



Significance of Institutional and Policy Support on Productivity: Evidence from Sri Lankan Manufacturing

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Abstract

This paper examines productivity barriers to elevating Sri Lankan industry with special reference to manufacturing sector industries. Our core hypothesis is long-term productivity growth in industry is a function of institutional and policy support system of a given economy. The empirical work is based on an integrated industry-trade panel data set covering two of the most important policy regimes e.g. 1994 to 2004 and 2004 to 2014. We argue that institutional and policy failures lead to high transaction costs and loss of competitiveness. The statistical evidence indicates the positive impact of efficiency driven variables (e.g. capital intensity and minimum scale of production etc.) on productivity. The evidence on supply side factors point to institutional and policy failures as main barriers to elevate productivity in industry. Sri Lanka needs an industrial policy with a clear focus on institutional and policy support for industrial development. It should also be a part of national policy targeted at enhancing long term productivity and competitiveness of the national economy. Barriers to enhance industrial productivity arise mainly from domestic factors rather than from external sources.

Key words: Productivity, product market, factor market, efficiency, institutional failures, policy failures.

1. Introduction

Sri Lanka is a lower middle income, small economy with a per capita income of US\$ 4065 and economic growth of 5 percent between 2009 and 2017. Its work force is 8.2 million and operating at the tail end of demographic dividend period. Over 50 percent of the GDP is from the services sector and the rest is shared by industry (27%) and agriculture (8%) sectors. The drivers of growth are mainly from non-tradable sectors. In spite of rapid globalization of economic activities, Sri Lanka has been gradually deviating from liberalized economic policies since 2000. In the Global Competitiveness Index (GCI) Sri Lanka is ranked at 85 in 2016/17 out of 144 countries as against 64 in 2009/10 out of 133 countries. The drop in the Global Trade Index (GTI) from 67th in 2009 to 68th in 2016 further confirms deteriorating competitiveness of Sri Lanka over the past 10 years.

The research issue of the paper is to examine why productivity levels in Sri Lankan manufacturing are low relative to its counterparts in Asia in spite of taking the lead in pro-market policy reforms in the post-1977 period? Accordingly, the purpose of this paper is to identify barriers to elevate industrial productivity with a special focus on manufacturing sector industries. Our core hypothesis is that continuous upgrading of industrial productivity is a function of strong institutional and policy support systems. We test this hypothesis considering three sets of variables: (1) product and factor market efficiency, b) policy support systems; and (3) institutional support towards enhancing productivity in industry. The policy support system is defined to include trade, industry, investment, skills development, research and development and the institutional support system covers network of institutions responsible for industrial development, investment promotion and trade facilitation. The manufacturing sector is selected for a detailed analysis considering both theoretical and empirical evidence on key role played by the manufacturing sector industries in promoting long-term growth performance of the national economy. The paper is organized into five main sections. Section two presents theoretical background and methodology and section three deals with structural characteristics and productivity levels of manufacturing industry. The determinants of labour productivity in manufacturing is analysed in section four and section five presents an overall assessment of productivity barriers in manufacturing. Finally, section six presents summary and conclusions.

2. Theoretical Background and Methodology

As argued by Krugman (1994), productivity is not everything but in the long-run it is almost everything. Constant improvement and upgrading of productivity is a function of strong institutional and policy support system of an economy particularly in the case small economies such as Sri Lanka. With the globalization of economic activities, “competitiveness” has become a key factor in promoting economic prosperity of a nation. As argued by Porter (1990) economic prosperity of a country does not depend on the amorphous notion of “competitiveness” but on the productivity with which a nation’s resources (labour and capital) are employed (Porter, 1990, p.6). He further argues that explaining the determinants of productivity and the rate of productivity growth is the correct approach rather than trying to explain “competitiveness” at the national level. Sustained productivity growth is a key factor of a nation’s economic growth, export promotion, high levels of income, creation of good jobs, reducing poverty and inequality and rising standards of living. Productivity growth is also driven by competition from domestic and foreign sources. Foreign competition in particular leads to high level of productive efficiency driven by market forces. Foreign direct investment is yet another contributory factor in promoting productivity growth in the long run through new technology, managerial skills, access to new markets and new sources of raw material and intermediate inputs and various other spillover benefits.

In the present context of global competition, countries are forced to deploy limited resources in the most productive uses possible. As argued in international trade theory, participation in global trade leads to improvements in national productivity. Adam Smith explained this with the notion of 'absolute advantage' in which a nation exports an item if it is the world's low cost producer. David Ricardo used the notion of 'comparative advantages' and argued that market forces will allocate a nation's resources to those industries where it is relatively more productive. This argument was further developed by Heckscher and Ohlin using the theory of factor endowments. It is based on equivalent technology and cross country differences in resource (land, labour, natural resources and capital). Accordingly, production and exporting activities of a country is determined by the intensive use of resources they possess in abundance. In the modern context of international trade however, factor endowments are defined under five broad categories: a) human resources, b) physical resources, c) knowledge resources, capital resources and e) infrastructure (Porter, 1990). Obviously, the productive efficiency of industries vary significantly across countries based on factors proportions employed in production systems. Countries gain comparative advantages with the application of efficient factor combinations. Besides resource endowments, this is critically dependent on two other factors: government policy and institutional support systems.

Industrial organization theory has made a significant contribution towards better understanding on constraints affecting industrial productivity. Its explanations are based on industry structure (e.g. oligopolistic markets, foreign direct investment, scale effects), industry conduct (e.g. advertising and research and development intensity), industry performance (e.g. profitability) and influence of industry and trade policy. The theoretical foundations for these arguments are based on theory of microeconomics and international trade. Under structural factors, it is argued that highly concentrated industries tend to be more productive relative to the medium and small scale establishments. With exporting activities, large scale operators in small economies are in a position to reach the minimum point of the average cost and maintain market dominance both in domestic and foreign markets. With the support of foreign direct investment (FDI) large scale firms are in a better position to maximize scale economies through access to modern technology, new sources of raw material, and new markets. The theoretical foundations for these arguments are clearly stated in microeconomic theory and its applications in foreign direct investment (FDI) and international trade. With respect to market conduct, the large scale establishments are in a better position to compete with their counterparts in advertising, research and development and new product development. Similarly, firms enjoying high profits margins are in a better position to invest more on R&D, human resource development and aggressively compete in product markets.

