Structural economic transformation in land locked developing countries (LLDCs) of Asia

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Abstract

This paper evaluates the progress of the Asian Land-Locked Developing Countries (LLDCs) in structural economic transformation in the context of mid-term review of the 2015-2024 Vienna Programme of Action (VPOA). While these countries in general experienced premature deindustrialisation, the way in which the standard structural transformation framework is applied will require several cautious notes. Macro assessment is complemented with country case studies. Then, the paper offers an industry policy framework and suggests way forwards.

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Keywords: Diversification, Deindustrialisation, Dutch disease, Industry policy

1. Introduction

Land locked developing countries (LLDCs) face unique development challenges largely dictated by their exceptional geographical nature. This has been a concern of not only these countries, but also of the international community. Thus, the United Nations (UN) organised two international conferences to decide on the programme of action to support LLDCs' development.[1]

One of the key development challenges is structural economic transformation. This is essentially the heart of development, as has been highlighted by Chang (2015: ix), "development is ultimately about the transformation of the structure of the economy, both in terms of the diversification of the production and export baskets

[1] The Almaty Programme of Action, APOA (2004-2014) and the Vienna Programme of Action, VPOA (2014-2024). While APOA focused on transit issues to transform landlocked into "land-linked", VPOA primarily focused on structural economic transformation.

and the increase in the levels of sophistication and uniqueness of individual products."

This paper reviews progress made in structural economic transformation of LLDCs in Asia. It covers 12 countries (Afghanistan, Armenia, Azerbaijan, Bhutan, Kazakhstan, Kyrgyzstan, Lao PDR, Mongolia, Nepal, Tajikistan, Turkmenistan and Uzbekistan), out of which 4 (Afghanistan, Bhutan, Lao PDR and Nepal) are also least developed countries (LDCs).[2]

Structural transformation and diversification are seen as synonymous with development. The United Nations defines structural transformation as "a process that involves the reallocation of economic activity from low value-added and low productivity activities and sectors to those of higher value added and high productivity."[3] Structural transformation has been commonly understood as a process of shifting "share of output and the distribution of employment from low- to high-value-added economic activities" (ESCAP, 2015, p. 5). Various means of promoting structural transformation have been advocated such as 'industrialisation'; 'export diversification'; 'strengthened productive capacities' and 'changes in the structure of economies, such as in the composition of production or foreign trade'.

In operational terms, structural transformation is popularly measured as the shift of output and employment from agricultural to manufacturing. That is, during the process of structural transformation, the share of agriculture declines while the share of manufacturing increases. Then as the economy continues to progress toward maturity and advancement, the share of manufacturing should decline as in agriculture and the share of modern and high productivity services continues to rise.[4] This is a normal process of positive de-industrialisation as experienced by most of developed countries.

However, several caveats apply to this general narrative of structural transformation in the context of LLDCs and LDCs. *First*, the application of a general framework of structural transformation has to be country specific, especially for geographically unique LLDCs. For example, in Mongolia, a resource rich LLDC of only 3 million people covering a very large geographical area, the push for industrial development might not be an immediate need, given its productive capacity, manpower and market access (domestic and international). With its characteristics, Mongolia might need to concentrate more on capitalising enhanced value added and benefit from its primary sector, while investing in domestic capacity for the development of higher value added secondary sectors in the future.

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[2] LDCs are also covered by separate internationally agreed programme of action, currently Istanbul Programme of Action, IPOA (2010-2020).

[3] http://unohrlls.org/custom-content/uploads/2016/04/Ms.-Hertova-Structural-Economic-Transformation.pdf

[4] See Chenery (1960), Chenery and Syrquin (1975),
Kuznets (1966, 1971).

Second, the discussion should consider the fact that most of the Asian LLDCs are transition economies. Almost all of them experienced steep declines in output and sharp rises in unemployment and poverty during the early phase of their transition. Most of them also took significantly long years to recover to the pre-transition period GDP. While Azerbaijan and Armenia are locked into territorial conflict since their independence, Afghanistan went through a long period of conflict, followed by an extreme theocratic regime and war. Nepal, too, experienced political instability following the assassination of its king and subsequent removal of monarchy. These experiences have important bearings on the nature and speed of subsequent structural transformation.

Third, almost all of these countries are resource-rich and benefited from the commodity price boom of the early 2000s, until about 2008-2009 global financial crisis (GFC). This, too, has impacted on their growth and structural transformation experience. For example, together with high growth rates, they witnessed sharp real appreciation which adversely affected their tradable sectors. In short, their experience can be described as a classic case of "Dutch disease".

Fourth, in contrast to the historical trend observed in the present day developed countries, almost all Asian and European LLDCs are experiencing negative or pre-mature deindustrialisation, where the decline in the role of manufacturing is not due to natural advancement to high productivity service sector, but due to the decline in manufacturing competitiveness. This may be a consequences of several factors, such as neo-liberal policies pursued since the early 1990s and unfavourable conditions arising from the 2000s resource boom.[5]

Rowthorn and Wells (1987) developed a distinction between positive and negative deindustrialisation. Positive deindustrialisation is:

> "regarded as … the normal result of sustained economic growth in a fully employed, and already highly developed, economy. It occurs because productivity growth in the manufacturing sector is so rapid that, despite increasing output, employment in this sector is reduced, either absolutely or as a share of total employment. However, this does not lead to unemployment, because new jobs are created in the service sector on a scale sufficient to absorb any workers displaced from manufacturing. Paradoxically, this kind of de-industrialisation is a symptom of economic success." (Rowthorn and Wells 1987, p. 5).

On the other hand, negative deindustrialisation is "a product of economic failure and occurs when industry is in severe difficulties … labour shed from the manufacturing sector—because of falling output or rising productivity—will not be reabsorbed into the service sector. Unemployment will therefore rise" (Rowthorn and Wells 1987, p. 5).

[5] See Rodrik (2015), Rowthorn and Wells (1987) and Rowthorn and Ramaswamy (1997).

In advanced economies, the peak of manufacturing sector's contributions to GDP – achieved in the 1960s – was around 36 per cent in Japan, 32 per cent in European Union and 30 per cent in industrial countries (Rowthorn and Ramaswamy 1997), before declining. But, in Central Asian LLDCs, the share of manufacturing in GDP began falling much earlier – even before reaching around 20 per cent.

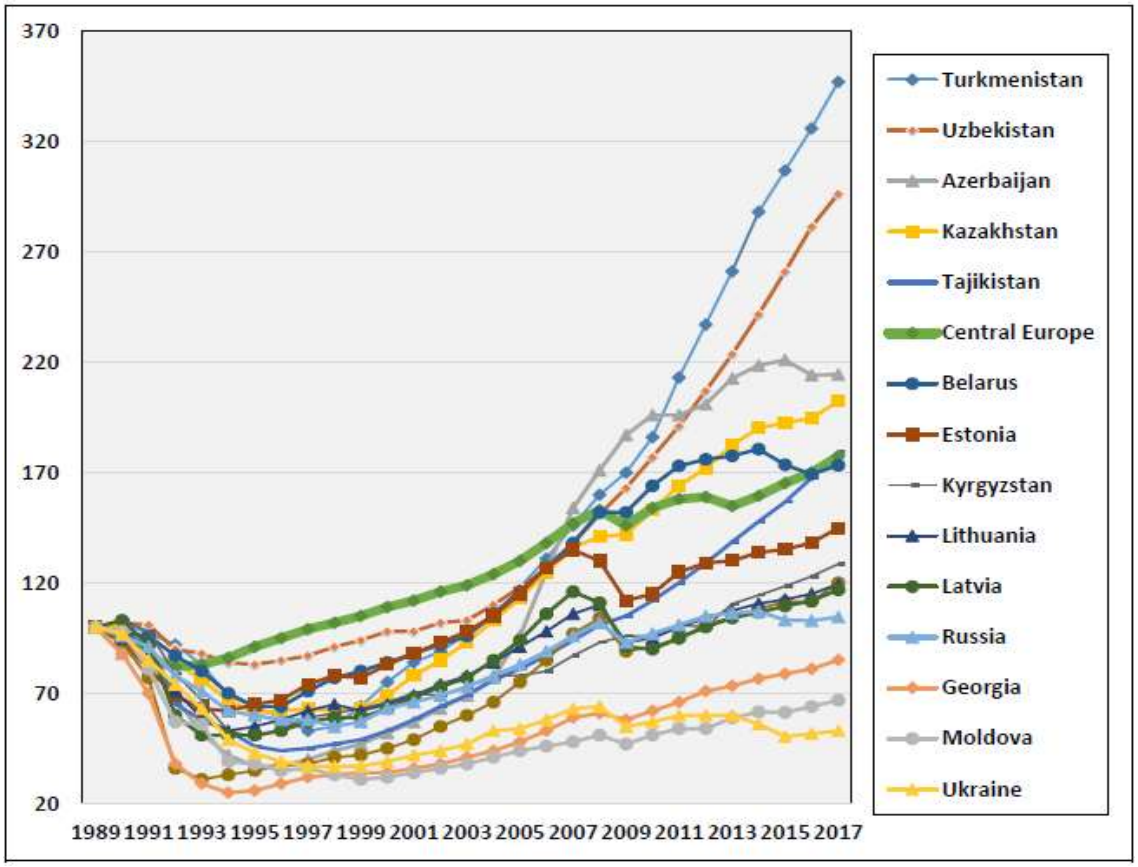
The rest of the paper proceeds as follows. Section 2 takes stock of the development progress of the LLDCs. Section 3 assesses the state of structural transformation in these countries. Section 4 suggests policy frameworks for domestic policies for fostering economic transformation. The last section concludes and offers several suggestions.

