SRI LANKAN ECONOMY – THE WAY FORWARD

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Introduction

The objective of this article is to highlight the problems and challenges faced by Sri Lanka at the present juncture and propose ways and means that can be adopted to solve those problems. Development strategies of a country can be classified as short-term strategies, mid-term strategies and long-term strategies. However, we should be mindful of the famous saying of the British economist, J.M. Keynes, i.e. "in the long-run we are all dead". Sri Lankans deserve favourable outcomes and an improvement in their quality of life within a reasonable period of time. The wait has been far too long. The country's debt- service payments on foreign debt are ever increasing. Hence, the crucial need to generate dollar-denominated revenues to match dollar-denominated debt-service payments. This is why Sri Lanka should focus on low hanging fruit and act according to a well thought out and systematic plan with clear time lines to make full use of those opportunities to generate dollar-denominated revenues.

We as a country have not made full use of our youth...are we encouraging our youth to become three-wheeler drivers or to join the public sector, while ample job vacancies remain yet to be filled in the private sector ? Something is wrong somewhere...this 'something' is what we are trying to discover through this article...and corrective action (as well as food for thought) has also been suggested.

Due to the rapidly ageing population of Sri Lanka, the country has had to deal with ageing at a much earlier point in our development process and the country can no longer drive growth simply through labour augmentation. That is why Sri Lanka will have to diligently work on increasing her Total Factor Productivity (TFP) to drive growth. Hence, innovation and R&D will have to play a crucial role in driving Total Factor Productivity. Although increasing the work force or labour augmentation is going to be a challenge, a window of opportunity exists to augment the labour force by inducting more women into it. This is because women account for a mere 36.6% of the economically active population, although they account for 51.6% of the total population of Sri Lanka.

The above issues and many more are analysed in this article and corrective actions have also been suggested. Let us begin by sizing up Sri Lanka's macroeconomic challenges.

Sizing up Sri Lanka's macroeconomic challenges

Sri Lanka had made progress in reducing her budget deficits, however the latest data indicate that the country may find it difficult to meet its deficit goal of about 5% for 2018. Further, monetary policy has been effective in keeping inflation in check and slowing down the growth in credit extended to the private sector. Export growth has been satisfactory and there has been an increase in Foreign Direct Investments (FDI).

Expansionary fiscal policy has helped to improve the outlook of the US economy. However, the economic outlook has weakened in the euro area, the UK, and especially some emerging economies. China's growth is expected to further moderate gradually. Increased trade tensions together with normalization of monetary policy in the US and the appreciation of the dollar are exerting severe market pressures on vulnerable emerging markets. Sri Lanka is also exposed to these market pressures. Further, faster than expected rises in commodity prices would increase pressure on the balance of payments of emerging markets. Higher international oil prices are exerting balance-of-payment pressures on oil importers like Sri Lanka. Sri Lanka is particularly vulnerable, due to its twin deficit and restrictive trade environment (Goretti 2018).

Continuing a prudent monetary policy and further fiscal consolidation will be crucial in the wake of external pressures including substantial external debt-service payments amounting to around USD 4Bn per year during 2019- 2023. Therefore, structural reforms should be accelerated to strengthen the Sri Lankan economy's resilience to domestic and external shocks. However, the impending election cycle could pose challenges for further reforms. External risks include disappointing growth in key countries that generate foreign exchange inflows to Sri Lanka in the areas of exports, tourism, remittances, FDI, and other financing flows. Tighter than expected global financial conditions would increase the cost of external debt and make rolling over the maturing Eurobonds more difficult from 2019 onwards; however, the Liability Management Act will help mitigate this refinancing risk (World Bank - Sri Lanka Development Update – June, 2018: 27).

Since Sri Lanka would have to resort to international capital markets to raise funds for debt repayments, it is imperative for the country to retain investor confidence by maintaining strong macroeconomic fundamentals. A sustainable fiscal regime is necessary to dispel foreign investor concerns and ensure that confidence is upheld. Further, policy predictability and consistency will be critical in retaining investor confidence (Weerakoon 2018).

From the foregoing it is clear that it is difficult to expect a significant turnaround in the Sri Lankan economy in the short-term and that it is crucially important to generate dollar-denominated revenues to match dollar-denominated debt service payments.

Despite the challenges posed by the impending election cycle, accelerating growth enhancing structural reforms will be crucial for Sri Lanka. Liberalizing the protectionist trade regime and improving trade facilitation are also important. According to trade policy indicators

recently developed by the IMF, Sri Lanka's trade and FDI regimes are more restrictive than the average for emerging markets in all key areas. In particular, the country is more distant from the emerging market average in the categories of trade facilitation performance and ease of starting a foreign business (IMF – Selected Issues – June, 2018).

