated features such as connectivity continuously being added, it has been observed that “One of the biggest changes in the auto industry in recent years is simple. These aren’t ‘car companies’ any longer—they’re software companies.”⁴

According to Bryson (2010), services are entwined within production processes of manufacturing firms, but at different production stages. He describes the production process as consisting of a number of elements: manufacturing or fabrication, the provision of services that support fabrication, customer-targeted services and the provision of pure services. Services involved in the manufacturing process can be grouped in two broad categories (See Annex A):

- **Production-related services** include all technical, business and professional services or producer services, or in other words, providers of intermediate inputs.
- **Product-related services** include service functions that directly and indirectly support consumers in their purchase and use of a product.

The identification of two service value creation moments in the production process highlights the existence of a “services duality” which recognizes the role that services play within the process of production as intermediate inputs and in combination with products for final consumption (Bryson and Daniels (2009) as cited in Bryson (2010 p. 692)). The concepts of production- and product-related services are analogous to *embodied* services and *embedded* services (ABAC 2012). “Embodied” services are inputs into production of goods. Services contained in products from mining, agricultural and manufacturing sectors include for example, transport, communications, insurance, accountancy, design, software, and other technical expertise. “Embedded” services complement production of goods. Services are “embedded” at the point of merchandise sale, for example financing, training, maintenance, repair and other after-sales service.

³ <http://www.recode.net/2015/9/29/11619036/apples-iphone-6s-plus-costs-an-estimated-236-to-make-749-to-purchase>

⁴ <https://www.wired.com/brandlab/2016/02/how-connectivity-is-driving-the-future-of-the-car/>

Bryson(2010) contends that although the objective of manufacturing industry is the production of commodities many people employed in manufacturing are not directly employed in the actual production process (i.e. they are non-production workers). He further argues that a distinction could be made between **hybrid production** (blending of manufacturing and service inputs and processes) and **hybrid product** (goods with product related services embedded or attached services). All production systems are hybrid production systems, but not all hybrid production systems produce hybrid products. The concept of a hybrid product is similar to that of “compacks” or complex packages (Bressand et al. 1989 as cited by Bryson 2010, 683-684). Compacks consist of bundles of services and manufactured inputs which firms produce as the bundling of products and services is an important marketing and sales strategy for producers and retailers.

Globally, manufacturing and agricultural companies have been observed to increasingly engage in **servicification** (Kommerskollegium (2012, 2013). This is a process where non-services sectors in the economy 1) buy and produce more services than before, and 2) sell and export more services, often as a package deal with the good. Table 1 provides a summary of the motivation behind this trend with corresponding examples.

Table 1 Why firms engage in servicification

	As a response/effect	As a as a strategy
Use of services (input)	Logistics and transport as a result of fragmented production	Information Technology (IT) and management services in order to increase efficiency
Offered services (output)	Recycling services as a result of regulatory demands	Repairs, upgrades and surveillance services in order to prolong the relationship with the customer

Source: Kommerskollegium (2012, page 13)

Services needed by a manufacturing firm can be done in-house or outsourced. Some services are outsourced by necessity (for example, telecommunications) while in other cases the decision to ‘make or buy’ services are driven by other factors. In general, outsourcing non-core business processes is an effective way to reduce costs, enhance quality and improve response to market (Gao et al, 2011).

B. The splintering of services

According to Bhagwati (1984), as economies grow technical change and economies of scale interact to splinter services from goods and goods from services. Such splintering will be reflected in national statistics. For example, a paint job done in-house using the company’s

own labor and capital would be considered part of car production but once it is farmed out to another firm, then the paint job is classified as a service. The same would be true for other service activities such as transport or accounting. If these services were done by the employees of the manufacturing firm, these would be considered as goods production but if these were outsourced then the value added from these activities would be counted as services. He adds that since specialization reflect economies of scale, the services which emerge from this splintering process will tend to be technically progressive rather than technically stagnant as they are part of the dynamic process of change.

De Backer, et al. (2015) note that outsourcing of services activities is more common now than it was in the past. Moreover, outsourcing today is not only confined to entire service functions but also include individual services tasks. This means that the growing importance of services in national economies is partially due to a statistical artefact. Previously in-house service activities that have been outsourced by vertically integrated manufacturing companies (cleaning, transport, etc.) are now better reflected in statistics on services, while before they were hidden in manufacturing data. ‘The nature of the job hasn’t necessarily changed, but the employer has’ (Fiorini (2014) as cited by De Backer, et al. (2015, page 15)).

The outsourcing of activities along the value chain transcends national borders too. Baldwin (2006) has identified two forms of unbundling that have shaped global production and trade patterns. The first unbundling can be attributed to rapidly falling transportation costs which allowed factories to be spatially separated from consumers. International competition was primarily between firms and sectors in different nations and most firms in a sector stood or fell together along with the type of labor used most intensively in the sector. The second unbundling occurred with the reduction in international communication and coordination which have allowed the movement of ideas. This reduced the need to perform most manufacturing stages near each other. Many tasks which were previously considered non-traded could now be offshored. As such, international competition today occurs between individual workers performing similar tasks in different nations. Also called fragmentation, offshoring, vertical specialisation and slicing up the value-added chain, the second unbundling spatially unpacked both factories and offices leading to global competition occurring on a task-by-task basis rather than firm-by-firm or sector-by-sector basis. These developments have facilitated the creation of global value chains (GVCs), which are typically coordinated by transnational corporations (TNCs) with cross-border trade of inputs and

outputs taking place within their networks of affiliates, contractual partners and arm's-length suppliers (UNCTAD 2013).

C. The role of services in moving up the value chain

Within the GVC framework, four types of upgrading have been identified – process, product, functional and inter-sectoral.⁵ Upgrading patterns will differ across industries but regardless of the industry or form of upgrading various kinds of services will be critical (See Table 2). **Process upgrading** may require financial services to purchase the necessary equipment or technology, training of workers in the new process, and logistics services to streamline the supply chain. **Product upgrading** may need market research to be able to anticipate customer needs and research and development to create a new product. **Functional upgrading** towards the high value pre-production activities will require research and development (R&D), design and branding. Functional upgrading toward high value post production activities (the distribution and support stages) will require high quality transport and logistics services. Venturing into a new industry or **inter-sectoral upgrading** will likely require legal services and consulting services, among others. For all types of upgrading, the availability of information and communications technology (ICT) services is essential.

Table 2 Services required for GVC upgrading

Types of upgrading	Examples of relevant services
<i>Process upgrading</i> , which transforms inputs into outputs more efficiently by reorganizing the production system or introducing superior technology. For example, streamlining the production process to produce the existing good or service at lower price	Financial services Training Transport and logistics services
<i>Product upgrading</i> , or moving into more sophisticated product lines. For example, improving an existing product and achieving a higher quality or more functional variety	Research and development Market research Engineering services Design and branding
<i>Functional upgrading</i> , which entails acquiring new functions (or abandoning existing functions) to increase the overall skill content of the activities.	Research and development Market research Engineering services Design and branding Logistics services
<i>Chain or inter-sectoral upgrading</i> , where firms move	Financial services

⁵ The types of GVC upgrading are closely related to business innovation. As defined in the OSLO manual (OECD 2005 p. 46), an *innovation* is “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.”

into new but often related industries.