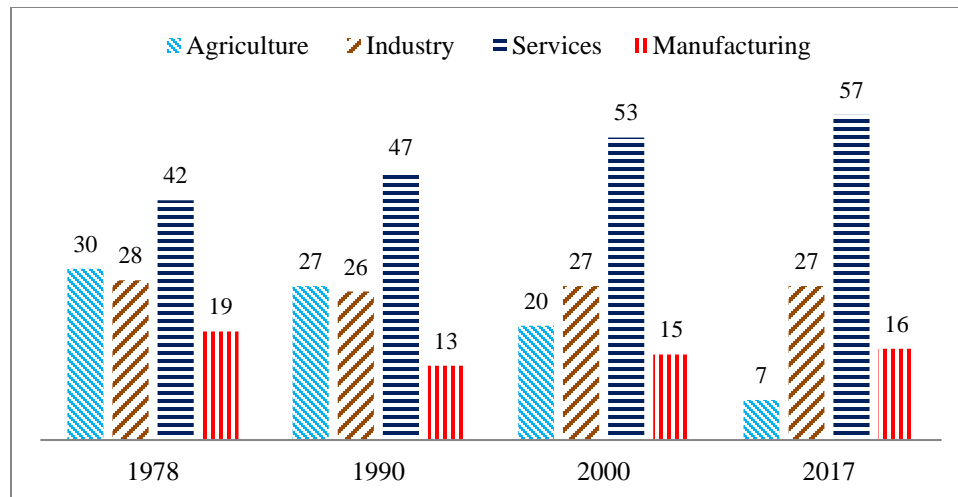
Modern trade theories also provide useful explanations on productive efficiency of economies. The technology theories in particular, emphasize the role of technology in promoting productive efficiency. Similarly, with the development of global production networks (GPN) the classical and neo-classical trade theories have become less valid due to emergence of buyer and producer-driven export systems and increasing trend of exporting parts and components. Instead of exporting a complete product, the emerging trend reveals export of parts and components rather than exporting finished products. It also involves high intensity of imports particularly, parts and components and other intermediate inputs. In summary, modern trade theories emphasize the significance of market efficiency created through high openness and efficiency of institutional and policy support systems. In other words investment and trade facilitation are key determinants of industrial productivity.

Dani Rodrik (2011) argued that manufacturing today is not what it used to be. It has become much more capital- and skill-intensive, with greatly diminished potential to absorb large amounts of labour from the countryside. Global supply chains have facilitated entry into manufacturing with low value added gains to developing economies. Dani Rodrik also states that many other developing countries are finding it much harder to establish

more than a niche in manufacturing due to the recent success of China in manufacturing. As a consequence, developing countries are starting to de-industrialize and become more dependent on services at much lower levels of income as against the pattern for developed countries. Dani Rodrik calls this ‘premature de-industrialization.’ He also argues that partial productivity gains in non-tradable activities are ultimately self-limiting, because individual service activities cannot expand without turning their terms of trade against themselves—pushing down their own prices and profitability. He further argues that growth therefore must rely on the much slower accumulation of economy-wide capabilities in the form of human capital and institutions. In his view, in manufacturing, small developing countries could thrive on the basis of a few export successes and diversify sequentially through time. As argued by Rodrik (2013), manufacturing has some features that makes them instrumental in the process of growth. According to him, manufacturing is technologically more dynamic and exhibit unconditional labour productivity convergence, unlike the rest of the economy. Manufacturing also has high capacity to absorb unskilled labour relative to other high-productive sectors. Finally, manufacturing is a tradable sector and therefore not constrained by size of the domestic market. Thus, Dani Rodrik is rather skeptical that a services-led model can deliver rapid growth and good jobs in the way that manufacturing once did.

3. Structural transformation and productivity in manufacturing

Similar to other countries at stages of development, resources in Sri Lanka are moving from agriculture to manufacturing and services. This shift in economic activity from lower productivity to more productive ones is known as structural transformation. Sri Lankan experience in this regard during the post-liberalization period is analysed in Figure 2 and the evidence shows four major structural changes: a) drastic drop in GDP contribution of the agriculture sector from 31 to 8 percent between 1978 and 2016, b) significant increase in contribution to the GDP by the services sector from 42 to 57 percent during the same period, c) GDP contribution by industry sector remaining constant (around 27%) over the past 40 years and d) GDP share of manufacturing sector reducing from 19 percent in 1978 to 15 percent in 2000 and remaining around 17 percent during the post-2000 period. The comparative figure for manufacturing sector contribution to GDP in some of the Asian economies such as Indonesia (21%), Malaysia (23%) and Thailand (27%) are much higher indicating the presence of much stronger and sustainable industry structures.¹ In terms of employment, the relative share of agriculture reduced from 50 to 27 percent between 1970 and 2016 while the services sector share increased from 37 to 47 percent during the same period (Table 1). The employment share of industry sector including manufacturing doubled its share from 13 to 26 percent over the past 46 years. As argued in development theory, strong manufacturing sector industries promote overall economic growth through backward and forward linkages. It also facilitates growth process of the national economy towards the next stage of development through skills development, absorption of new technology, integration with the global economy, improving trade balance and balance of payments.



Note: GDP share for 2017 is without the effect of taxes and subsidies (9.6%)
 Source: Source: Central Bank of Sri Lanka, Annual Reports- Various issues

Figure 1: Structure of the economy by industry origin (GDP, %), 1978-2017

Table 1: Structural changes in employment (%)

	Agriculture	Industry	Services	Manufacturing which is a part of industry
1970	50	13	37	9
1990	47	19	34	13
2017	26	28	46	19

Source: Department of Census and Statistics, Various Reports including QLF

The evidence on productivity relative to several Asian economies indicates low productivity levels of Sri Lanka between 1970 and 2015, in spite of pro-market policy reforms of post-1977 period. The increasing trend of productivity recorded by Malaysia and Singapore clearly reveals low productivity performance of Sri Lanka (Table 2). In terms of productivity growth also Sri Lanka stands as a low growth performer since 1970 in spite of vast economic opportunities created by the global economy (Table 3).