With a view to successfully facing the above challenges and driving growth, making maximum use of Sri Lanka's workforce will also be crucial. Although Sri Lanka's official unemployment rate has hovered around 4.3% during 2011-2016, unemployment is high amongst young people and those with advanced degrees. Further, Sri Lanka's labour market is characterized by high informality, absence of many working-age women from both the informal and formal labour market (i.e. low female labour force participation), a high share of workers in the public sector including state-owned enterprises and low average productivity in the agriculture sector (World Bank - Sri Lanka Development Update – June, 2018: 34). With an ageing population, productively engaging Sri Lanka's sizable youth and enhancing female labour force participation remains critical (Goretti 2018). Sri Lanka's female labour force participation (LFP) rates had declined from 41% in 2010 to 36.6% in 2017. This trend stands in contrast to the country's achievements in human development outcomes that favour women, such as high levels of female education and low total fertility rates. (World Bank - Sri Lanka Development Update – June, 2018). In relation to certain areas where it will be difficult to find labour domestically, skill migration (importing skilled labour) will have to be seriously considered to fill the gaps.

Additionally, the increasing occurrence of natural disasters could have an adverse impact on growth, the fiscal budget, the external sector and poverty reduction (World Bank - Sri Lanka Development Update – June, 2018: 27). Therefore, a well-designed natural disaster risk financing framework will have to be put in place to mitigate the impact of climate change.

Broadening the coverage of social safety nets based on well-defined selection criteria can help protect the most vulnerable (from the somewhat painful side effects of necessary economic reforms) and foster more inclusive growth.

As noted above, it is crucially important to generate dollar-denominated revenues to match dollar-denominated debt service payments. Therefore, Sri Lanka should focus on ways in which the country can generate foreign exchange earnings and other non-debt creating foreign exchange inflows (FDI and portfolio inflows etc.). Accordingly, increasing export earnings is crucially important for the country. The next section deals with this important aspect.

Export-led growth – how serious are we?

Almost a decade after the end of the internal armed conflict in Sri Lanka, the country's economy is confronted with a large and growing debt, while the growth outlook is moderate.

A rising US dollar, amidst tighter global financial conditions, has increased credit risks for countries with large external funding needs as pointed out by Moody's Investors Service.

"Countries with large current account deficits, high external debt repayments and substantial foreign-currency Government debt are most exposed to the impact of a stronger US dollar" and Sri Lanka fits into this category. Therefore, Sri Lanka has to increasingly concentrate on reducing her debt burden and tapping non-debt creating financial inflows such as foreign direct investments and portfolio investments, while enhancing foreign exchange earnings through exports (both merchandise and service exports) and tourism (Fernando 2018).

Sri Lanka has experimented with many development strategies. In the seventies the country tried import substitution under a closed economy. In 1977, the then government opened the economy without putting in place adequate measures to mitigate the resultant adverse impact on domestic industries, thereby putting some domestic industries out of business overnight. Although the governments in power have been talking about the need for "export promotion" or an "export-led economic growth path" for a very long time, no serious attention has been paid to get our exports going. In the post-war period (beyond mid-2009) government attention was mostly focused on infrastructure development projects... some of them eye-catching...yet grandiose (Fernando 2018).

While saying that we want to promote exports, we sometimes try to do it by devaluing the rupee or by handing out subsidized credit to selected export categories, with attendant harmful consequences. In order for an export strategy to be successful we need to first find out what international markets demand from us and try to figure out what we can produce competitively to cater to such demand. Alternatively, we should not just produce whatever we can and hope against hope that the international market would buy whatever we produce. Proper market information should be disseminated so that our entrepreneurs will be encouraged to produce what the market is demanding, without simply providing subsidized credit to selected entrepreneurs and hope that by some magic they will turn out to be successful exporters (Fernando 2018)

Going by the numerous subsidized credit schemes that we have offered to "would be exporters" over the years, by now we should have created a very large number of new exporters with the capacity to produce competitive goods for export. How far have we succeeded by adopting this subsidized credit route? A better policy would be to provide subsidized credit (where appropriate) to budding exporters (for a limited period of time) while ensuring that they channel such funds to producing goods demanded by international markets, utilizing proper market information disseminated to them through an effective mechanism. Sri Lankan embassies in foreign countries should be properly harnessed to obtain information on market opportunities for our exporters. In other words we must effectively leverage economic diplomacy to boost our exports and diversify our export products and markets. We need to identify our competitive strengths. We also need to identify niche markets for our export products. Having identified these things we need to execute a plan of action to promote exports based on those findings. In other words, market research should be carried out meticulously to discover market opportunities and also to identify foreign companies and partners who would like to enter into joint ventures with Sri Lankan export companies (Fernando 2018)

The anti-export bias

The International Monetary Fund (IMF), in one of its recent reports on Sri Lanka's economy, has observed that protectionism has been a key factor that has weakened the country's trade competitiveness. The IMF report has further noted that lobbying rather than strategic development or high employment have been the main reasons for protecting certain sectors.