2. Development progress of LLDCs

This section begins with brief reflections on the transition experience of Central Asian LLDCs. As can be seen from Figure 1, there have been sharped declines in their GDP. While Uzbekistan's GDP recovered to the pre-transition level by the late 1990s, most took more than 10 years and Moldova's GDP still below the pre-transition period.

In retrospect, it is obvious that rapid economic liberalisation did not pay off: many gradual reformers from the former Soviet Union in this region performed better than the champions of "big bang" liberalisation – Baltic States and Central Europe. In Turkmenistan and Uzbekistan, for instance, privatisation was rather slow – over 50 per cent of their GDP is still produced at state enterprises, but their performance is superior to that of more liberalised economies. Resource abundance definitely helped resource exporters, such as Azerbaijan, Kazakhstan and Turkmenistan, to maintain higher incomes, when resource prices were high, but was not a *sine qua non* for growth – resource poor Tajikistan, as well as self-sufficient in fuel and energy Uzbekistan did much better than resource rich economies.

Figure 1: GDP change in economies of the Central Asian LLDCs, 1989 = 100%



Source: Popov (2018).
Note: Central Europe is the unweighted average for Czech Republic, Hungary, Poland, Slovakia and Slovenia.

Table 1 shows that economic growth trend in general has been slowing down since 2000. The most dramatic decline happened in Azerbaijan – from an average of 15.3 per cent in 2000-2010 to –0.6 per cent in 2015-2017. Armenia, Kazakhstan, Afghanistan and Mongolia also experienced significant declines in their GDP growth rates. Others, although did not record very high growth rates, were more stable; nevertheless, are also slowing. Despite the generally slowing trend, Bhutan recorded a growth recovery of an average of 7.1 per cent in 2015-17, increased from an average of 5.2 per cent in 2010-14.

Table 1: GDP growth, Per-capita GDP and Population

	Annual GDP growth (% average)			GDP per capita, PPP (current international $)	Population (000)
Country Name	2001-10	2011-14	2015-17	2017	2017
Central Asia					
Armenia	8.3	4.7	3.6	9,647	2,930
Azerbaijan	15.3	2.5	-0.6	17,398	9,828
Kazakhstan	8.3	5.6	2.1	26,410	18,204
Kyrgyz Republic	4.2	5.2	4.3	3,726	6,045
Mongolia	6.5	12.3	3.2	13,000	3,076
Tajikistan	8.2	7.2	6.7	3,180	8,921
Turkmenistan	7.8	11.6	6.4	17,993	5,758
Uzbekistan	7.0	8.1	7.0	6,865	31,911
Average	*8.2*	*7.2*	*4.1*		
South and Southeast Asia					
Afghanistan	9.1	6.8	2.1	1,981	35,530
Bhutan	8.8	5.2	7.1	9,561	808
Lao PDR	7.1	7.9	7.1	7,023	6,858
Nepal	3.9	4.6	3.7	2,682	29,305
Average	*7.2*	*6.1*	*5.0*		

Source: World Bank, World Development Indicators (various issues)

Table 2 summarises export performance of Asian LLDCs. It shows declining relative size of export (% GDP) in most of former Soviet Republics. There has been a significant expansion of export in Mongolia due to resource boom. According to the UN Comtrade dataset for years 2011--2015, the commodity exports (mineral fuels, lubricants and related materials, non-ferrous metals and nonmonetary gold) of the Mongolian economy account for around 96 per cent of its total exports, which is about 39 per cent of its total GDP during these years. Mongolia's top exports are: mineral fuels including oil: US$2.6 billion (42.4% of total exports), ores, slag, ash: $2.2 billion (35.3%); gems, precious metals: $662 million (10.8%).

Table 2: Global trade – export as % GDP

Country Name	1990	1995	2000	2005	2010	2014	2015	2016	2017
Central Asia									
Armenia	35.0	23.9	23.4	28.8	20.8	28.6	29.7	33.1	38.1
Azerbaijan	43.9	27.9	39.0	62.9	54.3	43.3	37.8	46.4	48.7
Kazakhstan		39.0	56.6	53.2	44.2	39.3	28.5	31.8	
Kyrgyz Republic	29.2	29.5	41.8	38.3	51.6	37.4	35.2	35.8	35.4
Mongolia	18.3	40.5	54.0	58.8	46.7	52.2	45.6	50.2	59.5
Tajikistan	27.8	65.6	98.8	27.0	14.9	9.1	10.5	13.3	15.7
Turkmenistan		84.0	95.5	65.0	76.3				
Uzbekistan	28.8	36.7	24.6	37.9	31.7	23.1	19.5	18.9	28.5
South and Southeast Asia									
Afghanistan				27.4	10.0	6.6	7.0	6.9	
Bhutan	26.8	37.8	29.4	38.2	42.5	36.3	33.2	29.7	26.0
Lao PDR	11.3	23.2	30.7	29.0	35.4	40.8	34.0	33.2	34.3
Nepal	10.5	25.0	23.3	14.6	9.6	11.5	11.6	9.5	9.8

Source: World Bank, World Development Indicators (various issues)

3. **Structural economic transformation**

This section takes stock of progress made by the Asian LLDCs in structural economic transformation – the extent these economies have diversified from primary commodity sectors. The discussion covers sectoral production and employment shares and the deepening of manufacturing. As mentioned earlier, one particular concern is premature deindustrialisation, observed in many middle-income Asian LLDCs.

Table 3 (a, b and c) presents **trends in GDP shares** of the primary (agriculture, forestry & fishing), secondary (manufacturing) and services sectors since 1990. The key points can be summarised as follows:

- General decline in the role of the primary sector in the economy since 1990. In most countries, the decline is very dramatic, such as in Azerbaijan (from 27% to 6%) and Turkmenistan (from 33% to 9%).

- The above trend of declining role of primary commodity has not been followed by a more important role of the more modern, productive and dynamic manufacturing sector.

    - In the former Soviet Republics, a process of dramatic deindustrialisation has taken placed since 1990. This means that the two main tradable sectors (agriculture and manufacturing) have shrunk very significantly, replaced

by the mining sector and largely non-tradable activities (construction and services).

- Other LLDCs in Asia showed a proses of industrialisation till 2014, but data in the later years indicate a process of pre-mature deindustrialisation.