Market research
Consulting services
Legal services

Source: Gereffi, G. and K. Fernandez-Stark (2011) citing Humphrey & Schmitz (2002) with examples

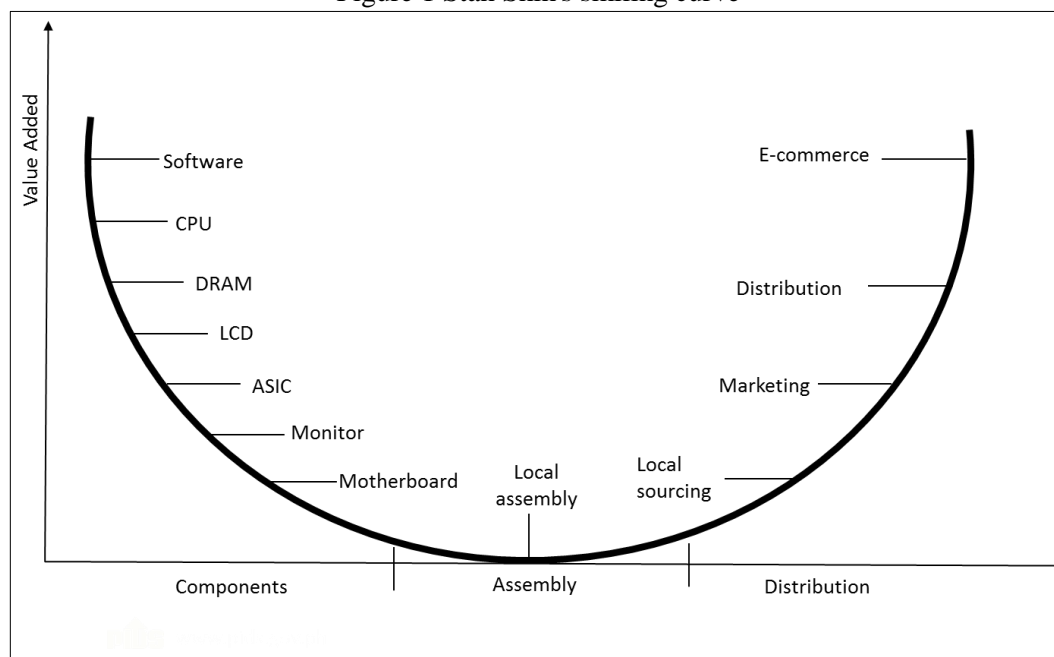
An example of how services are instrumental to upgrading within the value chain is described in Gao, et al. (2011) using the now famous smile curve attributed to Stan Shih, the founder, president, and chairman of Acer Inc. (Box 1).

Box 1. The smile curve

The production chain of an industry can be split into a number of segments, such as R&D, product design, component fabrication, assembly, distribution and sales/marketing. Although each segment is indispensable in the whole production chain, the profitability differs from one segment to another.

The value curve of the PC industry developed by Shih illustrates this using the PC production chain (Figure 1). Acer, a Taiwanese company, started in 1976 as an electronic components importer but recognizing that Acer's focus on assembling PC was keeping the company in the least profitable segment of the market, Stan Shih decided to move up the value curve by developing capabilities in components and distribution. Success in components required strong technology and enough manufacturing skill to produce economies of scale while success in distribution requires a solid brand, established channels, and effective logistics. Acer has been able to develop strength in both aspects and thus has continuously evolved in the global market.

Figure 1 Stan Shih's smiling curve



Source: Figure 3 in Gao et al (2011, page 441)

D. Impact of new technologies on services in manufacturing

As mentioned previously, the reduction in international communication and coordination costs facilitated the second unbundling. The fragmentation of the value chain was made possible not only in factories but also in offices such that services which were previously non-traded became freely traded when telecommunication costs dropped significantly (Baldwin 2006). Today, services are again changing production processes and business models with the aid of new technologies.

As shown in Table 3 various innovations are helping improve existing services or have created new services, which enable manufacturing producers to improve their processes, achieve greater efficiency, and increase customization and customer interaction (USITC 2013). As these new technologies become more widely adopted the servicification of manufacturing will likely intensify.

Table 3 Services advances throughout the product value chain

Driver: More efficiency and lower costs of product development, production, and overhead			
Stage in value chain	Service	Benefit to Producer	Enabling technology
Design	Design services	Makes process more efficient	Computer-aided design (CAD) Information technologies
R&D	R&D services; prototyping services	Improves products; reduces development costs and shortens product development cycle; increases product efficiency (in decrease cost of failure)	Advanced manufacturing – 3D printing – New composite materials and chemistry – Nanotechnology
Sourcing of intermediate inputs	Logistics and transportation services; supply chain and management services	Allows geographic dispersion of GVC with the aim of lowering costs	Containerization; Digital communications, Radio Frequency ID tracking
Manufacture and assembly	IT services/production process management services; testing services; parts inventory tracking	Makes process more efficient	Robotics and automation
	Network and	Makes process more efficient	Cloud computing

	communications services; data analytics and processing services		
		Increases production process quality and cuts production times	Algorithms for processing Big Data
			The Internet of Things, smart systems and sensor networks
	Utilities, including telecommunications and electricity	Makes manufacturing more efficient owing to high-quality provision of services (no interruptions)	Fiber optic telecommunications and broadband networks; Smart grid
Management of the firm	Human capital management services	Lowers overhead costs and improves coordination of the enterprise	Digital communications and cloud computing; Enterprise management software
	IT services		
	Financial and treasury services	Lowers financing costs	
	Legal, accounting, and other professional services	Lower overhead costs	
Warehousing and distribution	Inventory management services logistics and transportation services	Allows geographic dispersion of GVC with the aim of lowering costs	Containerization; digital communications
Driver: More product differentiation and customer satisfaction, enabling higher sales margins and more competitive product positioning			
Stage in value chain	Service	Benefit to Producer	Enabling technology
Marketing, branding, and sales	Online sales	Facilitates outreach to customers and offers ways to access new markets	Cloud computing; e-commerce platforms
	Sales force management services	Enables faster and more efficient customer targeting	Enterprise management software and networks; cloud computing
	Financial services (such as customer finance or equipment leasing services)	Enables sales of large-ticket items such as aircraft via customer financing solutions; allows customers to buy functionality that can be easily scaled up and down via	Innovative asset securitization structures; digital communications

		equipment leasing	
Aftermarket service	Digital services including cloud computing, social media, customer relationship management; IT services	Attracts more customer insights and collaboration	Cloud computing; digital communications technologies
	Maintenance and repair services	Shortens response times to repair products and upgrades ability to do preventative maintenance, improving customer service	“Internet of things” communications; cloud computing; machine sensors

Source: Table 3.1 in USITC (2013, page 3-6)

III. Patterns of services utilization in manufacturing

A. Services in production

The importance of services in production can be gleaned from Input-Output Tables. In the Philippines, there was a slight decline in the services intensity of the manufacturing sector measured as the share of services in intermediate inputs. As a share of total inputs, services intensity increased from 10.21 percent to 12.14 percent (Table 4).

Table 4 Services intensity in Philippine manufacturing (%)

Measure	2000	2006
Share of bought-in services in intermediate inputs	16.78	16.75
Share of bought-in services in total inputs	10.21	12.14

Source: PSA (2016b)

Table 5 presents examples of industries where the share of services significantly changed from 2000 to 2006. Decreases in services intensity include ‘Office, computing and accounting machines’ and ‘Jewelry’ while examples of industries where services intensity increased are ‘Processing and preserving of fruits and vegetables’ and ‘Cutlery, hand tools and general hardware’. Note that services done in-house are not captured in these figures.

Table 5 Services intensity in Philippine manufacturing industries (examples)

Industry	Share of bought-in services in intermediate inputs (%)		Share of bought-in services in total inputs (%)	
	2000	2006	2000	2006
Office, computing and accounting machines	47.50	20.87	24.88	18.40
Jewelry and related articles	58.57	4.82	30.89	3.57
Processing and preserving of fruits and vegetables	18.48	24.03	11.52	13.08
Cutlery, hand tools and general hardware	6.18	20.26	3.59	17.11

Source: PSA (2016b)

Box 2 lists the bought-in services identified from the IO Table.