As noted above, Sri Lanka's trade and FDI regimes are more restrictive than the average for emerging markets in all key areas. In particular, the country is more distant from the emerging market average in the categories of trade facilitation performance and ease of starting a foreign business (IMF – Selected Issues – June 2018).

Introduction of para-tariffs in the country during the last decade has effectively doubled the protection rates, making the present import regime of Sri Lanka one of the most complex and protectionist in the world, inhibiting Sri Lanka's entry into Global Production Networks. When domestic industries are protected in this manner, resources that can be otherwise allocated to export industries, tend to be allocated to protected domestic industries, thereby resulting in a misallocation of resources. This is what we refer to as the anti-export bias.

Para-tariffs are defined as charges on imports that act as a tariff but are not included in a country's tariff schedule. Para-tariffs in Sri Lanka include the Ports and Airports Development Levy (PAL), the Commodity Export Subsidy Scheme (CESS), and the Special Commodity Levy (SCL). In relation to Sri Lanka, the World Bank has identified the Ports and Airports Development Levy (PAL) and the CESS as two para-tariffs with high potential for reform. The objective of increasing para-tariffs in Sri Lanka was not only to protect domestic industries, but also to support the declining government revenue base. It is good to note that the Government has announced that it will adopt a time-bound plan to eliminate para-tariffs and conduct a comprehensive review of tariffs. (IMF Country Report No.18/176 - Sri Lanka – selected issues – June, 2018; Vision 2025 document of GOSL).

As described above, protectionism has led to the anti-export bias in Sri Lanka's trade policy. This has weakened Sri Lanka's export performance. Sri Lanka's share of global merchandise exports had reduced from 0.08% in 2000 to 0.06% in 2016, while its merchandise exports as a share of its GDP had declined from 33.3% in 2000 to 12.9% in 2017 (Vision 2025, GOSL).

From the above, it is clear that if Sri Lanka is serious about export promotion, it has to significantly reduce protection rates (mainly through dismantling para-tariffs) as early as possible.

Merchandise Exports

	2000	2010	2016
World - USD Tn	6.502	15.403	16.072
Sri Lanka – USD Tn	0.00543	0.00860	0.01031
Sri Lanka's merchandise exports as a % of world merchandise exports	0.084	0.056	0.064
Vietnam – USD Tn	0.01448	0.07224	0.17679
Vietnam's merchandise exports as a % of world merchandise exports	0.22	0.47	1.10

Source: World Bank

Exports of Goods and Services

	2000	2010	2016
World - USD Tn	7.911	18.904	20.836
Sri Lanka – USD Tn	0.00637	0.01109	0.01744
Sri Lanka's goods & services exports as a % of world goods & services exports	0.081	0.059	0.084
Vietnam – USD Tn	0.01681	0.08347	0.19219
Vietnam's goods & services exports as a % of world goods & services exports	0.21	0.44	0.92

Source: World Bank

The next section deals with an important area in relation to attracting non-debt creating foreign exchange inflows, i.e. the importance of attracting foreign direct investments (FDI)

Attracting FDI

Despite its complex and expensive system of tax incentives, including tax holidays, to promote investment, Sri Lanka's foreign investments have remained below 2% of GDP (compared to 6.3% of GDP in Vietnam in 2017) over the past twenty years. Further, new FDI in the past few years have been predominantly infrastructure oriented, with only a relatively small proportion reaching sectors that are associated with global production networks.

Political stability and consistent policies are two key areas that foreign investors look at when deciding to invest in a country. Policy uncertainty in Sri Lanka has significantly dampened foreign investor sentiments, along with a lack of information on regulations, high fragmentation in policy making, frequent policy changes and slow policy implementation (Nenova 2018).

AMCHAM, in collaboration with STAX recently launched a white paper on "FDI Landscape and Investor Sentiment in Sri Lanka". In preparing that report a survey had been undertaken. As per the survey, 59% of the respondents had cited policy instability as a key barrier to conducting business. Changes in tax policy such as VAT rates, import duties and sudden shifts in economic strategy have all contributed to sending negative signals to prospective investors. Sustained policy stability is the need of the hour to provide a sense of clarity. (AMCHAM-STAX: 2018 white paper).