Table 2: Per worker productivity levels (US \$, 000)

	1970	1980	1990	2000	2010	2015
Indonesia	5.3	8.4	10.5	13.5	19.5	24.3
Sri Lanka	6.8	8.8	11.2	14.7	20	29.5
Thailand	5.7	7.6	11.7	16.4	22.4	26.5
Malaysia	12.8	20.3	39.6	38.8	50.2	55.7
China	11	21.5	37.5	63.0	86.7	93.4
Singapore	31.7	44.8	66.8	98.5	119	127.8

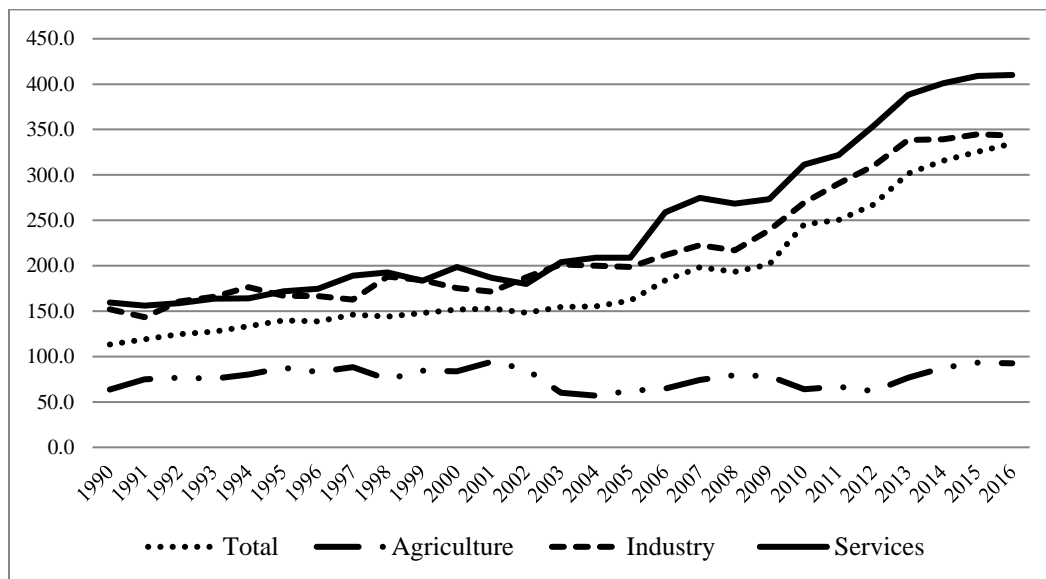
Note: GDP at constant prices per worker using 2011 PPP as reference year
 Source: APO Productivity Data Base, 2017

Table 3: Per worker labour productivity growth (%)

	1990-1995	1995-2000	2000-2005	2010-2015	1990-2000	2000-2015
Sri Lanka	3.7	1.6	2.5	5.7	2.7	3.4
Thailand	6.5	0.3	3.8	3.1	3.4	3.2
Malaysia	6.6	1.1	3.6	1.8	3.8	2.9
Indonesia	6.5	-1.5	4.0	4.2	2.5	3.1
Singapore	4.2	3.5	3.2	1.2	3.9	2.5
China	10.6	7.1	8.7	1.3	8.9	3.6

Note: GDP at constant prices per worker using 2011 PPP as reference year
 Source: APO Productivity Data Base, 2017

The analysis presented in Figure 2 deals with productivity performance of Sri Lanka during the post-1990 period and the evidence point to three major findings: a) low productivity of agriculture sector relative to other sectors and national standards, b) high productivity levels of industry and service sectors relative to overall levels and c) emergence of services sector as the highest productive sector of the national economy. It has been observed that the relative share of services sector in the national economy of Sri Lanka is higher than its counterparts in the developing world. In fact, the proportion of nontraded services sector in Sri Lanka is large even for South Asia, where the size of the services sector stands out relative to other developing regions of the world. Services-led growth has become more pronounced in recent years, putting it closer to the composition of economic growth in developed countries. By regional standards, the productivity gains from reallocating labor out of agriculture and into manufacturing and services have been smaller than in other countries in the region (WB, 2013).



Source: Central Bank of Sri Lanka, Annual Reports- Various issues

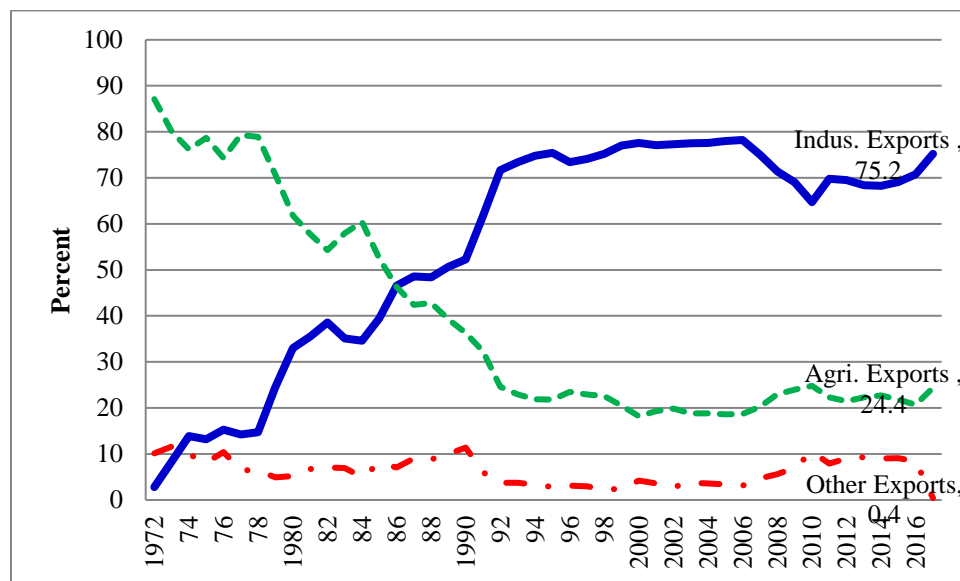
Figure 2: Labour productivity by sector Rs. 000

Table 4: Structure of manufacturing industry by employment size, 2013/14

Size	Emplo yees	Value added Rs. Mns	Labour Productivity Rs. Mns	Employees %	Value added Rs. mns (%)	No. of Establishments %
<20	15689	12155.3	0.774766	1.8	0.93	25.03
20-39	33666	54010.1	1.604292	3.9	4.13	23.50
40-99	91432	121197.2	1.325545	10.6	9.27	27.65
100+	719288	1119955	1.557033	83.6	85.67	23.82
Total	860075	1307318	1.520004	100	100.00	100.00

Source: DCS (2017) Economic Census, Final Report for Formal Industries 2013/14

The distribution of manufacturing sector industries by employment size reveals relatively higher proportion of firms in 40 to 99 employee category (28%) while the rest are distributed on equal basis among other three categories of firms (Table 4). The analysis also reveals dominance of large scale firms (100+ employees) in making highest contribution to employment and value added (over 80%) in manufacturing. It is also worth noting the highest productivity levels reported by small scale firms (with 20-39 employees). In contrast, productivity levels of firms employing less than 20 persons and 40-99 employees are 49 and 13 percent less than the industry average. This is an interesting finding which deserves further investigation as it does not confirm recent evidence on misallocation of resources due to low productivity of small scale firms (WB, 2017).