Box 2 Bought-in services (2006)

(1) Processing and preserving of fruits and vegetables

Jeepney and other land transport services; Road freight transport; Sea and coastal water transport; Air transport; Storage and warehousing; Postal and courier activities; Telephone service includes telegraphs; Wireless telecommunications; Telecommunication services, n.e.c; Wholesale and Retail; Repairs of motor vehicles, motorcycles, personal and household goods; Banking; Investment, financing and other non-banking services; Non-life and other insurance activities; Activities auxiliary to financial intermediation; Real Estate Activities; Renting of Machinery and Equipment Without Operator, Personal and Household Goods; Research and Development; Legal activities; Accounting, bookkeeping and auditing activities; tax consultancy; Market research; Advertising; Labor recruitment and provision of personnel; Investigation and security activities; Miscellaneous business activities, n.e.c; Other hospital activities and medical and dental practices including veterinary services, n.e.c.; Hotels and motels; Other accommodation services; Restaurants, bars, canteens and other eating and drinking places; and Sewage and Refuse Disposal Sanitation and Similar Activities

(2) Manufacture of cutlery, hand tools and general hardware

Bus line operation; Jeepney and other land transport services; Public utility cars and taxicab operation; Road freight transport; Sea and coastal water transport; Supporting services to transport; Storage and warehousing; Postal and courier activities; Telephone service includes telegraphs; Wireless telecommunications; Telecommunication services, n.e.c; Wholesale and retail trade; Repairs of motor vehicles, motorcycles, personal and household goods; Banking; Investment, financing and other non-banking services; Non-life and other insurance activities; Activities auxiliary to financial intermediation; Real Estate Activities; Renting of Machinery and Equipment Without Operator, Personal and Household Goods; Maintenance and repair of office accounting and computing machinery; Research and Development; Legal activities; Accounting, bookkeeping and auditing activities; tax consultancy; Market research; Business and management consultancy activities; Advertising; Labor recruitment and provision of personnel; Investigation and security activities; Miscellaneous business activities, n.e.c;

Source: PSA 2016b

B. Services in trade

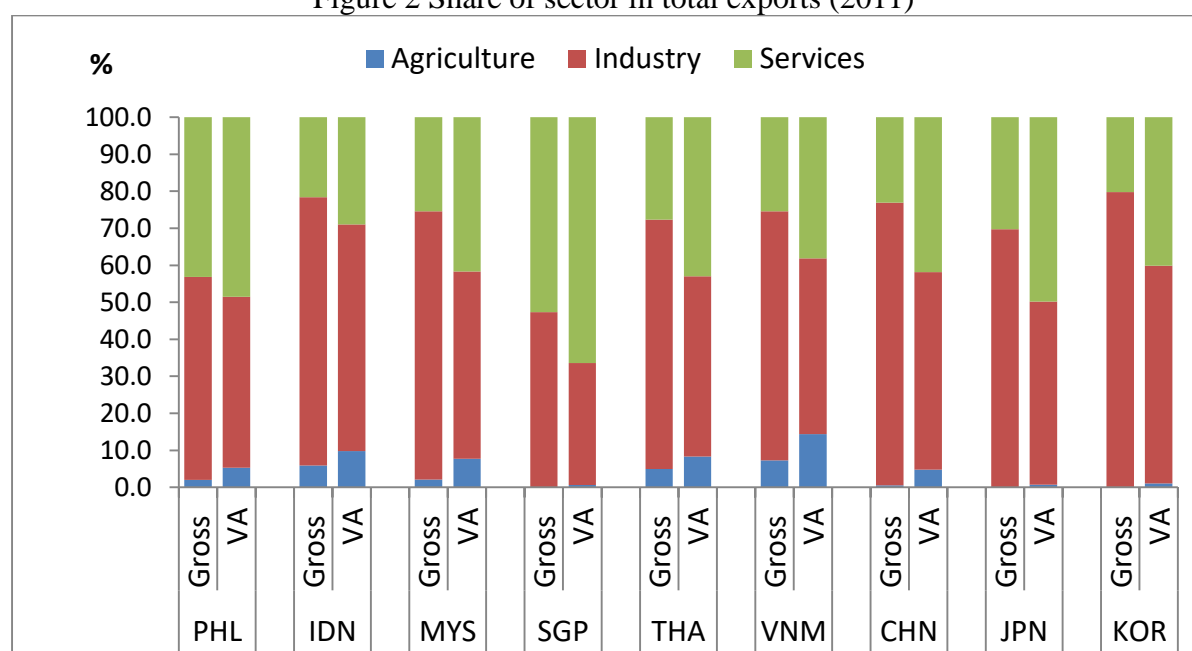
1. Total exports

Lanz and Maurer (2015) note that although services account for more than 70% of world GDP, in terms of world trade services only account for around 20% in balance of payments terms which is measured using gross value (value added and intermediate inputs combined).

In value added terms however, which traces the industry source of all inputs used, services account for 40% of world trade. According to Francois, et al. (2015) a large share of total value added in the goods sectors that dominate trade on a gross value basis comes from services inputs in manufacturing. Based on data from 1992 to 2011 covering both developed and developing countries, they observe that the ratio of domestic value added to gross trade has been decreasing over the last two decades both for goods and for services, which is consistent with growing vertical production fragmentation. Moreover, while the value added of the goods sectors including indirect exports is less than the gross value of its exports, in services it is the opposite indicating the importance of services in total exports (i.e. directly exported and indirectly exported via the goods that embody services).

Figure 3 presents the sectoral shares in total exports in gross vs. value added terms across select countries. It is not surprising that for the Philippines and Singapore the share of services in total exports using gross value is quite significant at 43.12 percent and 52.63 percent, respectively. When we compare the sector shares using the two measures, in all countries the share of services in total exports is higher when measured in value added terms consistent with the findings cited above. This is because services are indirectly exported through manufactures and other exports that embody services.⁶

Figure 2 Share of sector in total exports (2011)



⁶ Similarly, we can see higher shares of agriculture in exports in value added terms which indicate how agricultural commodities are processed further and embodied in the exports of other sectors.

Note: VA - Value Added; PHL – Philippines, IDN – Indonesia, MYS – Malaysia, SGP – Singapore, THA – Thailand, VNM – Viet Nam, CHN – China, JPN – Japan, and KOR – South Korea

Source: OECD TiVA October 2015 database accessed on 17 September 2016

The difference in the share of services in total exports using the two measures is also indicative of the extent of inter-sectoral linkages. It is notable that compared to the other countries the inter-sectoral linkage between goods and services in Philippine exports is the weakest.⁷ See Table 6.

Table 6 Difference in the share of services in total exports using Gross and VA (%), 2011

Country	PHL	IDN	MYS	SGP	THA	VNM	CHN	JPN	KOR
Difference	5.38	7.36	16.28	13.81	15.32	12.69	18.79	19.53	19.87

Note: PHL – Philippines, IDN – Indonesia, MYS – Malaysia, SGP – Singapore, THA – Thailand, VNM – Viet Nam, CHN – China, JPN – Japan, and KOR – South Korea