An equally important aspect in attracting FDI is 'ease of doing business'. Sri Lanka was ranked 111th out of 190 economies in the Ease of Doing Business Index 2018 (published by the World Bank/IFC) which shows that there are opportunities for improvement. This year (2018), improvements are expected in the areas of starting a business, property registration and construction permits. Reforms are also required to address critical challenges in areas like land ownership. At present, land is mainly state-owned in Sri Lanka, and land administration is weak and cumbersome. Many FDI projects had been discouraged due to land issues as indicated by anecdotal evidence (Nenova 2018). Another international ranking that Sri Lanka should concentrate on is the 'Logistics Performance Index' (published by the World Bank and partners). Foreign investors pay considerable attention to these international rankings on business environment when deciding on suitable countries to invest in. Therefore, the government should pay special attention to improve the country's rankings in relation to these international indices (Fernando 2016:65).

It is encouraging to note that the BOI (the main FDI facilitation body) is being actively reoriented towards modern investment promotion at a time when the government is also liberalizing the foreign exchange controls (Nenova 2018).

According to the AMCHAM-STAX white paper, instead of numerous line ministries with overlapping mandates, reaching out to global investors, there needs to be one central body (umbrella organization) capable of formulating policy, issuing guidelines, attracting investors and governing FDI flows. (AMCHAM-STAX: 2018 white paper).

The white paper also highlights the problem of FDI surveys inadequately capturing areas such as service exports. Therefore, it is important to ensure a representative sample. While sectors like manufacturing are traditionally well-represented in FDI surveys, with a view to developing a fuller view of Sri Lanka's FDI position, there is a need to capture data on FDI inflows entering under-represented sectors like ICT/KPO/BPO. In these sectors, most of the profits that can be repatriated are reinvested into business expansion activities (AMCHAM-STAX: 2018 white paper).

At least 63% of the respondents surveyed in preparing the white paper had cited a shortage of quality labour. However, the problem isn't necessarily a human resource shortage, but rather a failure to fully develop the workforce and improve productivity of the existing labour force according to the white paper. Therefore, going forward, there should be greater emphasis on investing in education and vocational training to match industry needs and potential and to improve productivity.

Further, street protests in Sri Lanka are very common. This is something that will simply put off foreign investors. Therefore, the Government will have to take appropriate action in relation to street protests if we are serious about attracting FDI.

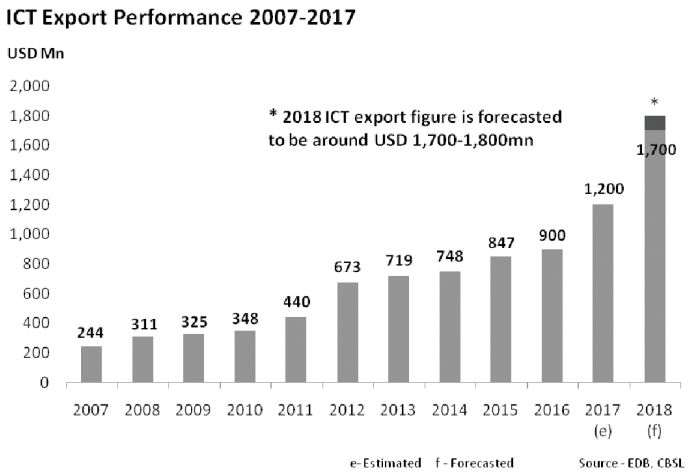
The next section deals with three important areas which offer immense opportunities for the Sri Lankan economy. These areas are ICT/BPO related service exports, commercial hub operations and nanotechnology related applications. All three areas have the potential to generate valuable foreign exchange earnings for Sri Lanka.

Aim for low hanging fruit

As pointed above, clearly it is difficult to expect a significant turnaround in the Sri Lankan economy in the short-term and it is crucially important to generate dollar-denominated revenues to match dollar-denominated debt service payments.

In boosting dollar denominated revenues, in addition to tourism and merchandise exports, Sri Lanka will have to increasingly concentrate on service exports. In the short to mid-term Sri Lanka will find it difficult to get into heavy industries related exports which require considerable capital. Therefore, in the short to mid-term it will be more feasible for the country to go for low hanging fruit such as ICT/BPO related service exports, commercial hub operations and nanotechnology related applications. Additionally, nanotechnology related applications offer Sri Lanka new opportunities to both earn, as well as to save, valuable foreign exchange.