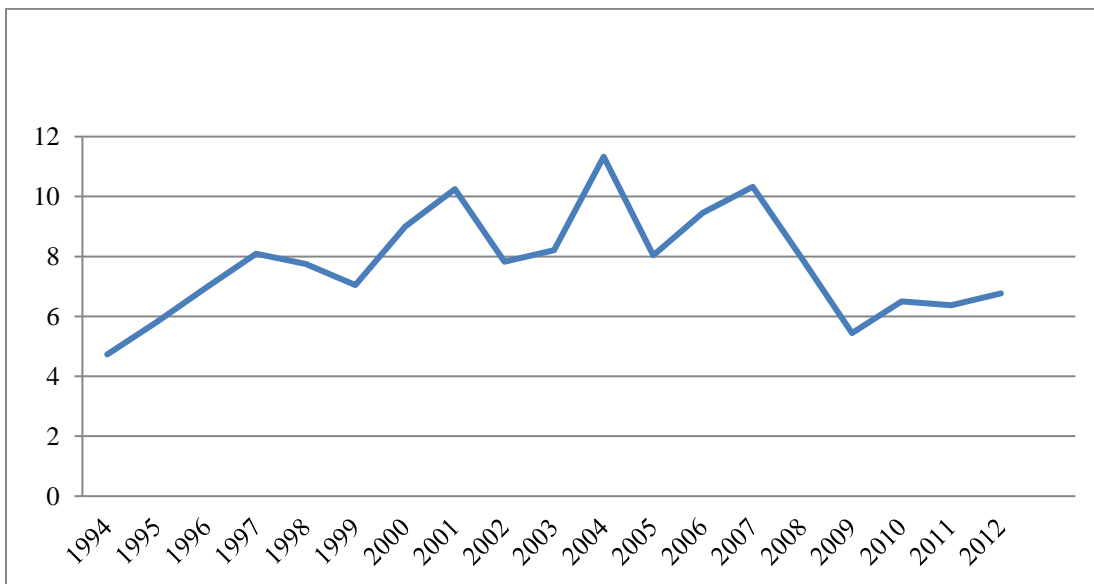
Source: CBSL, Annual Reports, various issues

Figure 3: Composition of exports, 1972-2017

Sri Lanka is a small economy and its production sectors need to be export oriented in order to gain scale economies and enhance productive efficiency. Its growth performance should also be led by tradable sectors rather than non-tradable sectors. An analysis of Sri Lankan economy, particularly manufacturing exports provides some interesting evidence on low productivity performance of Sri Lankan economy and its manufacturing sector industries. The evidence reveals a significant increase in industrial exports during the post-liberalization period especially from the early 1990s (Figure 3). In contrast, a significant drop in relative shares of agricultural exports

is also noticeable since the late 1990s. In terms of inter-sectoral productivity however, manufacturing sector productivity is low relative to the services sector. This needs to be investigated in detail as manufacturing sector is well recognized as a key driver of economic growth both in developed and developing economies.

The structure of manufacturing exports of Sri Lanka has also been analysed in terms of Global Production Network (GPN) product groups and it accounts for about 8 percent of manufacturing exports (Figure 4). This is to be expected given the poor investment climate, presence of anti-export bias, unstable policy environment, high level of para-tariffs, low level of FDI participation and low level of R& D investments. Another point worth noting is nearly 90 percent of Sri Lankan GPN exports are heavily concentrated with buyer-driven networks and this ratio is around 25 and 53 percent respectively in developing East Asia and South Asia respectively for 2012/13 period (ADB, 2017). In Sri Lanka this structure has not changed for the past three decades and it is an indication of less dynamic character of Sri Lankan manufacturing. It needs to be shifted towards producer-driven exports because such production systems are more high-tech oriented and absorbs high-skilled labour.



Source: Computed by the authors based on UN Comtrade database

Figure 4: Share of parts and component exports as a percentage of manufacturing exports (%)

4. Determinants of labour productivity in manufacturing

This section presents determinants of labour productivity in manufacturing based on an econometric model developed in line with standard Cobb-Douglas production function and theoretical and empirical evidence in Industrial Organization (IO) literature. Thus, it includes variables relating to Cobb-Douglas production function, industry structure, conduct and performance and trade policy. Accordingly, labor productivity is defined as a function of several factors including capital intensity, minimum efficient scale of production, industry concentration, R&D intensity, managerial skills, skills intensity, consumption of imported and local raw material, subcontracting, import penetration, export intensity, profitability, labour share of value added and growth of output. The linearized version of the model is given below.

$$LNVPW = \beta_0 + \beta_1 LNKO + \beta_2 MEPS + \beta_3 FFC + \beta_4 RDI + \beta_5 MGR + \beta_6 SKI + \beta_7 RAWIMP + \beta_8 RAWCL + \beta_9 SUBCON + \beta_{10} IM + \beta_{11} EX + \beta_{12} PROFIT + \beta_{13} LSVA + \beta_{14} GO + \varepsilon \quad (1)$$

Table 5: Definition of variables used in the study

Symbol	Variable	Expected Sign
LNVPW	Labor productivity per worker in its logarithmic form	
LNKO	Capital output ratio; real output as % real value of machinery in its logarithmic form	+
MEPS	Minimum efficient scale of production; the average size of top 50% of firms to total output as % total industry output	+
FFC	Four firm concentration ratio	+
RDI	Research and development intensity; number of technicians as % of total employees	+
MGR	Managerial staff/skills; managerial level staff as % of total employees	+
SKI	Skill intensity; Skilled operative workers as % of total employees	+/-
RAWIMP	Imported raw-materials as % of total raw-material consumed	+
RAWCL	Local raw-materials as % of total raw-material consumed	+/-
SUBCON	Subcontracting: cost of industrial services done by other firms	+
EX	Export intensity = Exports as % of total output	+
IM	Import penetration ratio = Imports as % of value of consumption Consumption = output + imports - exports	+
PROFIT	Price-cost margin (PCM)	+
INISVA	Labour share of value added; compensation to employees as % of value added	+
GO	Growth of output; average annual growth of real output	+

Among the explanatory variables, capital output ratio (KO), minimum efficient scale of production (MEPS) and industry concentration (FFC) are expected to capture the structural effects on labour productivity. The set of variables employed to capture the effects of industry conduct include six proxy measures: R&D intensity (RDI), managerial skills (MGR), skills intensity (SKI), consumption of imported raw material (RAWIMP), consumption of local raw material (RAWCL) and subcontracting (SUBCON). The effect of industry performance on labour productivity was captured through profitability (PCM), labour share of value added (ISVA) and growth of real output (GO). Finally, import intensity (IP) and export intensity (EI) were employed to examine the effect of trade policy on productivity.