Source: OECD TiVA October 2015 database accessed on 17 September 2016

2. Manufacturing exports

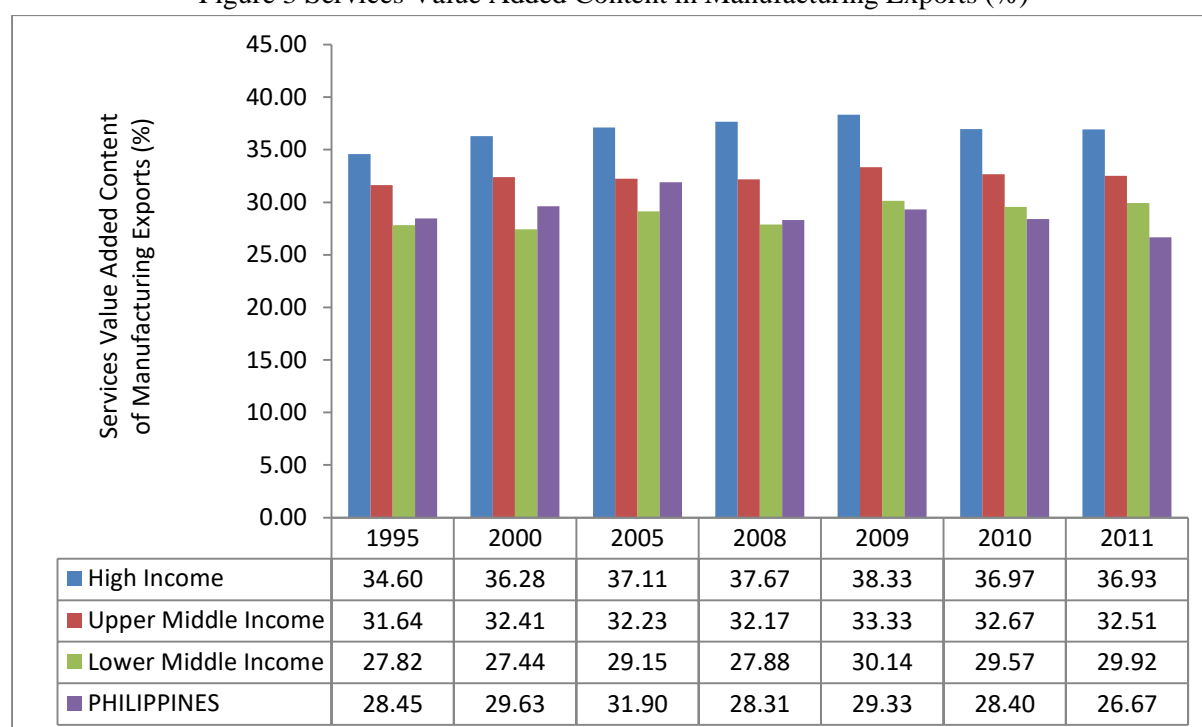
Focusing on manufacturing exports, Lanz and Maurer (2015) find evidence of significant servicification where services value added accounts for almost a third of gross exports of manufacturing industries in developed countries compared to only 26 percent in developing countries. They add that the lower services content in manufacturing exports in developing countries is due to a lower domestic content. From 1995 to 2008, the servicification of manufacturing exports increased by more than 4% in developed countries, but in developing countries it has slightly declined. In both groups of countries however the international sourcing of services, as captured by the foreign services value added content in exports, is significant accounting for close to 12% of manufacturing exports. Thus, the lower share of services value added in manufacturing in developing countries is due to lower domestic sourcing.

Figure 4 compares services value added content among income groups and over time. Firstly, it can be observed that the higher the income group, the higher the share of services embodied in manufacturing. Secondly, in all three groups, the share increased from 1995 to 2009. The shares have slightly decreased since then but are still higher relative to 1995. For the Philippines, which is classified as a Lower Middle Income country, the share of services was initially higher than other countries in the same income group but this peaked in 2005.

⁷ Note that in the same way that services are embodied in goods, goods are also embodied in services. Exports measured in value added terms trace the industry of origin of all exports.

Since then, it has gone down such that by 2011 the share of services value added in manufacturing exports was lower compared to 1995 and relative to the exports of its peers.

Figure 3 Services Value Added Content in Manufacturing Exports (%)

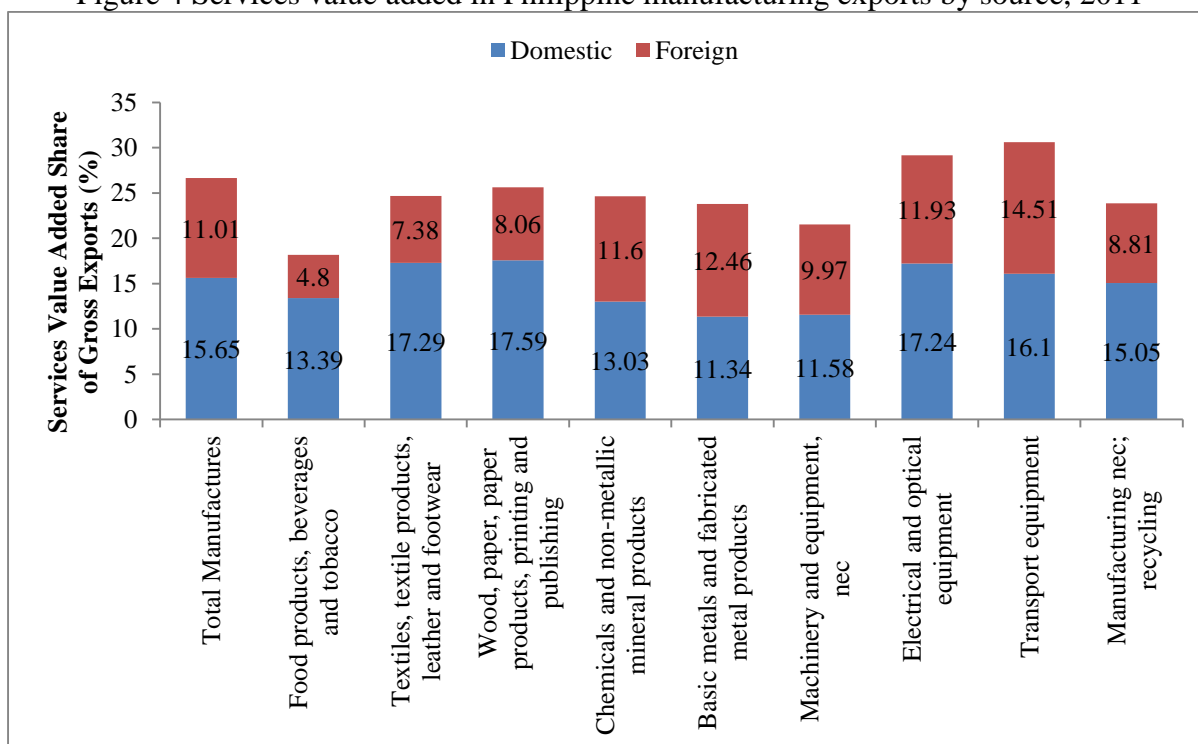


Note: Countries are grouped based on World Bank Classification. **High Income** - Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States, Brunei Darussalam, Croatia, Cyprus, Hong Kong (China), Lithuania, Malta, Saudi Arabia, Singapore, South Africa, Chinese Taipei. **Upper Middle Income** - Mexico, Turkey, Argentina, Brazil, Bulgaria, China (People's Republic of), Colombia, Costa Rica, Malaysia, Romania, Russia, Thailand. **Lower Middle Income** – Cambodia, India, Indonesia, Tunisia, Viet Nam
Source: OECD TiVA October 2015 database accessed on 17 September 2016

Focusing on 2011 figures for the Philippines, the share of services value added from foreign sources was 11 percent and the rest from domestic sources. As Figure 5 shows, the services intensity and source vary across manufacturing industries with transport equipment having the highest services value added at almost 31 percent and food products having the lowest services share mainly from domestic sources.