ICT/BPO Exports



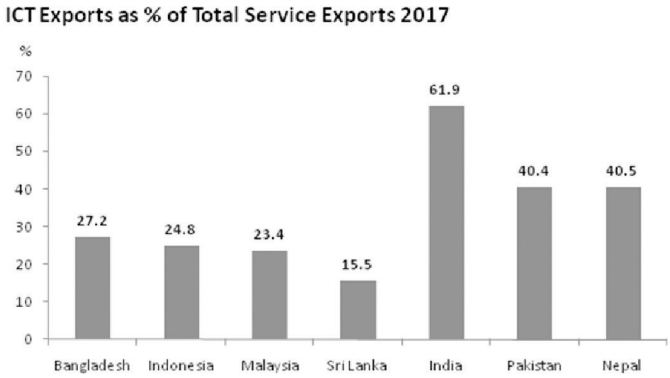
ICT which is a rapidly growing industry in Sri Lanka, serves a broad range of areas. With Sri Lanka hoping to graduate to a upper middle income country in the future, the number of industry verticals benefiting from ICT is on the rise. A vertical market is a market in which vendors offer goods and services specific to an industry, trade, profession, or other group of customers with specialized needs. An example could be software that manages services in hotels - amenities solutions.

Sri Lankan IT companies have earned global recognition for their cost-competitive advantages, high quality and educated workforce.

Sri Lanka has improved her position as the eleventh most attractive outsourcing destination globally as per the Global Services Location Index compiled by AT Kearny (an American based management consulting company) for 2017 (from 2013-2017 Sri Lanka had progressively improved her position from 21st, 16th, 16th ,14th to 11th respectively). ICT Companies in Sri Lanka export software products and services to regions such as North America, the EU, Australia, East Asia, the Middle East, Africa and the Nordic region. Moreover, Sri Lanka acts as an offshore development centre for Fortune 500 companies in the US, Ireland, the UK, Australasia and Sweden (Echelon, July 2018).

Sri Lanka's total service exports for 2017 amounted to USD 7.76Bn. Largest contributors to total service exports were tourism earnings, port activities and software exports. The net service exports for 2017 amounted to USD 3.34Bn (Net Service Exports = Total Service Exports – Total Service Imports).

Challenges and way forward



Source: World Bank

Sri Lankan technology companies such as WSO2, 99X and Virtusa have proven their ability to compete with the best IT companies of the world. The major challenge for Sri Lanka in expanding her ICT industry is finding the required skilled labour. With Sri Lanka targeting ICT export earnings of around USD 5Bn in 2022, the country will need to have another 150,000 – 200,000 skilled workers coming into the workforce during the period ahead up to 2022, to achieve the desired export earnings target for 2022. This also means that about 1000 new start-ups will have to emerge over the same period. This is because compared to other industries, the tech industry needs a lot of start-ups for it to develop and grow. The present Sri Lankan ICT sector serves a number of industry verticals, with over 300 companies and a workforce of over 85,000 as of 2017 (Echelon, July 2018).

How can we address the talent scarcity in the ICT sector?

One solution for the talent crunch is for tech firms to take on high-value, high margin work. Software engineers engaged in such activities typically earn around USD 50,000 - USD 60,000 a year per person, compared to the average annual revenue per person for the entire ICT sector which is around USD 18,500 (Echelon, July 2018).

Another way to address the talent scarcity is by increasing the number of local tech graduates produced in a year. In 2016, the number of computer science undergrads that graduated in Sri Lanka was 946. Tripling the output of tech graduates will take too much time. Less than 20% of all those who qualify to enter university actually gain admission due to limited space, and from this, under 5% get selected to the technology/engineering faculties. Sri Lanka doesn't have enough talent in high skilled areas such as AI, blockchain, data sciences, digital marketing, and robotics (Sekaram 2018). The country cannot afford to wait for five or more years to build capacity. Therefore, the only solution is to open the country's borders so that skilled migrants can flow into the country (Sekaram 2018). The next section deals with this aspect.

Importance of skilled migrants

Foreign talent helped build successful Lankan tech companies such as Virtusa, Millennium IT and WSO2. When importing skilled migrants, there shouldn't be concerns of sub standard labour flooding the market if companies have good screening processes in place. Further, Sri Lanka could encourage foreign tech professionals to start their businesses in Sri Lanka by granting concessions. Chile is inviting foreign startups to test and develop their ideas there, offering generous incentives. Education reforms in Chile were aimed at feeding the tech industry. Out of Chile's IT graduates 94% manage to obtain jobs within a year of graduating, according to Launchway Media (Echelon, July 2018).

Opening doors to foreign talent is critical to drive innovation in the tech industry. Additionally, such foreign professionals living here will attract investments into consumption, real estate, education and healthcare with attendant positive multiplier-effects on the economy.

As per the Central Bank of Sri Lanka, in 2017, private consumption accounted for 62.2% of GDP. Attracting foreign professionals for local tech industries will result in an increase in consumption, which in turn will help to boost GDP growth.