Table 3: sectoral shifts in GDP

(a) Agriculture, forestry, and fishing, value added (% of GDP)							
(Primary sector)							
Country Name	1990	1995	2005	2014	2015	2016	2017
Central Asia							
Armenia	16.0	40.7	19.1	18.1	17.2	16.4	14.9
Azerbaijan	26.5	25.2	9.1	5.3	6.2	5.6	5.6
Kazakhstan		12.3	6.4	4.3	4.7	4.6	4.4
Kyrgyz Republic	32.7	40.7	28.5	14.7	14.1	12.8	12.3
Mongolia	12.5	32.5	19.8	13.3	13.4	11.7	10.4
Tajikistan	33.3	36.7	21.2	23.4	21.9	20.4	
Turkmenistan	33.3	16.2	18.5	8.3	9.3		
Uzbekistan	33.1	28.0	25.0	17.1	16.6	16.1	17.3
South and Southeast Asia							
Afghanistan			30.8	22.0	20.5	21.0	
Bhutan	34.4	30.8	22.3	16.8	16.7	16.5	15.2
Lao PDR	46.5	42.2	28.3	17.8	17.6	17.2	16.2
Nepal	48.8	39.0	33.8	30.3	29.4	29.2	27.0

(b) Manufacturing, value added (% of GDP)							
Country Name	1990	1995	2005	2014	2015	2016	2017
Central Asia							
Armenia	30.2	24.3	13.5	9.7	9.2	10.3	10.2
Azerbaijan	17.6	11.5	6.5	4.7	5.0	4.9	4.7
Kazakhstan		14.6	12.0	10.3	10.3	11.3	11.2
Kyrgyz Republic	26.4	8.6	12.9	13.7	14.1	15.4	15.1
Mongolia	20.4	17.3	5.8	8.8	7.6	7.3	8.3
Tajikistan	24.8	26.8		7.6	8.7	9.7	
Turkmenistan		38.2	20.5 (2004)				
Uzbekistan							
South and Southeast Asia							
Afghanistan			16.4	11.4	11.4	11.3	
Bhutan	7.7	10.3	7.1	8.1	8.0	7.5	7.1
Lao PDR	4.2	6.0	9.6	8.4	8.2	7.8	7.5
Nepal	5.8	8.9	7.6	5.8	5.6	5.3	5.2

(c) Services, value added (% of GDP)							
Country Name	1990	1995	2005	2014	2015	2016	2017
Central Asia							
Armenia				47.4	48.2	49.9	51.3
Azerbaijan	34.0	37.9	25.1	33.6	40.0	38.7	37.5
Kazakhstan		54.0	52.0	54.8	59.3	57.9	57.4
Kyrgyz Republic	30.6	35.6	42.4	50.6	52.1	50.1	50.4
Mongolia	43.3	29.3	37.5	45.8	47.5	46.1	42.3
Tajikistan	29.1	21.2	40.6	40.6	42.5	42.2	
Turkmenistan	36.7	19.1	42.9				
Uzbekistan	34.6	34.7	37.0	44.3	44.5	43.4	39.8
South and Southeast Asia							
Afghanistan			39.0	53.0	53.2	52.8	52.7
Bhutan	38.9	32.9	38.1	37.2	37.6	37.4	37.2
Lao PDR	40.2	40.9	43.4	44.2	44.2	42.5	41.5
Nepal	30.4	33.2	45.8	48.7	49.5	50.0	51.6

Source: World Bank, World Development Indicators (various issues)

On the other hand, there have not been commensurate declines in agriculture's employment shares in almost all countries, except in Kazakhstan, where it declined from around 32 per cent in 2005 to 18 per cent in 2017 (Table 4). In Loa PDR, Nepal, Afghanistan and Bhutan respectively around 78 per cent, 72 per

cent, 61 per cent and 56 per cent of the labour force still works in low productivity agriculture, implying large scale rural property.

Table 4: Sectoral employment

	Agriculture				Industry				Services			
Country Name	1995	2005	2014	2018	1995	2005	2014	2018	1995	2005	2014	2018
Central Asia												
Armenia	51.7	40.6	34.8	33.2	18.1	17.7	16.7	16.3	30.3	41.7	48.4	50.4
Azerbaijan	44.9	40.5	36.8	37.5	10.7	12.6	14.3	13.9	44.4	46.9	48.9	48.7
Kazakhstan	39.7	32.4	20.1	17.7	15.6	18.0	20.5	20.8	44.7	49.6	59.4	61.5
Kyrgyz Republic	54.0	38.5	31.6	26.1	10.9	17.6	20.4	22.4	35.1	43.9	48.0	51.5
Mongolia	54.6	45.7	28.0	29.8	13.8	11.9	20.7	19.2	31.6	42.5	51.3	51.0
Tajikistan	60.9	56.7	53.7	51.2	17.6	16.2	14.9	16.5	21.5	27.1	31.4	32.3
Turkmenistan	19.3	19.1	9.4	7.9	49.6	36.6	44.9	44.8	31.1	44.2	45.7	47.2
Uzbekistan	37.5	34.7	23.9	21.4	33.7	32.2	37.6	37.7	28.8	33.1	38.5	40.9
South and Southeast Asia												
Afghanistan	78.7	71.8	61.6	62.0	4.1	6.6	6.5	6.8	17.2	21.7	31.9	31.3
Bhutan	83.1	70.3	56.7	55.6	2.1	4.8	10.8	9.7	14.8	24.9	32.5	34.7
Lao PDR	85.4	78.5	64.3	59.9	3.5	5.3	9.4	9.8	11.1	16.2	26.3	30.3
Nepal	81.1	76.0	72.8	71.3	4.7	4.7	7.9	8.2	14.2	19.3	19.3	20.5

Source: World Bank, World Development Indicators (various issues)

Notes: The agriculture sector consists of activities in agriculture, hunting, forestry and fishing. The industry sector consists of mining and quarrying, manufacturing, construction, and public utilities (electricity, gas, and water). The services sector consists of wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services.

Table 5 presents indicators showing **manufacturing's deepening**, which refers to the extent of advancement within the manufacturing sector. This indicates to what extent the manufacturing sector has transformed itself from a lower level, more traditional and simpler manufacturing activities and resulted products to a higher level, more modern and more sophisticated ones. Despite the deindustrialisation trend, data on the share of medium and high technology manufacturing value added (MVA) in the total of MVA is probably the best proxy to see the extent of advancement within the manufacturing sector over time. This indicator reflects progress related to technological content within the manufacturing sector. The key observations of mixed performance can be summarised as follows:

- During 2010 and 2015, countries show both progress and stagnation on this. The share of high and medium tech MVA in total manufacturing increased considerably in Azerbaijan, Kazakhstan and Mongolia.

- The changes in the shares of medium and high technology MVA in the total MVA are not consistently reflected in the share of medium and high technology MVA export in the total MVA export.

- During 2010 and 2015, the shares of MVA export in total exports either declined or remained stagnant. On this, a few countries are worth highlighting: Armenia, Mongolia and Nepal show the dominance (around 60-70 per cent) of manufacturing exports in their total export. This is particularly worth noting that the size of export (relative to GDP) is relatively large (around 40%) in small countries of Armenia and Mongolia. This simply points to the importance of export market due to small size of domestic market (with population of around 3-4 million).

Table 5: Deepening of manufacturing

	Medium-high tech MVA share in total MANUF (%)		Medium-high tech Manuf export share in total MANUF export (%)		MANUF export share in total export (%)	
	2010	2015	2010	2015	2010	2015
Central Asia						
Armenia	5.0	3.7	24.8	10.4	69.2	70.2
Azerbaijan	10.1	13.7	17.2	16.5	10.5	13.9
Kazakhstan	12.8	16.6	37.2	41.5	22.7	24.4
Kyrgyz Republic	3.5	4.1	20.0	42.3	25.5	34.6
Mongolia	2.1	6.7	1.9	0.3	62.9	59.9
Tajikistan	3.7	2.5	66.3	66.3	13.8	13.8
Turkmenistan						
Uzbekistan						
South and Southeast Asia						
Afghanistan	9.5	9.5	-	0.1	19.6	16.5
Bhutan						
Lao PDR						
Nepal	8.5	8.6	20.1	17.9	76.7	76.9