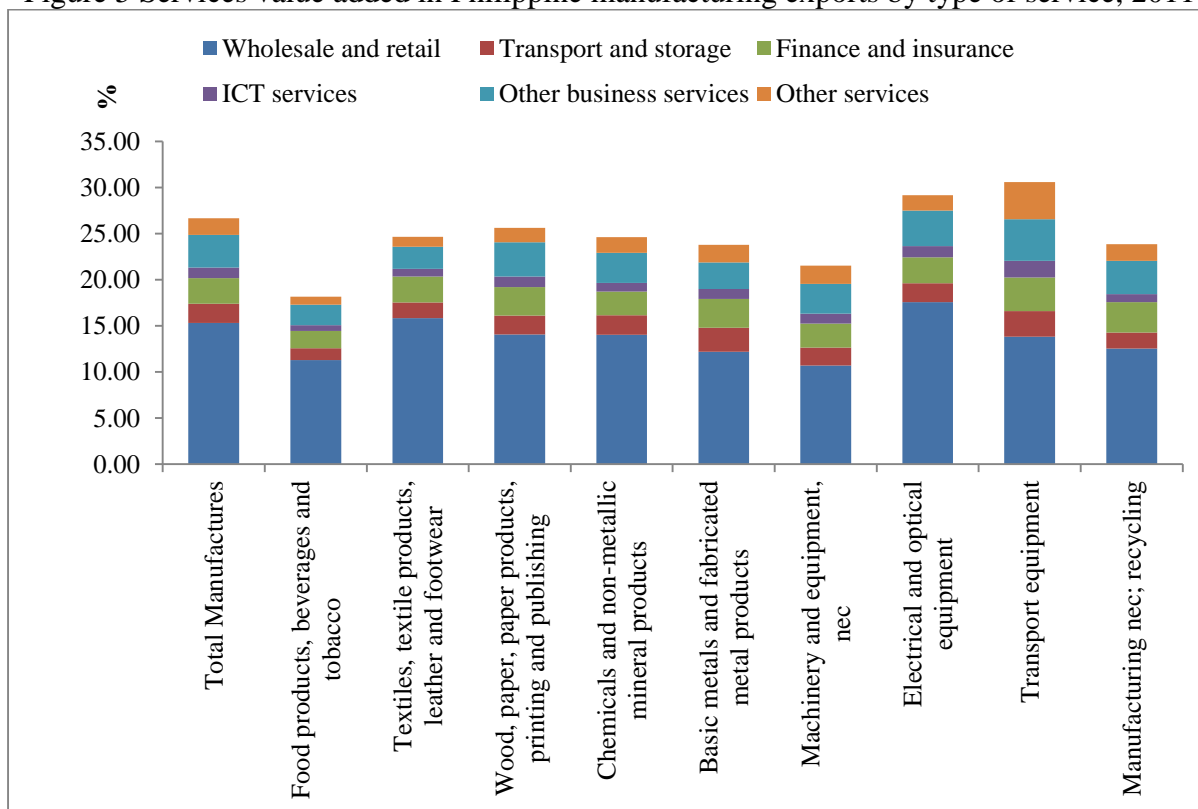
In terms of industry breakdown, distribution services (wholesale and retail trade) account for the biggest portion of services embodied in Philippine manufacturing exports. See Figure 6.

Figure 4 Services value added in Philippine manufacturing exports by source, 2011



Source: OECD TiVA October 2015 database accessed on 17 September 2016

Figure 5 Services value added in Philippine manufacturing exports by type of service, 2011



Source: OECD TiVA October 2015 database accessed on 17 September 2016

When compared with other countries in the region, the share of services embodied in Philippine manufacturing exports is among the lowest (second only to Indonesia). The same is true for specific services except in ‘Wholesale and retail’ where its share in Philippine manufacturing exports is one of the highest (second only to Singapore). After ‘Wholesale and retail’, the next most significant contributor to services valued added in manufacturing exports especially among higher income countries is ‘Other business services’. See Table 7.

Table 7 Services value added embodied in manufacturing exports, by type of service, 2011 (%)

Country	Wholesale and retail	Transport and storage	Finance and insurance	ICT services	Other business services	Other services	Total Services
Philippines	15.33	2.07	2.80	1.14	3.53	1.80	26.67
Indonesia	9.07	2.74	2.37	1.42	2.66	2.39	20.66
Malaysia	13.65	4.54	4.77	2.15	5.50	2.15	32.76
Singapore	17.65	5.65	3.95	2.86	10.42	2.50	43.03
Thailand	12.72	4.27	5.24	1.49	4.52	2.09	30.33
Viet Nam	14.23	3.38	3.27	1.23	4.65	2.63	29.39
China	11.37	4.61	4.95	1.62	5.96	2.60	31.12
Japan	14.49	3.82	2.25	2.04	7.64	2.92	33.15
Korea	11.05	3.64	3.37	1.90	7.48	2.25	29.70

Note: Sectors are defined according to ISIC Rev.3: Total manufactures (Divisions 15 to 37); Wholesale and retail trade (50 to 52); Transport and storage (60 to 63); Finance and insurance (65 to 67); Other business services (70, 71, 73 and 74); Other services (45, 55 and 75 to 93). ‘ICT services’ is an aggregate of Telecommunications (64) and Computer and related service activities (72).

Source: OECD TiVA October 2015 database accessed on 17 September 2016

Apart from the total share of services in manufacturing exports, the contribution of specific services seems to matter as well. See Table 8. For the Philippines, the share of distribution services (wholesale and retail trade) is quite significant at 57 percent. In contrast, the share of modern services composed of ‘ICT services’ and ‘Other business services’ is the lowest at 17.52 percent compared to other countries. Whether the cost of specific types of services contribute to adding real value to manufacturing exports or reflect inefficiencies that make manufacturing exports less competitive need to be examined further.

Table 8 Share in total services value added embodied in manufacturing exports, by type of service, 2011 (%)

Country	Wholesale and retail	Transport and storage	Finance and insurance	ICT services	Other business services	Other services	Total Services	Memo Item: Distribution and Transport	Memo Item: Modern Services
Philippines	57.49	7.75	10.51	4.29	13.23	6.73	100.00	65.24	17.52
Indonesia	43.89	13.25	11.49	6.89	12.89	11.59	100.00	57.14	19.78
Malaysia	41.66	13.85	14.57	6.56	16.80	6.56	100.00	55.51	23.36
Singapore	41.01	13.13	9.18	6.65	24.21	5.81	100.00	54.14	30.87
Thailand	41.93	14.08	17.27	4.92	14.88	6.91	100.00	56.02	19.81

Viet Nam	48.41	11.50	11.13	4.20	15.81	8.95	100.00	59.91	20.01
China	36.53	14.81	15.92	5.22	19.16	8.37	100.00	51.34	24.37
Japan	43.69	11.53	6.77	6.15	23.04	8.82	100.00	55.22	29.19
Korea	37.21	12.26	11.35	6.41	25.19	7.58	100.00	49.47	31.60

Note: Sectors are defined according to ISIC Rev.3: Total manufactures (Divisions 15 to 37); Wholesale and retail trade (50 to 52); Transport and storage (60 to 63); Finance and insurance (65 to 67); Other business services (70, 71, 73 and 74); Other services (45, 55 and 75 to 93). 'ICT services' is an aggregate of Telecommunications (64) and Computer and related service activities (72). Modern services - 'ICT services' and 'Other Business Services'; Distribution and Transport – 'Wholesale and retail' and 'Transport and storage'

Source: OECD TiVA October 2015 database accessed on 17 September 2016

Table 9 below presents the breakdown of services value added in manufacturing by type of service among income groups and between two time periods. As reported in Figure 4, the share of 'Total services' in manufacturing exports increased from 1995 to 2011. Moreover, 'Wholesale and retail' was consistently the highest contributor. This is followed by 'Other business services' among high income countries in both time periods and among upper middle income countries by 2011. Indeed, the share of "Other business services" increased from 1995 to 2011 in all income groups. For the Philippines however, the share of 'Other business services' decreased along with 'Total services', as previously highlighted.

Table 9 Services value added embodied in manufacturing exports, by type of service and income group, 1995 and 2011, (%)

Group	Year	Wholesale and retail	Transport and storage	Finance and insurance	ICT services	Other business services	Other services	Total Services
High Income	1995	12.09	3.70	3.54	2.03	9.68	3.56	34.60
	2011	12.15	4.01	3.12	2.25	11.47	3.92	36.93
Upper Middle Income	1995	13.30	5.46	4.77	1.18	4.69	2.24	31.64
	2011	12.53	4.96	4.54	1.59	6.28	2.61	32.51
Lower Middle Income	1995	11.69	5.34	4.50	1.12	3.16	2.01	27.82
	2011	12.89	4.77	4.69	2.07	3.21	2.28	29.92
PHILIPPINES	1995	15.96	3.03	1.95	0.98	4.52	2.01	28.45
	2011	15.33	2.07	2.80	1.14	3.53	1.80	26.67

Note: (1) Sectors are defined according to ISIC Rev.3: Total manufactures (Divisions 15 to 37); Wholesale and retail trade (50 to 52); Transport and storage (60 to 63); Finance and insurance (65 to 67); Other business services (70, 71, 73 and 74); Other services (45, 55 and 75 to 93). 'ICT services' is an aggregate of Telecommunications (Division 64) and Computer and related service activities (Division 72).