ICT industry of Sri Lanka – the way forward

According to some industry experts by 2022 AI and data analytics will account for a fifth of Sri Lanka's USD 5bn tech exports. The ICT industry of Sri Lanka should increasingly focus on value added ICT products involving internet of things (IOT), artificial intelligence (AI) and big data. Further, the Sri Lankan ICT industry should focus on physical products too which make use of 3D printers, laser cutters and CNC routers. There are immense opportunities in these areas and that should be the way forward. (Echelon, July 2018).

The next section explores another promising area with great potential for the Sri Lankan economy, i.e. commercial hub operations.

Commercial Hub Operations

Sri Lanka is ideally located along the major East-West trade route. Sri Lanka's strategic location places it on 6 of the 10 largest trade routes in the world, and within reach of over 26% of the world's total container traffic (IHS Fairplay, World Trade Service, World Shipping Council). Indeed, Sri Lanka's Unique Selling Proposition (USP) is arguably its geographic location, making the country ideally suitable for commercial hub operations.

Having recognized this potential, the government of Sri Lanka enacted legislation in 2013 to create the required regulatory environment for the establishment and operation of Commercial Hub activities. The relevant legislation is as follows:

"Part (iv) of Finance Act No. 12 of 2012 as amended, and Commercial Hub Regulation No. 1 of 2013 of Gazette (Extraordinary) of the Democratic Socialist Republic of Sri Lanka - No. 1818/30 of 11 July 2013".

Any new enterprise established or incorporated in Sri Lanka is eligible to commence commercial hub operations, provided that at least 65% of its total investment should be from foreign sources including transfers from a Foreign Currency Banking Unit (FCBU) of a licensed Commercial Bank operating in Sri Lanka. Further, the total turnover of the enterprise should come from export of goods and or services.

There are five main commercial hub activities. They are as follows: entrepot trade, offshore business, front-end services, headquarters operations and logistic services. In order to be eligible to engage in these hub activities, prospective investors have to fulfill minimum investment criteria and minimum annual re-export turnover criteria which are applicable in respect of each of the activities.

Under commercial hub regulations, certain specified areas have been declared as free ports, bonded areas and specified bonded areas. Accordingly, Colombo port and Hambantota port have been declared as free ports, Katunayake EPZ and Koggala EPZ have been declared as bonded areas, and the Mattala Airport and the Mirijjawila Zone have been declared as specified bonded areas. Commercial hub activity can take place only within these specified areas. However, off-shore business, front-end services and headquarters operations may be established outside the specified areas mentioned above.

Companies engaged in the above activities are exempted from exchange control, customs, and import and export control regulations. These companies are exempted from the application of provisions of the following too: Value Added Tax Act, No. 14 of 2002; Nation Building Tax Act, No. 9 of 2009; Sri Lanka Export Development Act, No. 40 of 1979; Special Commodity Levy Act, No. 48 of 2007; Ports and Airports Development Levy Act, No.18 of 2011; Excise (Special Provisions) Act, No. 13 of 1989.

Commercial hub operations have the capability to be a game changer in relation to the Sri Lankan economy. At a time when Sri Lanka is trying very hard to boost her foreign exchange earnings, commercial hub operations present an ideal opportunity to do so.

The next section deals with another promising area, i.e. nanotechnology applications.

Harnessing nanotechnology

The establishment of the Sri Lanka Institute of Nanotechnology (SLINTEC) has opened up exciting opportunities for the country. Nanotechnology and other advanced technologies are fast growing areas of science and technology which cover the entire spectrum of sciences. They include new materials, coatings, medicine, agriculture, textiles, nutraceuticals (a pharmaceutical-grade and standardized nutrient), water, food, biotechnology and synthetic biology.

The Sri Lankan Institute of Nanotechnology (SLINTEC) was established in 2008 as a private company, with 77% of shares held by the government, to pursue Sri Lanka's National Nanotechnology Initiative (NNI) that was adopted in 2006. Initially, the private sector partners in the project were MAS Capital (Pvt) Limited, Brandix Lanka Ltd., Dialog Axiata PLC, Hayleys PLC, and Loadstar (Private) Ltd. Lankem also joined as a private sector partner subsequently. The Board of Management of SLINTEC has equal numbers of government and private sector nominees. SLINTEC is committed to support the small-and-medium enterprises to improve and develop their products to meet the demands of the local and international markets, using nanotechnology and advanced technology solutions. (Fernando 2016:53).

How can nanotechnology be harnessed to increase value addition?