Source: UNIDO – IDR 2018

Table 6: Inflow of Foreign Direct Investment (FDI) as % GDP

Country Name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Central Asia																		
Armenia	5.5	3.3	4.7	4.4	6.9	6.0	7.3	7.3	8.1	8.8	5.7	6.4	4.7	3.1	3.5	1.7	3.2	2.2
Azerbaijan	2.5	14.4	32.5	55.1	54.4	33.8	21.4	13.9	8.2	6.5	6.3	6.8	7.6	3.5	5.9	7.6	11.9	7.0
Kazakhstan	7.5	12.7	10.5	8.1	13.0	4.5	9.4	11.4	12.6	12.4	5.0	7.1	6.6	4.2	3.3	3.5	12.2	2.8
Kyrgyz Republic	-0.2	0.3	0.3	2.4	7.9	1.7	6.4	5.5	7.3	4.0	9.9	11.1	4.0	8.3	4.6	17.1	9.1	-1.4
Mongolia	4.7	3.4	5.6	8.2	4.7	7.4	7.2	8.8	15.0	13.6	23.5	43.9	34.8	16.4	2.8	0.8	-37.2	13.0
Tajikistan	2.7	0.9	3.0	2.0	13.1	2.4	12.0	9.7	7.3	0.3	1.4	2.5	3.1	1.5	3.3	5.4	3.5	2.8
Turkmenistan	4.5	4.8	6.2	3.8	5.2	5.2	7.1	6.8	6.6	22.5	16.1	11.6	8.9	7.3	8.8	8.5	6.2	5.5
Uzbekistan	0.5	0.7	0.7	0.8	1.5	1.3	1.0	3.2	2.4	2.5	4.2	3.6	1.1	1.1	1.2	0.1	0.2	0.2
South and Southeast Asia																		
Afghanistan		0.0	1.2	1.3	3.5	4.3	3.4	1.9	0.4	0.4	1.2	0.3	0.3	0.2	0.2	0.9	0.5	0.3
Bhutan			0.5	0.5	1.3	0.8	0.7	6.2	0.2	1.4	4.7	1.7	1.3	1.1	1.2	0.3	0.5	-0.7
Lao PDR	2.0	1.4	0.3	1.0	0.7	1.0	5.4	7.7	4.2	5.5	3.9	3.4	2.9	3.6	6.9	9.9	6.3	4.8
Nepal	-0.0	0.3	-0.1	0.2	-0.0	0.0	-0.1	0.1	0.0	0.3	0.5	0.5	0.5	0.4	0.2	0.2	0.5	0.8

Source: World Bank, World Development Indicators (various issues)

The extent a country is able to attract the inflow of foreign direct investment (FDI) can indicate its **economic dynamism and competitiveness**. Table 6 shows the most recent trends of net FDI inflows in the Asian LLDCs. Several countries with a dominant resource sector (mining) show their attractiveness for FDI, such as Azerbaijan, Kazakhstan and Mongolia. For example, the inflow of FDI jumped significantly in Kazakhstan reaching the figure of 55 per cent of GDP during the resource boom of the early 2000s. This, however, cannot be simply interpreted as signs of dynamism and competitiveness as the flow is due to their natural resource endowments rather than created economic attractiveness resulting from human resource capabilities, technical capacity upgrading, institutional strengths, etc.

Table 7: Research and Development (R & D) expenditure as % of GDP

Country Name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Central Asia																
Armenia	0.19	0.28	0.25	0.32	0.26	0.26	0.24	0.21	0.22	0.29	0.24	0.27	0.24	0.22	0.24	0.25
Azerbaijan	0.34	0.34	0.30	0.32	0.30	0.22	0.17	0.17	0.17	0.25	0.22	0.21	0.22	0.21	0.21	0.22
Kazakhstan	0.18	0.22	0.25	0.25	0.25	0.28	0.24	0.21	0.22	0.23	0.15	0.15	0.17	0.17	0.17	0.17
Kyrgyz Republic	0.16	0.17	0.20	0.22	0.20	0.20	0.23	0.23	0.19	0.16	0.16	0.16	0.17	0.15	0.13	0.12
Mongolia	0.19	0.27	0.25	0.25	0.27	0.24	0.19	0.24	0.34	0.30	0.24	0.23	0.24	0.23	0.22	0.16
Tajikistan		0.09	0.07	0.07	0.07	0.10	0.11	0.07	0.07	0.09	0.09	0.12	0.11	0.12	0.11	0.11
Turkmenistan																
Uzbekistan	0.36	0.35	0.29	0.27	0.27	0.24	0.22	0.22	0.19	0.20	0.20	0.19	0.20	0.20	0.20	0.21
South and Southeast Asia																
Afghanistan																
Bhutan																
Lao PDR			0.04													
Nepal									0.05	0.26	0.30					

Source: World Bank, World Development Indicators (various issues)

As efficiency and competitiveness of an economy is a product of continued efforts and struggle, facilitated by developmental macroeconomic and pro-active sectoral policies, it is essentially a long-term process requiring certain investment in key priority areas. In other words, efficiency and competitiveness are determined largely a process from within. In this regard, one needs to look for other indicators, and on this, investment in research and development (R&D) is very crucial. Table 7 shows most recent trends of R&D expenditure. In general, R&D expenditures in the Asian LLDCs are low and hardly shows increasing trends, which is not supportive for innovations required for facilitating economic transformation through knowledge acquisition and innovation. As a comparison, China and India spend more on R&D, around 2 per cent and 0.6 per cent respectively. An important point to note is that resource rich LLDCs experiencing resource boom do not show higher spending on investment in research and development indicating that the resource windfall has not been invested domestically to improve internal capacity for future structural transformation.

Table 8: Broadband and mobile cellular subscriptions

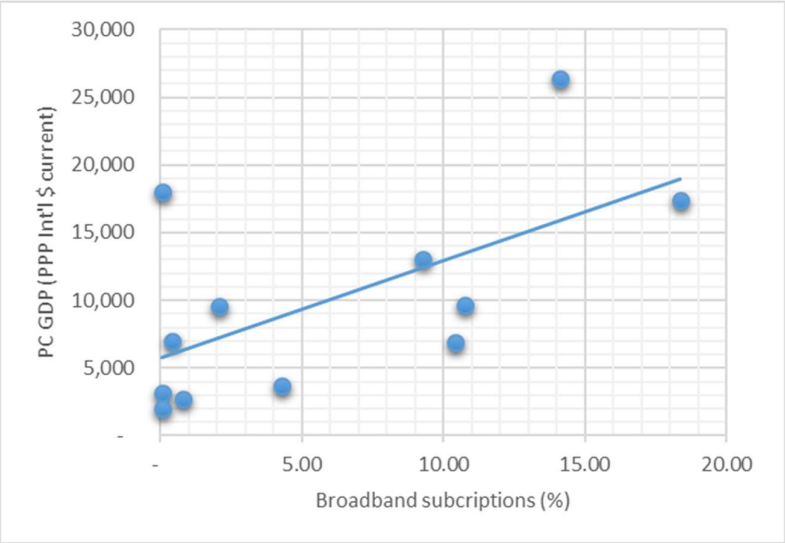
(a) Fixed broadband subscriptions (per 100 people)						
Country Name	2005	2010	2014	2015	2016	2017
Central Asia						
Armenia	0.07	3.25	9.39	9.82	10.23	10.76
Azerbaijan	0.03	5.26	19.97	19.75	18.55	18.37
Kazakhstan	0.07	2.83	6.75	6.99	7.47	9.27
Kyrgyz Republic	0.02	5.30	12.28	12.96	13.06	14.14
Mongolia	0.05	0.43	2.96	3.61	4.04	4.27
Tajikistan		0.06	0.07	0.07	0.07	
Turkmenistan		0.01	0.04	0.05	0.07	
Uzbekistan	0.03	0.41	2.69	5.77	8.73	10.40
South and Southeast Asia						
Afghanistan	0.00	0.01	0.00	0.02	0.03	0.05
Bhutan		1.19	3.22	3.54	2.07	2.07
Lao PDR	0.01	0.09	0.17	0.18	0.36	0.40
Nepal		0.22	0.88	1.06	0.77	

(b) Mobile cellular subscriptions (per 100 people)							
Country Name	2000	2005	2010	2014	2015	2016	2017
Central Asia							
Armenia	0.6	10.7	134.3	119.0	118.8	117.4	119.0
Azerbaijan	5.2	26.3	100.7	111.0	111.2	104.8	103.0
Kazakhstan	6.4	22.1	92.5	103.5	103.1	111.2	126.4
Kyrgyz Republic	1.3	34.7	118.3	163.5	148.2	142.0	145.4
Mongolia	0.2	10.7	97.3	131.0	129.2	127.8	121.9
Tajikistan	0.0	3.9	77.7	95.7	99.3	107.6	
Turkmenistan	0.2	2.2	62.9	131.8	140.9	151.4	
Uzbekistan	0.2	2.7	73.2	70.9	70.3	74.0	76.0
South and Southeast Asia							
Afghanistan	-	4.8	35.5	56.2	58.4	62.3	67.4
Bhutan	-	5.5	54.2	80.4	85.8	87.5	90.5
Lao PDR	0.2	11.4	64.1	70.2	55.9	58.6	54.1
Nepal	0.0	0.9	34.0	81.3	96.0	110.8	123.2

Source: World Bank, World Development Indicators (various issues)

On efficiency and competitiveness of an economy, another factor to consider is information and communication technology (ICT) penetration. One way to gauge the extent of the penetration is to look at the internet broadband and cellular phones coverage. It has to be noted that, fixed broadband subscription is better in representing access to ICT rather than mobile cellular subscription which is, in most cases, more of a response to poor fixed-line telephone infrastructures. Data presented in Table 8 show that the fixed broad band penetration vary significantly. ICT infrastructure represented by fixed broadband subscriptions in the society basically represents development progress as it is positively correlated with per capita GDP (see Figure 2).