(2) Note: Countries are grouped based on World Bank Classification. **High Income** - Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States, Brunei Darussalam, Croatia, Cyprus, Hong Kong (China), Lithuania, Malta, Saudi Arabia, Singapore, South Africa, Chinese Taipei. **Upper Middle Income** - Mexico, Turkey, Argentina, Brazil, Bulgaria, China (People's Republic of), Colombia, Costa Rica, Malaysia, Romania, Russia, Thailand. **Lower Middle Income** – Cambodia, India, Indonesia, Tunisia, Viet Nam

Source: OECD TiVA October 2015 database accessed on 17 September 2016

It should be noted that even with trade in value added data the importance of services for manufacturing is still underestimated. In particular, service activities that are conducted in-house by manufacturing firms and where consequently no arm's length transaction exists are likely to be allocated to goods value added and trade (Lanz and Maurer (2010) citing Low (2013)). This observation is similar to that expressed by Bryson (2010) discussed earlier that many of those employed in manufacturing are not directly working in the actual production process and instead are performing service functions.

III. How services can support manufacturing resurgence

A. The Manufacturing Resurgence Program

The Manufacturing Resurgence Program (MRP) is part of the Comprehensive National Industrial Strategy (CNIS) which seeks to link and integrate manufacturing, agriculture and services; address supply chain gaps; and deepen industry participation in global value chains. The new industrial policy focuses on upgrading manufacturing and integrating it with the agriculture and services sectors to promote strong forward and backward linkages laying the foundation for the Philippine economy's structural transformation.⁸

The CNIS is composed of three stages beginning in 2014 until 2025 at which time the Philippines shall have established itself as a regional hub for various products, both goods and services. See Table 10.

Table 10 The Comprehensive National Industrial Strategy:
Integrating Agriculture, Manufacturing, & Services

Sector	Phase I 2014-2017	Phase II 2018-2021	Phase III 2022-2025
AGRIBUSINESS ROADMAP: CATALYST TO DRIVE REGIONAL ECONOMIC TRANSFORMATION VISION: transform & upgrade agriculture from traditional farming to a globally competitive agribusiness sector	Improve productivity in rubber, coconut, mangoes, coffee, cacao; support emerging high value crops; supply chain gaps & coordination issues; rural physical infrastructure; S&T infrastructure, HRD	Strengthen agro-processing & its linkages to production; move up the GVC; R&D; Strengthen supply chains, upgrade commodity clusters; access to technologies, finance; regulatory & certification system	Deepen participation in GVC & PH as agribusiness regional hub
MANUFACTURING ROADMAP FOR STRUCTURAL TRANSFORMATION Vision: globally competitive industries with strong forward & backward linkages	Rebuild existing capacity (auto), strengthen emerging industries (aerospace parts), maintain competitiveness of comparative advantage industries (electronics, garments, auto parts, food, resource-based)	Shift to high value added activities, investments in upstream industries (chemicals, iron & steel), med-tech basic & fabricated metal, move up value chain (auto, electronics, garments, food); Link & integrate industries, SMEs & large firms, Innovation ecosystem; R&D	Move to high tech transport equipment, chemicals, electrical machinery Manufacturing related services Participate as manufacturing hubs in regional & global production networks for auto, electronics, machinery, garments, food
SERVICES	Improve	Investments in	PH as regional hub:

⁸ <http://industry.gov.ph/comprehensive-national-industrial-strategy/>

ROADMAP GLUE THAT BINDS ALL SECTORS TOGETHER Vision: globally competitive services, create quality jobs, enable structural transformation	competitiveness in labor-intensive sectors like tourism, construction, ship repair, MRO Accelerate infrastructure investments (ICT) Move up IT-BPM GVC	education, design, R&D, finance, infrastructure Engineering & services embedded in manufacturing HRD & skills training, innovation ecosystem linked with manufacturing	training Continue to upgrade services especially manufacturing related services to sustain growth & job creation
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Source: Presentation of DTI Asst. Secretary Rafaelita Aldaba at the PIDS Research Seminar on the Comprehensive National Industrial Strategy: Integrating Agriculture, Manufacturing, & Services on March 2, 2015

As presented in the previous sections, there is a compelling case for a coherent approach to goods and services industry strategies. Increasingly, goods and services are intertwined which require strategies across sectors to be better aligned.

B. Enhancing the competitiveness of manufacturing through more services

The manufacturing roadmap aims to maintain the competitiveness of industries where the country has comparative advantage and then shift to high value added activities (Table 10). To help achieve these objectives, firms must increasingly harness services to their advantage.

Earlier work by Pasadilla and Liao (2007) reveal that contrary to experiences of other countries, the contribution of services to growth in manufacturing decreased from the 1980s to the 1990s. Using a growth accounting model, they found that (1) the real value of services used in manufacturing grew at a rate of 7.53 percent in the eighties but fell to 4.13 percent in the nineties and (2) the contribution of services to manufacturing growth decreased from 0.50 percent in the eighties to 0.27 percent in the nineties or a drop in the relative contribution of 17.59 percent to 4.61 percent. To validate the results of the growth analysis they also looked at the Input-Output (IO) tables of the Philippine economy for the years 1985, 1988, 1994, and 2000. The IO results confirm the conclusion from the growth accounting model namely, that the contribution of services to growth in manufacturing declined from the 1980s to the 1990s, although an increase in the use of services inputs was detected in 2000. However, it seems this was not sustained. Recall from Table 4 presented earlier the share of services slightly declined from 16.78 in 2000 to 16.75 percent in 2006.

In the case of manufacturing exports, trade in value added data discussed previously confirm the decline in services intensity through the years such that by 2011, the share of services was lower in Philippines compared to other countries in the same income group. Moreover, the inter-sectoral linkage between goods and services in Philippine exports was

the weakest. Although the figures represent outsourced services, the limited splintering of services from goods reflect the slow pace of specialization that seem to have characterized Philippine manufacturing in the past.

Moving forward the manufacturing sector needs to ramp up servicification in order to sustain competitiveness and move up higher value added activities as envisioned in their roadmaps. This will be possible if reliable, good quality services are available and affordable. While all producer services are important, ‘ICT services’ and ‘Other business services’ are especially critical based on the pattern observed in other countries with more developed manufacturing sectors (Tables 7 to 9). The types of services included in ‘Other business services’ are listed in Box 3.

Box 3 Other Business Services

The sectors covered under ‘Other Business Services’ in the OECD TiVA database are as follows -

Division: 70 - Real estate activities

- Real estate activities with own or leased property
- Real estate activities on a fee or contract basis

Division: 71 - Renting of machinery and equipment without operator and of personal and household goods

- Renting of transport equipment
- Renting of other machinery and equipment
- Renting of personal and household goods n.e.c.

Division: 73 - Research and development

- Research and experimental development on natural sciences and engineering
- Research and experimental development on social sciences and humanities

Division: 74 - Other business activities

- Legal, accounting, book-keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy
- Architectural, engineering and other technical activities
- Advertising
- Business activities n.e.c.

Source: UN ISIC Rev. 3

C. Increasing GVC participation and upgrading through services trade

The CNIS targets increased participation of Philippine industries in regional production networks and global value chains. As noted earlier, services play an important role in

enabling firms to join and move up the value chain. Using a GVC framework where imports and exports are closely related and FDI and trade are complementary modes of international operations of firms (UNCTAD 2013), Lanz and Maurer (2015) explain that services inputs used in manufacturing GVCs can come in the following forms:

- Manufacturing services on inputs owned by others – this correspond to GATS Mode 2 (consumption abroad) exports, as the foreign firm moves their goods inputs to the domestic economy where the manufacturing services are "consumed".⁹ Manufacturing services on physical products owned by non-residents include processing, assembly, labeling, packing, etc.
- Domestic sourcing of services inputs within manufacturing GVCs – this can occur through independent suppliers (outsourcing) or through intra-firm transactions (i.e. in-house). Even though the services are sourced domestically, trade in services could still take place in the form of Mode 3 imports (i.e. the service is supplied through commercial presence of a foreign firm).
- Services offshoring – this entails the relocation of service activities from the domestic to a foreign economy, often leading to the sourcing of foreign inputs. Services offshoring includes both the activities of an independent supplier and the in-house activities conducted by a foreign affiliate. Imports of services are in the form of cross border supply or Mode 1.