The mineral industry is one of the earliest reported industries in the history of mankind. The mineral industry is one of key industries in the world which contributes significantly to the economies of many developed and developing countries even at present. Sri Lanka is endowed with naturally occurring industrial and economic mineral resources with large minable quantities. Sri Lankan beaches including Pulmoddai and Beruwala are rich in mineral sands such as rutile, ilmenite and monazite with large minable quantities. Some of the other mineral resources Sri Lanka is endowed with include graphite, apatite, feldspar, dolomite, calcite, iron bearing minerals, clay minerals and quartz, and mineral sands such as garnet, zircon and silica (SLINTEC).

However, current value-addition to Sri Lankan industrial minerals is very low and insufficient. Most of these minerals are directly exported to other countries after purification, at very low prices. Therefore, synthesis of value-added products using Sri Lankan minerals can bring immense benefits to the Sri Lankan economy. In recent years, nanotechnology has emerged as one of latest technologies playing a key role in the development of the mineral industry in terms of synthesis of value added products. Sri Lanka Institute of Nanotechnology (SLINTEC) as a leading research institution of the country has already worked with minerals including graphite, montmorillonite (MMT) clay, ilmenite, rutile, monazite, apatite, quartz, magnetite and literates.

Sri Lanka is endowed with high quality and highly pure rare vein type graphite deposits in various parts of the country. Major graphite mines are located at places including Bogala, Kahatagaha and Kolongaha with large quantities. However, synthesis of high-end products such as graphene, graphene oxide, reduced graphene oxides and carbon nanotubes using Sri Lankan graphite was a challenge due to the lack of knowledge and technology. SLINTEC has stepped in to fill this gap in knowledge and has developed technologies to synthesize high-tech products including graphene, graphene oxide, reduced graphene oxide and carbon nanotubes from Sri Lankan vein graphite, as highly valuable products. Therefore, upon establishment of industries to commercially manufacture such materials from Sri Lankan graphite, there will be immense scope to enhance the country's foreign exchange earnings while at the same time helping to reduce the current foreign exchange outflow incurred on account of importing some of those items (SLINTEC).

In addition to the above nanotechnology based value additions in relation to minerals and mineral sands, SLINTEC has also been involved in extending nanotechnology applications to several other areas too including fabric, fertilizer, plant biotechnology, advanced sensors for agricultural applications and medicine (SLINTEC).

Harnessing nexuses among entrepreneurship, innovation, education and labour productivity

Entrepreneurship and innovation

Consistent Government policies combined with effective and efficient delivery of Government services are required for entrepreneurs to thrive. What entrepreneurs require is ease of doing business so that they can set about their tasks speedily, and speed is everything in a competitive business environment.

Encouraging more innovation and entrepreneurship is also important. Investment in research and development (R&D) for 2017 in Sri Lanka was only 0.16% of GDP (dominated by public spending), which is lower than in some of the other Asian countries, such as India (0.69%), Indonesia (0.9%), Bangladesh (0.56%),Thailand (0.35%), Vietnam (0.32%) and Malaysia (1.27 %). It is important to improve public and private funding, address fragmentation of R&D institutions, improve the intellectual property rights regime and create an ecosystem with early-stage finance and incubation facilities (Sri Lanka Development Update – June, 2018, World Bank).

Innovation and R&D will have to play an increasingly important role in the context of Sri Lanka having to increase its Total Factor Productivity (TFP) at a much earlier stage in the country's development trajectory. This is due to the rapidly ageing population of Sri Lanka, and the country having to deal with ageing at a much earlier point in her development process. Therefore, the country can no longer drive growth simply through labour augmentation. That is why Sri Lanka will have to diligently work on increasing her Total Factor Productivity to drive growth. Hence, innovation and R&D will have to play a crucial role in driving Total Factor Productivity (Coomaraswamy -2018).

The next section deals with another important area of our economy and that is our education system. Needless to say, good education will directly contribute to enhance labour productivity which is a sub-component of Total Factor Productivity.

Problem based learning

Our A/L students depend on tuition rather than on schools for their education. Then why have A/L classes in our schools? Or can we do something to improve the quality of teaching in our A/L classes at schools so that more students could be encouraged to attend those classes?

Sri Lankan students from grade-1 to grade-12 are trained to focus on exams. Their main objective is to pass exams. We don't have a system of problem based learning. Our education is not oriented towards solving problems. "Learning should be very much application oriented to meet industry and workplace requirements. Testing of students should be done throughout the year and not be limited to questions given during the last month of the semester" (Wijeratne 2018).

"Sri Lankan universities have a body of knowledge, but no R&D capacity to solve problems and generate new ideas" (Sekaram 2018). There has to be a sizeable talent pool with the relevant skills to attract investors into research or tech. If not, even local businesses may move out to where there is talent (Sekaram 2018). "By opening our borders to R&D experts Sri Lanka can attract more investments into research institutes, education and healthcare as technology permeates these areas. This will raise Sri Lanka's game to a whole new level" (Sekaram 2018).