Figure 2: Broadband subscription and per capita GDP (Asian LLDCs, 2017)



Source: World Bank, World Development Indicators

Economic dynamism is a key to the process of structural transformation. In this regard, the role of the private sector is very important and few key indicators are worth looking at. As previously presented, net FDI inflows and exports are good measures of economic dynamism, where the private sector plays key roles, facilitated by the state policies. As previously highlighted, however, both measures (FDI and exports) are primarily driven by the resource sector rather than economic attractiveness driven by human resource or technological advancement. Therefore, these measures of economic dynamism have to be treated with cautions.

Table 9: Domestic credit to private sector (% of GDP)

Country Name	1995	2005	2010	2014	2015	2016	2017
Armenia	7.3	8.0	28.4	48.9	45.6	48.9	51.5
Azerbaijan	1.2	9.5	17.9	30.6	38.5	26.6	16.4
Macedonia, FYR	23.1	23.3	44.2	49.4	51.1	48.1	49.4
Moldova	6.7	23.6	35.4	37.0	34.6	30.3	23.4
Kazakhstan	7.1	35.7	39.3	33.5	37.7	33.0	30.5
Kyrgyz Republic	12.5	7.9	13.6	20.1	22.6	20.0	21.8
Tajikistan		9.1	14.2	21.5	22.7	19.2	13.7
Turkmenistan							
Uzbekistan							
Afghanistan		4.8	11.5	3.9	4.0	3.6	3.5
Bhutan	7.6	18.1	41.5	43.8	45.2	47.0	
Lao PDR	9.1	7.4	20.9				
Mongolia	8.0	27.6	34.2	59.3	53.9	56.9	52.9
Nepal	22.8	28.7	54.6	61.9	64.7	81.1	81.2

Source: World Bank, World Development Indicators (various issues)

A key policy variable impacting on the expansion of the private sector is the relative size of domestic credit allocated to the private sector as presented in Table 9. In general, between 1995 and 2010, there were significant increases in the relative size of domestic credit allocated to the private sector, with the exception of Kyrgyzstan and Tajikistan. These increases are likely due to two inter-related factors: (i) the transition to market economy and (ii) the expansion of domestic financial/banking system.

Recent data, however, show contrasting trends. Domestic credit to the private sector has either shrank or stagnated in most of former Soviet Republic LLDCs. Dramatic declines are found in Azerbaijan and Tajikistan. The sharp declines in domestic credit have also been experienced in Afghanistan from a very small base of only 11 per cent in 2010 to 3.5 per cent in 2017. On the other hand, expansions of domestic credit to private sector are recorded in Nepal and Mongolia. While the figure in Nepal is truly exceptional in indicating private sector dynamism, the situation in Mongolia is likely related to the resource boom phenomena.

Highlights on structural economic transformation in several Asian LLDCs are presented below to provide some country specific assessments.

3.1 Contrasting tales of structural transformation in Azerbaijan and Uzbekistan[6]

Azerbaijan failed in achieving structural transformation. Despite significant liberalisation reforms, such as privatisation of state owned enterprises (SOEs) and de-collectivisation of agriculture, there has been very limited non-oil industrial development and diversification in Azerbaijan. While the GDP share of mining and quarrying declined from the peak of 57% at the height of the oil & gas boom in 2007, it was around 29% in 2015; but employs less than 1% of the workforce. Agriculture's GDP share declined to around 7%; yet it still employs close to 40% of the workforce, implying substantial low productivity and underemployment in the rural economy. The decline in agriculture's share was not matched by the increase in manufacturing's share as it should have been in an ideal case. Instead, Azerbaijan de-industrialised, and manufacturing's GDP share declined from 15.5% in 1995 to 5.8% in 2015, employing only around 5% of the workforce.

Furthermore, industrial activities are mainly Baku-centric with little or no linkages with Azerbaijan's rural or regional economies. As a matter of fact, Azerbaijan's economic structure is hollow with very little backward and forward linkages among economic activities.

Deindustrialisation and declines of the rural economy meant that Azerbaijan failed to integrate well with the fast growing regional economies of Central Asia and Eurasia. Close to 60% of its exports in 2015 went to only 5 countries – Italy (21.3%), Germany (10.9%), Spain (9.6%), Indonesia (9.4%) and Greece (6.8%). This is a disappointing outcome given the fact that Azerbaijan was most industrialised among the Central Asian former Soviet Republics, and had extensive economic relations with them.

Azerbaijan's experience is a classic case of 'resource curse' as large inflows of foreign exchange from resource boom caused real exchange rate appreciation disadvantaging tradable sectors such as manufacturing and agriculture. Furthermore, it also shows what can go wrong when liberalisation and privatisation reforms are implemented believing that they can apply to all countries in all circumstances.

Uzbekistan has been the best performing transition economy among the fifteen former Soviet Republics. It was the first country to recover its pre-transition GDP level. By 2001, its GDP was 3% above the level 1989 level. Uzbekistan is the only country in the post-Soviet space that succeeded in increasing the share of industry in GDP and also was able to upgrade its structure of industrial output; the share of machinery, equipment and chemicals increased at the expense of light industry. Thus, the share of machinery and equipment in total export increased from 2% to 7% and the share of chemical products from 6% to 9%, while the share of cotton in export fell from 65% in 1992 to only 9% in 2012.

[6] The case of Azerbaijan draws on Chowdhury (2018), while the case of Uzbekistan draws on Popov and Chowdhury (2016).

Uzbekistan created a competitive export-oriented auto industry from the ground up. Car production was supported by the government and the Korean auto company Daewoo. After Daewoo declared bankruptcy, US General Motors became the government's partner. The government also bought a stake in Turkey's Koc in SamKochAvto, a producer of small buses and lorries. Afterwards, it signed an agreement with Isuzu Motors of Japan to produce Isuzu buses and lorries. In 2014 Uzbekistan produced 250,000 cars and nearly a quarter were exported. In 2011 a joint venture of State Auto Company and General Motors, the engine plant in Tashkent, became operational with a capacity of 360,000 engines a year.

The diversification in industry and the expansion of manufacturing exports were mostly the result of protectionism and of the policy of low exchange rate by the government / central bank. Similar to China, Uzbekistan maintained a low (undervalued) exchange rate due to rapid accumulation of foreign exchange reserves. In addition, there were non-negligible tax measures to stimulate the export of processed goods (50% lower tax rates for manufacturing companies that export 30% and more of their output). National statistics suggests that the share of non-resource goods in exports increased to over 70% against less than 30% in 1990, before independence.

Diversification in agriculture was carried out mostly via state orders: less for cotton, more for cereals. Thus, the production of cotton decreased by 50% as compared to the late 1980s, and the output of cereals and vegetables increased several folds.

In 2011, it became the 15th country in the world to launch a high speed train line (between Tashkent and Samarkand). The fast speed railway was extended to Bukhara and Karshi in August 2015. Now it runs a distance of 511 km in 3 hours; the train is made by the Spanish Talgo.

Uzbekistan's successful recovery and structural transformation have been pro-poor and inclusive. Unlike other former Soviet Republics, including Russia, it did not experience a decline in life-expectancy. On the contrary, the infant mortality rate (per 1,000 live births) declined from 34.6 in 1990 to 10.6 in 2012 and the maternal mortality rate (per 100,000 live births) fell from 65.3 to 21.4 during the same period. As a result, life expectancy steadily rose close to 73 years by 2012. Uzbekistan's poverty rate declined from 44% in the early 1990s to about 15% in 2012 as its per capita income nearly doubled between 2000 and 2012.