The data base is developed using micro data from the Annual Survey of Industries (ASI) conducted by the Department of Census and statistics from 1994 to 2011. It covers firms with 5 or more employees in

manufacturing for the years 1994 to 2011. It's a panel data set and covers two of the most important and most recent policy regimes e.g. initial stage of policy shift from pro-market to regulatory oriented regime (1994 to 2004) and more inward oriented policy regime (2005 to 2011). Trade data has been captured using the UN Comtrade database. The trade, labour and industry panel dataset is constructed at a detailed 4-digit ISIC level. Trade data and industry data has been harmonized using HS codes-ISIC concordance available from UN Comtrade. In the process of model estimation standard statistical procedures were followed to ensure accuracy and significance of coefficient values. Some of these were the decisions on checking for unusual and influential data, checking for normality of the residuals, choosing independent variables for the model, choosing a robust functional form, model specification tests, testing for non-stationarity, choosing an appropriate technique based on Hausman etc. First, a test for multicollinearity was employed and the variance of inflation factor was less than 1.5 for all variables. Models were also tested for heteroscedasticity. However, given that we use a panel dataset, that is unbalanced and with gaps, there is no robust test that is available to test for heteroscedasticity. A commonly used graphical method is to plot the residuals versus fitted values and any pattern that reveals heteroscedasticity was not evident. The model was also tested for serial correlation. The DW statistics for the model converges to 2, thereby indicating no serial correlation. Given that the dataset contains both time-series and cross-sectional dimensions, and following Hausman test, the fixed effect estimation model was engaged.

Table 6 summarizes the estimation of equation 1 using different functional forms with a view to examine the impact of industry and firm specific factors on productivity. In all models, the influence of structural variables was positive and significant. It is in line with existing body of theoretical and empirical evidence in the literature. The positive coefficient of four firm concentration ratio reflects the influence of oligopolistic power of major suppliers in gaining scale economies and enhancing productivity relative to small and medium scale firms in industry. However, in a panel data set it is difficult to measure the effect of small and medium scale firms on productivity.

Of the six variables employed to capture the effects of industry conduct on productivity, only two variables, R&D intensity and (RDI) managerial skills (MGR) are positive and significant. The skills intensity (SKI) variable is not statistically significant and take a positive/negative value. It appears that the skills gap hypothesis is still valid in the context of manufacturing in spite of various efforts made by public, private and NGO sector technical and vocation education and training (TVET) providers in Sri Lanka. Two of the most recent studies on skill gaps in Sri Lanka also pointed presence of skill gaps of the workforce in terms of cognitive, non-cognitive and job-specific skills.²

The other three variables relating to industry conduct, consumption of imported raw materials is positive and significant (RAWIMP) while local raw material (RAWCL) and subcontracting (SUBCON) are negative and significant. On theoretical grounds, use of imported raw materials enables firms to utilize high quality raw material at competitive prices and thereby reduce the cost of production while improving the quality standards of products. Imports diffuse research findings and upgrade technology in the importing countries. Imported inputs raises productivity, thereby exports, both through complementarity of inputs and technology transfers.

This is particularly important for firms operating in small economies as they need to engage in exporting to gain scale economies and enhance productivity levels. The negative and significant coefficient of local raw materials share (RAWCL) also suggests absence of trade facilitation including efficient logistic support systems. With the emergence of GPN based production systems use of imported raw materials is a part of production system and it requires an efficient institutional and policy support systems. The negative and significant coefficient of local raw material consumption suggests yet another source of inefficiency affecting industrial productivity. This could be

due to both quality and high cost of local raw materials. As argued in theoretical and empirical literature, subcontracting helps firms to minimize costs by concentrating on its core production activities and outsourcing support services. Most of the sub-contractors belong to small and medium scale sector and they are in a position to specialize in one or two support services and gain scale economies by serving large number of clients. However, negative and significant coefficient of subcontracting (SUBCON) suggests the absence of such sources of efficiency gains. This also reflects policy failures in promoting an efficient SME sector in industry. The coefficient of growth of real output (GO) was positive but not significant in any of the functional forms. It also confirms failures in institutional and policy support systems in promoting growth of manufacturing industry.

Table 6: Determinants of labor productivity in Sri Lankan manufacturing

Independent Variables	(1)	(2)	(3)	(4)	(5)
	LNVPW	LNVPW	LNVPW	LNVPW	LNVPW
INKO	0.08***	0.08***	0.08***	0.08***	0.08***
	(6.7)	(6.05)	(6.05)	(6.05)	(6.15)
MEPS	0.00**	0.00**	0.00**		0.00**
	(2.10)	(1.79)	(1.79)		(1.82)
FFC				0.00***	
				(4.26)	
RDI	0.02***	0.02***			
	(4.89)	(4.95)			
MGR	0.03***	0.03***	0.03***	0.03***	0.03***
	(8.58)	(8.53)	(8.53)	(8.53)	(8.34)
SKI	+0.00	-0.00	-0.00	-0.00	-0.00
	(0.76)	(0.28)	(0.28)	(0.28)	(0.27)
RAWIMP		+0.00***		+0.00***	
		(7.31)		(7.19)	
RAWCL	-0.00***				
	(6.26)				
SUBCON					-0.01**
					(2.87)
IM	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.21)	(0.06)	(0.06)	(0.06)	(0.06)
EX	-0.00***	-0.00**	-0.00**	-0.00**	-0.00**
	(4.24)	(3.38)	(3.38)	(3.38)	(3.38)
PROFIT					+0.02***
					(13.92)
ISVA	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(25.01)	(24.32)	(24.32)	(24.32)	(24.32)
GO	+0.00		+0.00	+0.00	
	(0.94)		(0.88)	(0.78)	
_cons	11.77***	12.12***	11.77***	12.12***	10.84***

	(134.7)	(139.79)	(134.7)	(139.79)	(106.05)
N	1327	1322	1327	1322	1322
Adj. R-squared	0.57	0.55	0.57	0.55	0.57
F	10.3	11.09	10.3	11.09	12.77

Note: significant level at 1%, 5% and 10% are indicated by ***, ** and * respectively and other variables are statistically insignificant.