We need to encourage innovation in our schools and universities. Our students should be able to appreciate innovation, entrepreneurship and risk taking rather than seeking stable jobs in the government sector (Wijeratne 2018). In developed country universities (and in more progressive local universities) examinations are commonly held on 'open book' basis. Under such open book examinations, "teachers can devise questions that require students to answer in more critical and analytical ways, thereby encouraging high-order thinking; as compared to closed book or traditional exams that tend to encourage rote learning and more superficial application of knowledge" (A guide to academics – University of Newcastle, Australia).

Our education system should encourage us to celebrate the successes of each other, rather than trying to bring down those who are doing well. Our education system should impart to us the skill to rejoice at the other person's success, thereby leading to a happier life for everyone. (Sooriyaarachchi 2016). Do we as a nation suffer from jealousy? Are we incapable of rejoicing at the success of others? Our education system should be radically changed so that it will encourage the celebration of the successes of each other. Team work and praising each other for good work should be an integral part of our education system, and these skills should be imparted to students from their tender years.

What the private sector requires is men and women with integrity, who can think, and solve problems, and harmoniously interact with their fellow staff members. The Sri Lankan education system should be geared towards meeting that requirement (Fernando 2018).

The next section deals with another important dimension in relation to driving Sri Lanka's future development and that is making full use of Sri Lankan women by inducting them productively to the labour force.

Sri Lankan women – unlocking an asset

The female population in Sri Lanka edges the male population with 51.6% of the total population being females (as at mid-2017). The total female population was 11,062,000 and the male population was 10,382,000 as at mid-2017. Thus, the female population exceeds the male population by 680,000 (Department of Census and Statistics).

However, when considering the economically active population, women account for a mere 36.6% of the economically active population (the economically active population or the labour force is comprised of all persons who are 15 years and above, who are either "employed" or "unemployed" during the reference period). Sri Lanka's overall unemployment rate for 2017 was 4.2%. While male unemployment was 2.9%, female unemployment recorded a much higher figure of 6.5%. These numbers show the potential to augment Sri Lanka's workforce by taking steps to increase the participation of women in the labour force. Augmenting the labour force with more women will eventually help improve the economic growth of the country (Department of Census and Statistics).

Therefore, even though the country can no longer drive growth simply through labour augmentation, due to a rapidly ageing population (as explained in the section on "entrepreneurship and innovation"), there is still a window of opportunity to augment the labour force by inducting more women into it. The main reason for women to stay at home rather than being employed is the need to look after their kids. Therefore, if the Government could take steps to encourage provision of safe childcare and day care for children, it will undoubtedly help to attract more women into the labour force while also contributing to increase the productivity of female employees. The next section deals with an area related to labour productivity, which is a sub-component of Total Factor Productivity (Fernando 2018).

How serious are we about public transport?

How serious are we about public transport? Are we going to just clog our existing roads and the roads that we are going to build in the future, with cars, three-wheelers and other contraptions, and eternally complain about traffic blocks? This is why we need to radically think about improving our public transport. Good quality public transport will reduce traffic, help to reduce our energy bill, save people time, enhance labour productivity and increase the gross happiness of people, since they will be able to spend more time with their families than on the road (Fernando 2018). The next section deals with the adverse effects of short election cycles on long-term planning and strategizing.

Too many elections and short election cycles

Too many elections and short election cycles mess up long-term planning and strategizing due to governments becoming preoccupied with winning elections at any cost by engaging in activities such as offering salary hikes, jobs in the state sector for graduates passing out from state universities, and doling out cash subsidies and subsidized credit in the name of 'development'.

The costs of these activities will anyway be recouped from the public by way of new taxes/levies and increases in existing taxes/levies. Therefore, overall, there will be no net gain for the masses, or they will be left worse off than before because they will have to stomach higher rates of inflation, fuelled by populist government expenditure, in addition to being burdened by higher taxes, imposed to recoup that expenditure. Of course, higher rates of inflation triggered by populist government expenditure will reduce export competitiveness too. (Fernando 2018).

Are we a reactive or a proactive nation?

Do we as a nation opt to do something and try to sort out the resultant mess later? Or do we opt to first think out properly, strategize, and come out with a proper plan, and try to figure out how things may go wrong when implementing such a plan, and be ready with remedial and backup action to mitigate such adverse consequences that may crop up when implementing that plan?

The Japanese, we are told, debate a proposed decision thoroughly, throughout the organization, whether in business or in government institutions. Through such a process, they reach consensus. It is only after reaching consensus that they make the decision. Can we Sri Lankans learn from the Japanese? (Fernando 2018).

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