Uzbekistan was also able to reverse rising inequality. According to the World Bank estimates, Uzbekistan's Gini coefficient, a standard measure of inequality, for 2002-03 is 0. 35-0.36. In the more liberalised economies of Russia, Lithuania, Georgia and Kyrgyzstan, Gini coefficients range between 0.38 and 0.45.

Uzbekistan's achievements are really impressive considering the fact it is one of only two double landlocked countries (completely surrounded by other landlocked countries). It achieved these results by going against the trend. It chose not to follow strict austerity policies, characterised by cuts in social expenditure. Instead, it expanded social support schemes to protect living standards, particularly of poor and elderly. It also did not go for rapid liberalisation, deregulation and privatisation. Instead it continued supporting productive activities through public infrastructure investment, cheaper credit to priority sectors and guaranteed price for producing state-determined quota of food and other agriculture crops.

3.2. Limited structural transformation in Lao PDR[7]

Lao PDR's economy lacks the structural economic transformation and diversification. The major part of recent GDP growth has stemmed from low-productivity agriculture and the capital-intensive natural resources sector. Although the share of agriculture in GDP declined from 31% in 2004 to 18% in 2014, then to 16% in 2017, its share in employment did not decline commensurately, still accounting for over 60% in 2017 of the economy's total working hours. The fast-growing mining, electricity and gas sector accounts for only 1% of total working hours. The manufacturing sector's share in total working hours stagnated at 8% during 2008-2013 and only reaching close to 10% in 2017. Thus, Lao PDR's growth has not been inclusive and broad based.[8]

Lao PDR's export structure is also narrow. Roughly 80% of Lao PDR's exports are primary products, and labour-intensive clothing and footwear manufacturing accounts for only 13% of total exports. Three countries—Thailand, China and Vietnam—absorb close to 70% of Lao PDR's exports.

Backward and forward linkages in Lao PDR's manufacturing sector are weak. About 51% of manufacturing value added generated within the country is composed of inputs from the primary sector—not from manufacturing itself, or the agriculture or services sectors. Domestic value added (49%) in exports from Lao PDR's manufacturing sector is below other countries such as Bangladesh (88%), Cambodia (76%), Thailand (80%) and Vietnam (64%).

Therefore, Lao PDR needs to leapfrog and create competitive advantage in high-value-added niche products. This is necessary to rapidly draw its large agricultural labour force to high-productivity, non-farming activities in the manufacturing and services sectors, and also to lift the productivity of the agriculture sector where the vast majority of the poor live and work. Creating backward and forward linkages among manufacturing, agriculture and services sectors by linking small and medium-sized enterprises (SMEs) to the supply chain

[7] Draws on UNDP (2017).
[8] Updated with data from WDI

and production network is key. Improving access to low-cost finance is vital for SMEs. Measures are also needed to raise agricultural productivity.

There have been some recent developments in Lao since 2015, linked with the implementation of the Asian Economic Community (AEC). New labour-intensive manufacturing firms have been established in the special economic zones in Lao with the cooperation of China. Lao PDR has been able to attract a number of multinational companies during the past few years, which has resulted in rapid growth in the assembly and equipment parts sectors (such as camera parts), indicating Lao PDR's potential to effectively participate in regional and global value chains.

However, LAO PDR possibly cannot follow the diversification path of early industrialisers in the region, which were largely labour surplus economies. The size of Lao PDR's labour force will remain very small. The current size of Lao PDR's labour force (aged 15-64) is 4.2 million. It is projected to increase to 5.6 million in 2030, and to only 7 million in 2050.

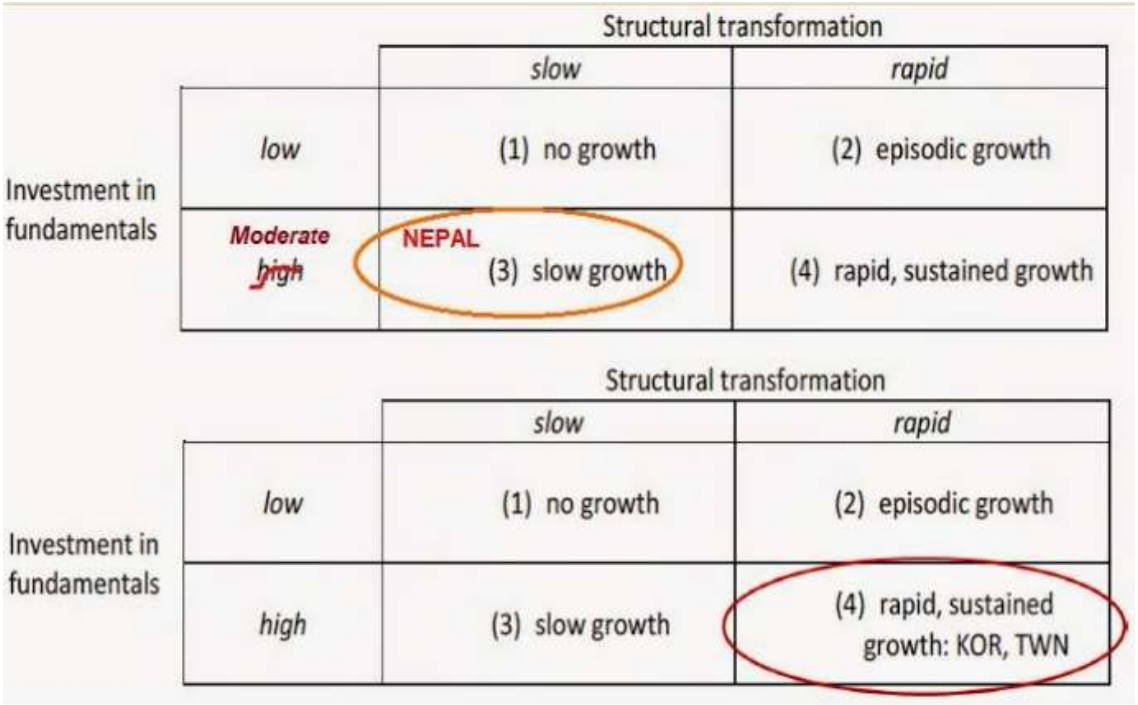
More FDI into the resource sector and participating at the lower end of the global/regional value chain would not be very beneficial for Lao PDR in the long term. Lao PDR must be able to participate at the higher end, for which it needs to increase the stock of human capital, improve connectivity and strengthen its institutions as well as its governance capabilities. Lao PDR should gain comparative advantage from AEC integration in a number of areas. They include: agro-processing (from the emerging agricultural surplus, such as in tea and coffee), value-added cultural and eco-tourism, woollen and silk carpets, organic agri-horticulture and high-value-added secondary wood products, which the Lao PDR Government has already identified.

Therefore, Lao PDR needs better institutions, improved governance, stronger research and innovation capacity and a skilled labour force. This would require investment in quality education, skill development and better health care. The starting point, of course, is to improve literacy and numeracy as well as the nutritional level of its growing labour force. An integrated approach to policy and implementation is necessary for enhancing the efficiency of public expenditure and maximizing synergies. Education, health, nutrition and social protection are interlinked: improvement in one area contributes to improvements in others.

3.3. Nepal's unusual structural transformation [9]

Figure 2 depicts the nature of structural transformation, investment in fundamentals, and the resulting nature of growth rate in Nepal. While the 'Asian Tigers' had high investment in fundamentals and a rapid structural transformation, Nepal is seeing moderate investments in economic fundamentals and a very slow (meaningful) structural transformation, leading to a low growth trap. The challenge for Nepalese policymakers is to transition the economy from (3) to (4) in a generation's time.

Figure 3. Structural transformation and fundamentals



Source: Rodrik (2014)

According to Rodrik, rapid structural transformation together with high investment in fundamentals results in rapid and sustained growth. Fundamentals include: *First* is reasonably stable fiscal and monetary policies. At least indicator wise, Nepal has done reasonably well as revenue is increasing, budget deficit is below 2.2% of GDP and has ended up with surplus sometimes, public debt is below 30% of GDP, forex reserves are sufficient to cover almost 9 months of imports, current account and balance of payments are mostly in surplus, etc. Unfortunately, these have been possible not due to domestic economic activities, but due to low public expenditure absorption capacity and large remittance inflows.