Source: Estimated by the authors

Industry performance is a result and a major source of efficiency. Of the two variables employed to examine the effect of industry performance on productivity, profitability (PROFIT) is positive and significant. The negative and significant coefficient of labour share of value added however, indicates absence of gain sharing systems in manufacturing. It could also be due to a shift towards capital intensity of production and absence of labour market reforms. In the global competitiveness index, Sri Lanka ranked at 131 out of 137 countries in terms of labour market efficiency reflecting the urgent need for policy reforms to enhance labour market efficiency. It should also be noted that declining share of labour in value added is a global phenomenon and widely debated in the literature³. Sri Lankan situation however, indicates presence of market inefficiencies in obtaining maximum gains from labour resources in manufacturing.

Of the two variables to analyse the impact trade policy on productivity, the coefficients of export intensity (EX) is negative and significant. The evidence on export intensity points to presence of major policy failures in enhancing industrial productivity. This is to be expected due to the impact of inward oriented policy regime since 2005. The coefficient of import penetration (IM) is also negative but not significant.

5. Overall Assessment

This section of the paper presents an overall assessment on barriers to elevating productivity in industry considering both the statistical evidence (Section 4) and most recent evidence from the literature. It also takes in to account most recent institutional and policy measures by the government to improve productivity and competitiveness of the industry. Protective trade policies are a major area of policy failures. In the 1970s Sri Lanka was a well-known close economy promoting import-competing manufacturing with high level of tariff protection.⁴ However, with the introduction of pro-market industry and trade policies in post-1977 period, the high rate of protection reduced to 70 and 56 percent in the early 1990s and early 2000 respectively (WB, 2004, p. 96). During the post-2000 period, following WTO regulations Sri Lanka continued to reduce customs tariffs but adopted a policy of applying a system of multiple para-tariffs and export duties (CESS). More specifically, Sri Lanka had in place a large number of additional levies and charges that are applied in addition to the tariff on a wide variety of products; these include the Export Development Board Levy, Excise Duty, Value Added Tax (VAT), Ports and Airports Development Levy, Nation Building Tax, port handling charges and the Special Commodity Levy. The Excise Duty, VAT, and Nation Building Tax apply to both imported and domestic goods while the others are charged on imported goods. The charges can be high and significantly increase the cost of importing, in some cases exceeding 100% of the c.i.f. value. Furthermore, many have been modified several times due to various reasons including revenue generation, thus adding unpredictability of trade policy regime. In fact, by 2009 there were five para-tariffs and four taxes in addition to customs duty. The magnitude of tariff protection created by this policy reversal is illustrated in Table 7. It clearly shows the dominant role played by para-tariffs in creating a protective trade regime in Sri Lanka. As reported in the literature, product level estimates on effective rate of tariff protection (ERP) are observable for about 101 tradable production sectors varying from 26.6 to 523.5 percent.⁵

The empirical evidence also revealed inefficiencies in the labour market due to institutional and policy failures. On one hand, employers are not willing to recruit new entrants to the labour market due to lack of required skills (Dunder et al. 2014). Even among the employed, only 8 percent are with some formal training.⁶ Moreover, of the total unemployed about 27 percent are with TVET qualifications.⁷ This means, the existing training system has failed to produce graduates who could meet the skill requirements of the industry. Existing evidence on skill gaps indicate that low and medium skilled workers⁸ lack basic skills in cognitive, non-cognitive and technical skills. Besides the quality, the quantity of labour is also a major problem in industry. According to several sources, inadequate supply of labour is a problem particularly among low and medium skilled category workers across a range of industry sub-sectors e.g. textiles & garments, food processing, leather products, light engineering etc.⁹ However, as reported in QLF 2ed Quarter 2017, educated youth unemployment was around 5 and 11.8 percent among males and females with AL and above qualifications respectively. In terms of age, it was 14.8 and 29.1 percent among males and females in the age group of 15-24 years respectively. Finally, negative and significant labour share of value added points to market failures in fixing salaries and wages to employees. It also indicates absence of gain sharing systems and deteriorating labour relations in manufacturing. In fact, there has been an increase of 38.5 percent in 2016 in total number of workers involved in strikes driven mainly by employees of sectors other than plantations. The number of man days lost due to strikes increased by 61 percent in non-plantation sectors while it was 21 percent increase in the plantation sector (CBSL, 2016).

Table 7: Estimates of Nominal and Effective Rates of Protection for Sri Lanka, 2015

Weighted averages (value added)	Nominal Rate of Protection			Nominal Rate of Protection		
	All tariffs	Customs tariffs	Para tariffs	All tariffs	Customs tariffs	Para tariffs
Manufacturing	34.3	7.8	26.4	63.2	14.5	48.7
All tradable production	28.0	5.6	22.4	46.7	9.5	37.2
Simple averages (mean)						
Manufacturing	35.9	6.9	28.9	68.3	12.9	55.4
All tradable production	33.1	6.4	26.7	58.8	11.1	47.7

Source: ADB (2017)

In overall terms, the empirical evidence reveals institutional and policy failures as main barriers to enhance industrial productivity. This is to be expected with complete reversal of export-oriented growth model to inward oriented, state dominant and protectionist system of production particularly after 2005. Over the past three decades the global economy has offered many opportunities for countries to take full advantage from global trade. Regional competitors in Asia have taken full advantage of this situation by creating investor friendly business environment and efficient system of institutional and policy support systems. Lack of trade openness can easily generate weak competitive pressure both in product and factor markets especially in small economies causing greater inefficiencies in production with adverse implications on productive efficiency. Most of the constraints are home grown and solutions need to be worked out with a clear focus on efficiency factors rather than political economy considerations.