Whether services inputs are from domestic or foreign sources, if the good is subsequently exported then the services embodied in the good are exported as well although indirectly. Cernat and Kutlina-Dimitrova (2014) refer to this indirect mode of services trade as Mode 5.

The important role of services trade in enabling manufacturing industries to join GVCs highlights the need to ensure consistency of trade and investment policies across sectors. If manufacturing firms are to join GVCs and move up the value chain as envisioned in the MRP, obstacles to the competitive supply of services should be removed. In a world of GVCs where exports incorporate imports, inefficiencies resulting from restricted services imports (especially through Mode 3 which is governed by investment policy) negatively impact the competitiveness of manufacturing exports, whether of goods or services.

⁹ These services used to be called "goods for processing" and were recorded as goods trade, but starting with the sixth edition of the Balance of Payments Manual (BPM6), they are to be recorded as services trade in BOP statistics (IMF, 2009).

D. Sustaining manufacturing resurgence through structural reform in services

As discussed in Francois and Hoekman (2010) the competitiveness of manufacturing firms in open economies is determined in part by access to low-cost and high-quality producer or intermediate services such as telecommunications, transport and distribution services, financial intermediation, etc. Looking at Sub-saharan countries, Arnold et al (2008) found that inadequate access to telecommunications, electricity and financial services hurts manufacturing firms by undermining their productivity. Other studies establish the relationship between services sector reform and manufacturing productivity. In the case of the Czech Republic, Arnold, et al. (2011) provide evidence suggesting that opening services sectors to foreign providers is a key channel through which services reforms affect downstream productivity in manufacturing. Additionally, foreign acquisitions led to substantial increases in labor productivity and sales of Czech service providers. More recent work by Hoekman and Shepherd (2015, 2106) focusing on countries in East Africa found a strong link between services productivity and manufacturing productivity. Moreover, the restrictiveness of services trade was found to be negatively associated with manufactured goods exports.

In the Philippines, the huge potential of services to contribute towards manufacturing sector competitiveness and economy-wide upgrading remains untapped due to the various laws and regulations that impede the sector. Based on the score of the Philippines in the World Bank's Services Trade Restrictiveness Index (STRI) (Borchert, et al. 2012), the Philippines has one of the most restrictive policy environments for services in the world. In the last few years, a number of reforms have been implemented which include:

- Executive Order 29 issued in 2011 opened up secondary gateways to international flights. The year 2016 is also significant for air services with the ratification of ASEAN Open Skies Agreement.
- In banking, Republic Act No. 10641 was signed in 2014, which allows the full entry of foreign banks in the Philippines.
- The Foreign Ships Co-Loading Act of 2015 (Republic Act No. 10668) liberalized shipping services by allowing foreign ships to transport cargo for import or export directly to and from any local port other than the Port of Manila.
- Republic Act No. 10881 which took effect in 2016 removing foreign ownership restrictions in adjustment companies, lending companies, financing companies and investment houses.

However, while the past reforms are significant, these are not enough especially when compared to other countries. According to OECD (2016) FDI restrictions in the Philippines are high by both regional and global standards. Based on the OECD FDI Index, the Philippines is one of the countries with the most statutory restrictions on foreign investment. It has more statutory restrictions than any of the large ASEAN Member States, with a score almost twice as high as in Viet Nam, a country which is considered as a competitor for investment (OECD 2016, page 28). A significant number of these restrictions are in the services sector including in telecommunications, mass media, transport, education, retail trade, advertising, and professional services.

Apart from explicit restrictions on market access and discriminatory treatment of foreign service suppliers, other domestic regulations and/or their application have the effect of discouraging trade and investments by imposing burdensome procedures and unnecessary costs to service suppliers as well as consumers. Serafica (forthcoming) discussed various reforms needed to sustain the competitiveness of the services sector such as improving the regulatory environment, establishing quality of service standards, scaling up promotion of services exports, and further relaxing barriers faced by foreign service suppliers. More in-depth analysis of the various sub-sectors will be useful in identifying specific issues.

With the MRP the need for structural reforms in the services sector becomes even more urgent given the objectives set out in the roadmaps. Without reforms, inefficiencies in services can stymie the growth of manufacturing preventing the shift to higher value added activities and increased participation in regional production networks and GVCs.

IV. Conclusion

A key message of this paper is that a big push for the manufacturing sector implies more and better services, not less. In its pursuit of manufacturing resurgence the government should prioritize structural reforms particularly in services needed by producers and exporters. With the new administration's commitment to increase the competitiveness of industries by easing constitutional economic restrictions and other laws under its 0-10 socio-economic agenda, there is an opportunity to address longstanding constraints to the efficient supply of services in the country.

Intensive use of services in production, whether done in-house or outsourced, is not a new phenomenon. With new technologies, the importance of services in manufacturing is expected to increase such that industries will evolve in ways that cannot even be imagined yet. For the MRP and the CNIS more generally to be truly transformative as envisioned, it is imperative that the regulatory environment does not get in the way of such innovations.

V. References

- APEC Business Advisory Council (ABAC). 2012. Report on Embedded and Embodied Services presented at the Group on Services – Market Access Group Joint Meeting, 10 February 2012. Moscow, Russia.
- Arnold, J. M., A. Mattoo, and G. Narciso. 2008. Services Inputs and Firm Productivity in Sub-Saharan Africa: Evidence from Firm-Level Data. *Journal of African Economies* 17(4): 578–99.
- Arnold, J. M., B.S. Javorcik, and A. Mattoo. 2011. Does services liberalization benefit manufacturing firms?: Evidence from the Czech Republic. *Journal of International Economics* 85(1):136–146.
- Baldwin, R. 2006. Globalization: The Great Unbundling (s). Helsinki: Economic Council of Finland 20 (3), 5-47 [online]
[http://appli8.hec.fr/map/files/globalisationthegreatunbundling\(s\).pdf](http://appli8.hec.fr/map/files/globalisationthegreatunbundling(s).pdf) [Accessed on 24 July 2016]
- Bhagwati, J. N. June 1988. Splintering and Disembodiment of Services and Developing Nations. *The World Economy*. Volume 7(Issue 2): 133–144.
- Borchert, I. B. Gootiiz, and A. Mattoo. 2012. *Policy barriers to international trade in services: evidence from a new database*. Policy Research WPS 6109. Washington, DC: World Bank.
- Bressand, A., C. Distler, and K. Nicolaidis. 1989. Networks at the Heart of the Service Economy’ in A. Bressand and K. Nicolaidis eds *Strategic Trends in Services: An Inquiry into the Global Service Economy*. New York: Harper & Row, pp. 17-32.
- Bryson, J. R. and P.W. Daniels. 2009. ‘Services Duality’ and the “manuservice” economy: a production, projects and tasks approach to understanding interactions between services and manufacturing. *Papeles de Economia Espanola*. 120,186-199.
- Bryson, J. R. 2010. Service innovation and manufacturing innovation: bundling and blending services and products in hybrid production systems to produce hybrid products. Chapter 28 in Gallouj and Djellal (eds) *The Handbook of Innovation and Services: A Multi-disciplinary Perspective*. pp. 679-700. Cheltenham: Edward Elgar.
- Cernat, L., and Z. Kutlina-Dimitrova. 2014. Thinking In a Box: A “Mode 5” Approach to Service Trade. DG TRADE Chief Economist Note No. 1/2014. Brussels. [online]
http://trade.ec.europa.eu/doclib/docs/2014/march/tradoc_152237.pdf [Accessed on 7 August 2016].
- De Backer, K., I. Desnoyers-James and L. Moussiégt. 2015. Manufacturing or Services - That is (not) the Question: The Role of Manufacturing and Services in OECD Economies. *OECD Science, Technology and Industry Policy Papers*, No. 19, OECD Publishing.