Second is reasonably business-friendly policies. Nepal's ranking in Doing Business and other cross-country comparable assessments has been improving.

[9] Draws on Chandan Sapkota's blog; http://sapkotac.blogspot.com/2014/10/structural-transformation-and.html, updated with latest data from WDI.

Investors complain more about lack of electricity rather than corruption and labour issues.

Third is steady investment in human capital and institutions, which is important for sustaining growth post middle-income level. As a share of budget, Nepal spends the most in education and spending in health is also one of the highest in the region. However, the expenditure efficiency is a different story.

Therefore, 'investment in fundamentals' is not too bad. But these have not emerged out of domestic economic activities. The relatively sound indicators are due to exogenous factors.

Structural transformation covers the following. Labour-absorbing as well as incrementally higher productivity activities (shift from agriculture to industrial activities as well as employment shares). Later on productivity services activities, which would normally require skilled workforce. This may create a symbiotic relationship between this and manufacturing, which would use the innovation from the latter to enhance productivity. Unorthodox policies may also work, such as export subsidisation, protection of home markers, exchange rate management, value addition rules, SEZs. The last one is a generally generous global context in terms of technology transfer, market access

Here, Nepal has ended up with an unusual structural transformation. Most of the GDP growth is coming from non-tradable sectors such as construction, retail and wholesale trade and real estate and housing. The demand for the services sector activities are in turn driven by public expenditure and remittances. Tradable sectors such as manufacturing and high-value agriculture activities are not prominent. Worse, more and more workers are shifting to informal activities in services sector until they find jobs overseas.

The above trend is still supported by the latest data. The share of manufacturing value added in GDP of Nepal peaked at only around 9% in the mid-1990s and, since then, has been continuously declined. It stood at 5.8% in 2014 and down to 5.2% in 2017. Despite this trend, the role of manufacturing export is very dominant in the country's total export (around three quarters), which is the highest among the 14 LLDCs under review. However, it has to be noted that the size of export (as per cent of GDP) in Nepal is relatively very small of only around 10%, much lower than in other Asian LLDCs, such as Lao PDR, Mongolia and Bhutan. These data simply re-inforce the potential for structural transformation or re-industrialisation in Nepal as the country is relatively resource poor compared with the other Asian LLDCs.

3.4. Afghanistan: From Transition to Transformation[10]

The World Bank's (2013) key findings from its analytical report: "Afghanistan: From Transition to Transformation," suggests that transformation decade is indeed a period for which there are high hopes, expectations and great opportunities for the people of Afghanistan.

Economic growth, job creation and development are central to the decade of transformation and long-term security for the people of Afghanistan. While Afghanistan's growth was projected at an average annual rate of 4.9% during the period of 2011/12–2025/26, there was a potential to increase it to 6.7%, depending on an appropriate enabling environment, including security, and good progress in the two key drivers of growth: agriculture and the resource sector. Growth needed to be inclusive, sustainable and leveraged for wider job creation and economic impact. The government's resource corridor approach was all about leveraging the resource sector for transformation – prioritising public and private investments and sequencing and combining interventions.

The transition economics work highlights that aid needs to be provided in ways that promote alignment with government sequencing and prioritisation, more funds on-budget and spent locally, and enhanced attention to operations and maintenance to ensure sustainability. Going forward, selectivity and prioritisation of public investment are vital to meet the needs of a secure and prosperous Afghanistan, as is focusing on the key drivers of growth – agriculture and resource corridors, the enabling environment for private sector investment, regional integration and the strategic investments in human capital – gender, health, education and skills.

The above growth projection seems to be too optimistic as the country's actual GDP growth during 2014-17 was only around 2%. Associated with the decline in aid and deterioration in security, and the period of political instability after the 2014 elections, the Afghan economy has slowly regained momentum as reforms have been implemented and confidence restored. From a low of 1.5% in 2015, real GDP growth accelerated to 2.3% in 2016, and reached 2.7% in 2017.

4. Policy Frameworks for Structural Transformation[11]

As noted in UNCTAD (2014, p. 121, emphasis original) "Economic transformation requires not merely increasing the resources available for investment, but also ensuring enough of the **right** kinds of investment, using the **right** technologies in the **right** sectors to achieve:

- Diversification, by developing new industries and activities, and increasing value addition in existing industries and activities;

[10] Draws on World Bank (2013, 2018).
[11] This section draws on Chowdhury (2018).

- Deepening, by creating forward and backward linkages with existing industries; and
- Upgrading of products and processes."

These require industry policy, supported by enabling macroeconomic, trade, financial, labour market, human resource and research & development (R&D) policies. However, industrial development has to be in tandem with rural and agricultural development. This means that agricultural and rural development policies must be an integral part of industry policy.

Therefore, although a large part of industry policy deals with industries or manufacturing; but it is an integrated approach to break out of vicious circles of low income, low savings and poverty by simultaneously addressing interconnected imperfections in credit, labour and product markets, as well as inadequate infrastructure, skills, technology and aggregate demand while at the same time adapting and building resilience to climate change and external volatilities. In short, it is for structural transformation towards a more inclusive and sustainable future. This fits with Warwick's broad definition of industry policy as "**any type of intervention** or government policy that attempts **to improve the business environment** or to alter the structure of **economic activity** toward **sectors, technologies or tasks** that are expected to offer better prospects for economic growth or **societal welfare** than would occur in the absence of such intervention" (Warwick, 2013, pp. 16), emphasis original).[12]

4.1 Industry policy: Comparative advantage following or defying?

The broad definition of industry policy implies a *horizontal* or *functional* approach. They are policies and measures designed to improve business environment generally without favouring any *particular* industry or activity. Thus, they are 'neutral'. On other hand, policies that are designed to alter the structure of economic activity towards *specific* sectors or activities are referred to as *vertical*, or *selective* industry policies. These are more interventionist.

Following Lall and Teubal (1998), UNCTAD and UNIDO (2011, p. 34) describe industry policy as involving "a combination of strategic or selective interventions aimed at propelling specific activities or sectors, functional interventions intended at improving the workings of markets, and horizontal interventions directed at promoting specific activities across sectors." They aim to promote cross-sector activities for which markets are missing or are difficult to create. A typical example is innovation and R&D policy.

[12] Other authors (Chang, 2009; Landesmann, 1992; Pack and Saggi, 2006) provide narrower definitions of industry policy. For example, Pack and Saggi (2006, p. 2) defines industry policy as "any type of **selective intervention** or government policy that attempts to alter the structure of production toward sectors that are expected to offer better prospects for economic growth than would occur in the absence of such intervention, i.e. in the market equilibrium" (emphasis added).

Macroeconomic stabilisation, infrastructure and education & skill development policies fall under horizontal category – they apply to all sectors equally, although ability to take advantage of them may differ among firms within a sector. Horizontal or functional industry policies are not prone to rent-seeking or directly unproductive activities by particular industry lobbies, because they do not create industry-specific rents or try to pick "winners".

Tariff protections, tax concessions, subsidies, specialised credit, etc. fall under vertical category. Being more interventionist in nature, vertical industry policies are more information-intensive, and hence are more demanding. That is, policymakers need to identify industries ("winners") which could become the engine of growth and hence worthy of support or protection.

Many progress and development initiatives undertaken in Asian LLDCs fall under the horizontal or functional category. This kind of industry policy generally work through enabling market and can be described as comparative advantage following (CAF). According to the CAF strategy, countries should develop industries that are consistent with their comparative advantages, as determined by their endowment structure, and do not try to overleap necessary stages aiming at exporting the goods which are exported by very advanced countries (Lin, 2012). Oil rich countries, like Kazakhstan and Azerbaijan, for instance, according to this logic, should aim at developing heavy chemical, not, for example, high-tech computer industries. Similarly, labour surplus countries, such as Afghanistan and Nepal should concentrate on labour-intensive activities, and try to catch the lower end of global value chain (GVC).