Two of the most important policy documents of post-2015 policy regime, Vision 2015 and Budget Speech – 2018, spells out policy measures to enhance productivity, efficiency and global competitiveness of the economy. For example Vision 2025 identifies four major constraints affecting growth performance of the economy: a) structural failures, b) poor export performance, c) excessive public sector borrowings and d) regulatory barriers (Vision, 2025, p.13). Its overall model is to promote Sri Lanka as knowledge based highly competitive social market

economy. Its reform agenda covers removing distortions both in product and factor markets, major trade reforms including removal of para-tariffs, market determined exchange rate policy, conducive institutional framework and improving labour market efficiency. Budget Speech 2018 spelt out some of the action programmes to promote industrial production and improve productive efficiency of manufacturing sector industries. The proposed action programme includes pro-growth reforms representing labour market, capital market, trade, foreign investment, entrepreneurship development, innovation, legal support system and repealing some of the laws detrimental to investment promotion.¹⁰The reform agenda and action programmes given in these two documents are very comprehensive and relevant to promote productivity and competitiveness of the national economy. The major limitation of these policy packages is inadequate emphasis placed on industrial development except some proposals to set up industrial parks (e.g. Milleniya, Pitipana, Bingiriya, Weligama etc.), promoting MNC outreach through Electrical and Electronic Machinery (EEM) value chain links and promotion of selected industries such as Boat Building. Obviously, these efforts would lead to increase industrial production and efficiency levels in manufacturing. The overall policy reform agenda of the post-2015 regime seem to be heavily biased towards trade reforms. It lacks emphasis on productivity enhancement of manufacturing. Sri Lanka needs an industrial policy which clearly indicates the institutional and policy support for industrial development. It should also be a part of national policy targeted at enhancing long term productivity and competitiveness of the national economy.

Sri Lanka took the lead in liberalizing trade policies in the late 1970s gained benefits in terms of attracting FDI, expanding export income, absorption of new technology, access to foreign markets, absorption of surplus labour and regional development. However, policy makers have failed to place due emphasis on industrial policy as a strategy to promote export led growth (ELG). The first attempt to introduce industrial policy was in 1989 and the second one was in 2005. Both policy documents were not fully implemented due to change of political regimes. Since then, industrial policy issues were addressed along with policies relating to the whole economy with a heavy emphasis on trade policy. In contrast, trade policy was recognized as a major area of policy support for industrial development. These policy measures offered little or no support for ELG and in fact it created a strong anti-export bias through various para-tariff measures and several other inward oriented policies. As a result, Sri Lanka failed to realize productivity gains through ELG policies. A recent study on inter-country analysis of trade policies in South Asia revealed that only in the case of Bangladesh exports have led to industrialization. Real exports and manufacturing output were found to be integrated and have a long-run relationship with the causality running from exports to manufacturing output. However, in the case of Sri Lanka, the movements in manufacturing and export activities were not linked to a long-run relationship (ADB, 2015). It further stated that there was no integration between exports and manufacturing activities and there are no causality effects. These results emphasize the need to focus more on industrial policies rather than trade policies. As noted above, post-2015 policy regime has also failed to provide a clearly defined industrial policy designed in line with ELG strategies. Instead, it has placed heavy emphasis on trade policy including trade agreements.

Productivity is the only sustainable path to promote growth and competitiveness in the long-run. Yet Sri Lanka's growth has been mainly driven by an accumulation of factor quantities rather than improving their quality, efficiency and application of new technology. Another recent study on challenges to enhance competitiveness in South Asia dealt with three challenges: macro, sectoral and firm level (WB, 2017). The first, macro level challenges refer to declining contribution of total factor productivity (TFP) to GDP due to inadequate quality improvements. The second, sectoral challenges cover slow pace of structural transformation e.g. slow pace of productivity gain due to transfer of resources from low productive agriculture to manufacturing and services sectors. The third, firm level challenges include slow progress of low-productive small firms.

Policy failures at macro level have created even more serious constraints on industrial productivity. For example, highly overvalued exchange rate, balance of payments deficits and loss of foreign reserves and high cost of borrowing have led to high inflation and high cost of capital. The net result has been deterioration of investment climate and presence of anti-export bias. The tax regimes relating to imports and exports have led to lower production capacity and lower competitiveness in manufacturing. The institutions responsible for policy formulation, inter-institutional coordination and promoting foreign direct investment have become highly politicized and inefficient.

Sri Lanka is confronted with several challenges including high fiscal deficit, heavy public debt and depleted external reserves. It is imperative to expedite high priority structural reforms to raise competitiveness, improve governance and consolidate fiscal situation in order to ensure sustained growth and development. Sri Lanka's attractiveness for FDI has remained low in spite of various efforts to promote export oriented foreign direct investment (EOFDI). Thus, with limited national savings Sri Lanka needs more FDI in manufacturing to sustain a high growth and enhance productivity.

As argued by Rodrik (2016) developing countries are turning into service economies without having going through a proper experience of industrialization. In his view, we need combination of both demand and supply side explanations both the decline in manufacturing's share and the later turnaround in output compared to employment. One possibility is service led growth. But, these service industries are highly skill intensive and do not have the capacity to absorb low and middle-skilled labour as manufacturing did. In the case of Sri Lanka, productivity gains from reallocating labor out of agriculture and into services seem to be beneficial as services sector records the highest productivity relative to agriculture and manufacturing. But, the services sector growth is driven by non-tradable sectors and labour absorptive capacity of these sectors are very low. Sri Lanka also needs to promote tradable sectors which could strengthen the macro economy including the balance of payments. Hence, promotion of ELG oriented industrial development seems to be a most feasible and sustainable policy option for Sri Lanka. Barriers to elevate industrial productivity arise mainly from domestic factors rather than from constraints in external sectors.

6. Summary and Conclusions

The evidence on structural transformation of Sri Lanka reveals an unusual shift from traditional type agriculture dominant dualistic economy to a service sector dominant economy characterized by low productive industry sector. This is completely different to the structural transformation process conjectured in Lewisian theory of development. The failure of manufacturing sector to emerge as a dominant player in structural transformation process of Sri Lanka was examined using an integrated industry-trade panel data set covering two of the most important policy regimes e.g. 1994 to 2004 and 2005 to 2014. The analytical framework was guided by standard IO theory and the assessment covered several variables to capture the influence of industry structure, factor efficiency and institutional and policy support systems.

The statistical evidence revealed positive and significant impact of efficiency driven variables (e.g. capital intensity and minimum scale of production) on productivity. The positive and significant coefficient of oligopolistic structure of industry also confirmed presence of scale effects on productivity. The coefficients of profitability and managerial skills were positive and significant. The negative and significant coefficient of export intensity confirms failures in trade and industry policy. The coefficient of import intensity was not significant. The statistical evidence also reveals failures in skills development efforts by institutions responsible for education and training. The negative and significant coefficient of sub-contracting confirms the failure of institutional and policy support systems in promoting SME sector enterprises.