- Fiorini, M., M. Jansen and W. Xie. 2014. *Structural Change: How Different is the Present from the Past?*, mimeo.
- Francois, F., M. Manchin, and P. Tomberger. 2015. Services Linkages and the Value Added Content of Trade. *The World Economy* Vol. 38, Number 11.
- Francois, J. and B. Hoekman. 2010. Services Trade and Policy. *Journal of Economic Literature*. 48: 642–692.
- Gao, Jie, Y. Yao, V. C. Y. Zhu, L. Sun, and L. Lin. 2011. Service-oriented manufacturing: a new product pattern and manufacturing paradigm *Journal of Intelligent Manufacturing* 22:435–446.
- Gereffi, G. and K. Fernandez-Stark. 2011. *Global Value Chain Analysis: A Primer*. Center on Globalization, Governance & Competitiveness (CGGC). Duke University: North Carolina, USA.
- Hoekman, B. and B. Shepherd. 2015. *Services, Firm Performance, and Exports: The Case of the East African Community*. International Growth Center.
- Hoekman, B. and B. Shepherd. 2016. Services trade policies in the East African Community and merchandise exports. International Growth Center Policy Brief 38213. International Growth Center.
- Humphrey, J. and H. Schmitz. 2002. How Does Insertion in Global Value Chains Affect Upgrading in Industrial Clusters? *Regional Studies* 36(9): 1017-1027.
- Kommerskollegium. 2012. *Everybody in Services – The impact of Servicification in Manufacturing on Trade and Trade Policy*, Swedish National Board of Trade.
- Kommerskollegium. 2013. *Just Add Services: A case study on servicification and the agri-food sector*. Swedish National Board of Trade.
- Lanz, R. and A. Maurer. 2015. Services and global value chains – some evidence on servicification of manufacturing and services networks. WTO Working Paper ERSD-2015-03. Geneva: WTO.
- Low, P. 2013. *The role of services in global value chains*. in D. Elms and P. Low, eds, *Global Value Chains in a Changing World*. Geneva: WTO.
- OECD. 2005. *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*. 3rd Edition. OECD and Eurostat.
- OECD. 2016. OECD Investment Policy Reviews: Philippines 2016. *OECD Investment Policy Reviews*. OECD Publishing, Paris. [online] <http://dx.doi.org/10.1787/9789264254510-en> [Accessed on 14 May 2016]
- Pasadilla, G. and C. Liao. 2007. Has Liberalization Strengthened the Link between Services and Manufacturing? PIDS Discussion Paper Series. Makati City: Philippine Institute for Development Studies.

Philippine Statistics Authority. 2016a. [online] <http://psa.gov.ph/nap-press-release/data-charts> [Accessed on 10 December 2016]

Philippine Statistics Authority. 2016b. Input-Output Table. [online] <http://psa.gov.ph/input-output-tables> [Accessed on 27 August 2016]

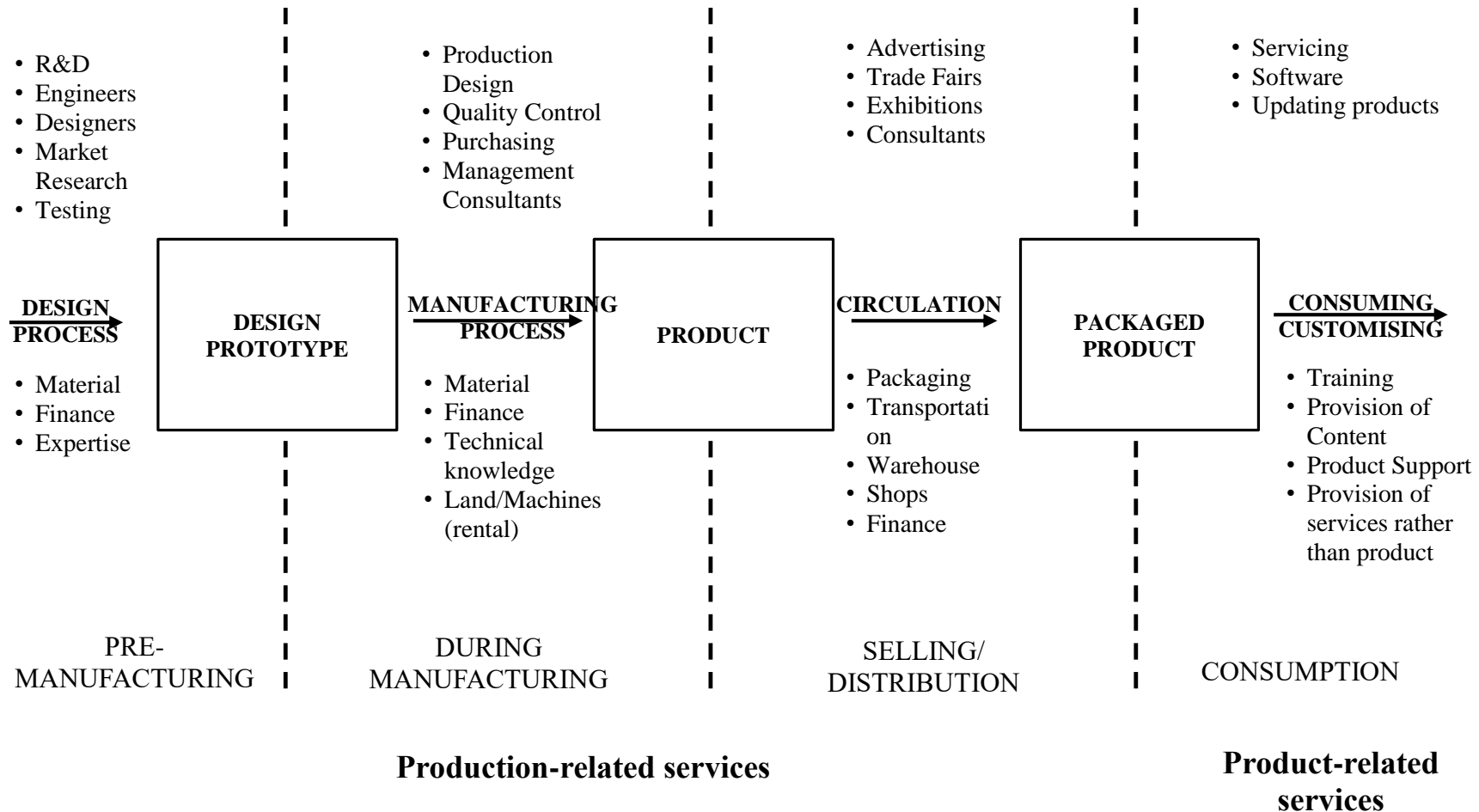
Serafica, R. Forthcoming. Sustaining the competitiveness of Philippine services. *Philippine Journal of Development*. Quezon City: Philippine Institute for Development Studies.

United Nations Conference on Trade and Development. 2013. *World Investment Report 2013 Global Value Chains: Investment and Trade for Development*. Geneva: UNCTAD.

United Nations Conference on Trade and Development. 2016. *Trade and Development Report 2016 Structural transformation for inclusive and sustained growth*. Geneva: UNCTAD.

United States International Trade Commission. 2013. Services' Contribution to Manufacturing in the Economic Effects of Significant U.S. Import Restraints. Eight Update 2013. Washington: US International Trade Commission. [online] <http://www.usitc.gov/publications/332/pub4440c.pdf> [Accessed on 17 August 2016]

Annex A. The services duality: production- and product-related services



Source: Figure 28.3 in Bryson (2010, p. 693)