In overall terms, the findings point to institutional and policy failures as main barriers to enhance industrial productivity. This is to be expected with complete reversal of export-oriented growth model to an inward oriented, state dominant and protectionist system of production. Over the past three decades the global economy has offered many opportunities for countries to upgrade industrial production and integrate with global system of production. Regional competitors in Asia have taken full advantage of this opportunity by creating investor friendly business environment and efficient system of institutional and policy support systems. Lack of trade openness can easily generate weak competitive pressure both in product and factor markets causing greater inefficiencies in industrial production. There is no evidence to support export-led industrialization in Sri Lanka and it emphasizes the need to focus more on industrial policies rather than trade policies. Most of the constraints are home grown and solutions need to be worked out with a clear focus on improving investment climate rather than trade reforms driven by political economy considerations. Sri Lanka needs an industrial policy with a clear focus on institutional and policy support for industrial development. It should also be a part of national policy targeted at enhancing long term productivity and competitiveness of the national economy.

References

1. ADB, 2017. Manufacturing Exports: Opportunities, Achievements, and Policy Options,” in The Sri Lankan Economy: Chartering a New Course, ADB, Manila.
2. ADB, 2015. Impact of Trade and FDI Policies on Industrial Development in South Asia, ADB and UNCTAD, Manila.
3. Asian Productivity Organization, 2017. Productivity Data Book, APO, Tokyo.
4. Athukorala, P. and Rajapathirana, S. 2000. Liberalization and Industrial Transformation. Sri Lanka in International Perspective. Oxford University Press. New Delhi.
5. Athukorala, P. 2007. “Manufacturing Exports: Opportunities, Achievements, and Policy Options,” in The Sri Lankan Economy: Chartering a New Course, ADB, Manila; 111-146.
6. Central Bank of Sri Lanka, 2018. Annual Report 2017. Colombo: Central Bank of Sri Lanka
7. Chandrasiri, S. and Indika, N. 2014. “Industrial Productivity for sustained growth: the case of Sri Lankan manufacturing industries,” in The Way Forward for Sustained Growth, ed. by A.D.V.de S. Indrarathna, S.Vidanagama and A.Wijeinghe, 2014. Sri Lanka Economic Association, Colombo: 139-164.
8. Department of Census and Statistics, Annual Survey of Industries, various Issues.
9. Dutz, M.A. and O’Connel, S.D. 2013. Productivity, Innovation and Growth in Sri Lanka: An Empirical Investigation, Poverty Reduction and Economic Management Network, Economic Policy and Debt Department, The World Bank, Washington D.C.
10. Dunder, H., B. Millot, Y. Savchenko, H. Aturupane, T. Piyasiri. 2014. Building the Skills for Economic Growth and Competitiveness in Sri Lanka, Washington, DC: World Bank Group
11. Ghani, E. and O’Connel, S.D. 2014. Can Service be a Growth Escalator in Low Income Countries?, Policy Research Working paper, 6971, World Bank Group, Washington D.C.
12. ILO, 2015. Skill Gaps in Selected For Industry Sectors: A Literature and Data Review, A Report Submitted to the ILO, Colombo
13. Krugman, P. 1994. The Age of Diminishing Expectations: US Economic Policy in the 1990s, MIT Press.

14. Ministry of Finance, 2017. Budget Speech, 2018. Colombo.
15. Office of the Prime Minister, 2017. Vision 2025, A Country Enriched. Colombo.
16. Piketty, Thomas. 2014. Capital in the 21st Century, The Belknap Press of Harvard University Press, Cambridge. Massachusetts.
17. Porter, Michael.1990.The Competitive Advantage of Nations, The MCMillan Press Ltd. Hong Kong.
18. Pursell, G. and F.M. Z. Ahsan. 2011. 'Sri Lanka's Trade Policies: Back to Protectionism', Australia South Asia Research Centre Working Paper 2011/03, Canberra: Australian National University.
19. Rashid Amjad, Dev Nathan, Salim Raihan, Sher Verick, Sunil Chandrasiri and Anam Yusuf.2015. What Holds Back Manufacturing in South Asia? Economic and Political Weekly. Vol. L., No.1:36-45.
20. Rodrik, D. 2016. "Premature de-industrialization." Journal of Economic Growth 21.1: 1-33.
21. Rodrik, D. 2013. "Unconditional Convergence in Manufacturing." Quarterly Journal of Economics, 128 (1), February: 165-204.
22. Rodrik, D. 2011.The Globalization Paradox. Democracy and the Future of the World Economy, W.W. Norton & Company, ISBN: 9780393071610.
23. TVEC, 2016, Labour Market Information Bulletin, December, Vol.2/15 December, 2015.Colombo
24. World Economic Forum (WEF). 2017/18. The Global Competitiveness Report, 2017-2018, Oxford University Press, New York.
25. WB, 2017. South Asia's Turn Policies to Boost Competitiveness and Create the Next Export Powerhouse, ed. by Gladys Lopez-Acevedo, Denis Medvedev, and Vincent Palmade, Editors World Bank, Washington DC.
26. World Bank. 2013. Island of Prosperity? Ideas for Accelerating Inclusive Growth in Sri Lanka, Report No.76453-LK, South Asian Region, World Bank, Washington DC.
27. World Bank. 2004. Sri Lanka: Development Policy Review, South Asian Region, World Bank, Washington DC.

¹ Refers to 2015 data. Source: CBSL, 2017.

² For more details see ILO (2015) and Dunder et al. (2014).

³ For more details see Piketty (2014).

⁴ According to empirical estimates effective rate of tariff protection during this period was as high as 137% (ADB, 2017).

⁵ For more details see the detailed estimates on ERP prepared by the Department of Census and Statics. www.dcs.gov.lk.

⁶ Estimates based on QLF 2014 unpublished data.

⁷ Among males and females with TVET training it was 24 and 30 percent respectively. Data refers to 1st half of 2016. LMI Bulletin, Vol 01/16- June 2016.

⁸ High skilled includes senior managers, professionals and technicians and associates. Medium skilled includes clerks and service workers. Low skilled includes the occupations of craft workers, plant and machine operators and assemblers, and elementary workers

⁹ For latest details see ADB (2017), Labour Market Information Bulletin by the TVEC (2016).

¹⁰ Review of Underperforming Enterprise or Underutilized Asset No. 43 of 2011.