But desired structural transformation may also require vertical or selective industry policy to defy determinism of factor endowments. Such strategies are referred to as comparative advantage defying (CAD). For example, Japan protected its car industry with high tariffs for nearly four decades, provided a lot of direct and indirect subsidies, and virtually banned foreign direct investment in the industry before it could become competitive in the world market. It is for the same reason that the electronics subsidiary of the Nokia group had to be cross subsidised by its sister companies for 17 years before it made any profit. "History is full of examples of this kind, from eighteenth-century Britain to late twentieth-century Korea" (Lin and Chang, 2009).[13]

The CAD strategy does not necessarily imply a transition to more technologically sophisticated industries, but rather, to industries that are not linked to comparative advantages of a particular country. Theoretically, it could be a transition from chemicals to machine building with the same, or even lower, level of R&D intensity and technological sophistication.

[13] Hausman-Hwang-Rodrik's (Hausmann, Hwang and Rodrik (HHR), 2007; Rodrik, 2006) suggestion to promote high tech industries and R&D in relatively poor countries is not very dissimilar to Chang's CAD strategy.

Unfortunately, economic theory does not suggest any definite clues for picking the "winners", except for the idea that these industries should have the highest externalities, i.e. their social returns should be higher than private returns. Yet, it is not easy to measure these externalities. Nevertheless, upon examination of the literature and the experience of countries with industry policy, it is possible to isolate methods which can aid in identification of industries that should be supported (Popov and Chowdhury, 2016). Some authors have specified the characteristics that such "winner" sectors must have, e.g., export, job, and knowledge creation potential (Reich, 1982); activities new to the economy (Rodrik, 2004); higher technological content and promote innovative activities with strong backward and forward linkages to the rest of the economy (Ocampo, Rada and Taylor, 2009).

Furthermore, selective policies are prone to risk rent-seeking, and supported/protected firms or industries may become complacent, and hence less efficient or competitive. There is considerable debate about the efficacy of such industry policy instruments that try to pick the "winners", and critiques of industry policy often point to the failures mainly attributable to rent-seeking and the difficulties of picking the winners.

In order to overcome such problems, it is suggested that these measures be in place for a fixed period on the condition that the supported/protected firms/industries must achieve certain goals (e.g. export) within the pre-specified period. For example, a government can support several promising industries with the condition that assistance ends, if the increase in export is not achieved within, for example, five years. This is called "EPconEP" – effective protection conditional on export promotion (Jomo, 2013). Economic policymakers in this case are similar to the military commander who begins an offensive on several fronts, but throws reserves where there has been a breakthrough.

Governments can also choose to support some general principles, such as productivity, competitiveness, environmental soundness and inclusiveness, without necessarily identifying particular sector/activities ("winners" or "losers"). Firms which fall under the industry average or a bench-mark, will have to either improve or disappear, whereas above average firms become more dynamic. For example, governments can raise minimum wage to nudge low-productivity firms to improve their performance and move towards higher productivity activities. Higher minimum wage applies to all; but low productivity activities can find them in a disadvantageous position vis-à-vis high productivity activities, as experienced by Singapore.[14] Exchange rate and reserve accumulation policies also apply uniformly across the economy and can also be similarly used to promote export-oriented activities. As the experience of successful countries shows, the use of exchange rate as an industry policy instrument can avoid pitfalls of rent-seeking (Popov and Chowdhury (2016a).

[14] See Popov and Chowdhury (2016) and ESCAP (2013).

4.2 Industry policy instruments

Partly following Warwick (2013), Weiss (2015) has identified five categories of industry policy instruments: those related to the product market, labour market, capital market, land market, and technology. They are further categorised into market-based, defined as instruments operating through pricing; and public goods, referring to the provision of goods and services that private firms would not supply on their own. Table 10 presents industry policies for low-income countries and Table 11 for middle-income countries.

Table 10: Select industry policies in low-income economies

Policy domain	Instruments	
	Market-based	Public goods/direct provision
Product market	Import tariffs, export subsidies, duty drawbacks, tax credits, investment/FDI incentives	Procurement policy, export market information/trade fairs, linkage programmes, FDI country marketing, one-stop shops, investment promotion agencies
Labour market	Wage tax credits/subsidies, training grants	Training institutes, skills, councils
Capital market	Directed credit, interest rate subsidies	Loan guarantees, development bank lending
Land market	Subsidized rental	EPZs/SEZs, factory shells, infrastructure, legislative change, incubator programmes
Technology		Technology transfer support, technology extension programmes

Source: Weiss (2015, p. 9)
Notes: EPZs: export processing zones; FDI: foreign direct investment; SEZs: special economic zones.

Table 11: Select industry policies in middle-income economies

Policy domain	Instruments	
	Market-based	Public goods/direct provision
Product market	Import tariffs, duty drawbacks, tax credits, investment/FDI incentives	Procurement policy, export market information/trade fairs, linkage programmes, FDI country marketing, one-stop shops, investment promotion agencies
Labour market	Wage tax credits/subsidies, training grants	Training institutes, skills, councils
Capital market	Interest rate subsidies, loan guarantees	Financial regulation, development bank (first/second tier) lending, venture capital
Land market	Subsidized rental	EPZs/SEZs, factory shells, infrastructure, legislative change, incubator programmes
Technology	R&D subsidies, grants	Public-private research consortia, public research institutes, technology transfer support, technology extension programmes

Source: Weiss (2015, p. 23)
Notes: EPZs: export processing zones; FDI: foreign direct investment; SEZs: special economic zones.

It is important to note that some industry policy instruments are expensive, and hence may not be suitable for countries with severe fiscal constraints. Mobilising resources, thus, becomes crucial along with choosing those instruments which are within a country's fiscal means in the immediate run and then gradually move upstream as its fiscal space growth. This once again, highlights the importance of a pragmatic and evolutionary approach.

Comparison of Table 10 and Table 11 reveals relatively costly and complex industry policy instruments that middle-income countries can introduce to upgrade their industrial structure and sustain industrialisation and development. These instruments are found in two policy domains: capital markets and technology. Capital markets are rudimentary in many low and middle-income countries. They develop along with the level of development of a country, allowing governments to provide venture capital to projects with a high-risk profile, but high growth potential (e.g. innovative projects in new technological fields). Similarly, as firms accumulate knowledge and capabilities and the State technical and administrative capabilities grow, governments can offer a number of incentives to stimulate innovation. The experience of East Asian economies is once more illuminating in this regard.

4.3. Designing and implementing industry policy

Just as there is no one-size-fits-all policy package, there is no set rule or one simple "recipe" as to how countries should design, coordinate, and implement an industry policy. It all depends on varying country circumstances. Nevertheless, while each country has to individually experiment and learn by doing when establishing its own industry policy programmes, important lessons can be learned from other countries' experiences.

Thus, various authors have produced general advice on how to effectively design and implement industry policy. This relates to two main aspects of industry policymaking processes: (a) how to build an institutional setting capable of implementing policies effectively; and (b) how to manage the delicate relationship with the private sector.

Based on a wide-ranging country experiences, Devlin and Moguillansky (2011) outline a set of strategic and operational principles. They start with two over-arching strategic principles that should serve as the guide for effective industry policy implementation. First, State initiatives must be pro-active, selective, and focused on the long term, rather than simply tied to the electoral cycle or the need to gain popular legitimacy over the short term to remain in power. Here the problem of carefully "picking winners" (and getting rid of "losers" over time) is of particular relevance. This would require proactively seeking solutions to cope with the problems faced by industry and improve government support for businesses to upgrade towards more productive and value-adding activities.

The second strategic imperative is to stress the inter-connectedness of the industrial development and structural transformation process, as well as the need to forge a common vision for collective action. Devlin and Moguillansky argue that public-private alliances are a means to accomplish this crucial task. Such structures allow for information sharing and collective action, but preclude the possibility of the State being "captured" by private interests. Devlin and Moguillansky (2011) also provide a list of operational principles that the public sector could implement when designing and pursuing an industry policy.

Rodrik (2008, p. v) suggest that "[t]hree key design attributes that industry policy must possess are embeddedness, carrots-and-sticks, and accountability." Embeddedness concerns how close state-business relations should be; "carrots and sticks" refers to the combination of incentives and discipline that industry policy should seek; and accountability refers to the need to monitor bureaucrats and hold them responsible for how they spend public money. The first two of these attributes clearly concern State-business relations: the State needs to be embedded in close relations with the private sector, and State support must be combined with discipline (carrot-and-sticks) in order to reduce the chances of rent-seeking and corruption.

According to Evans (1995), the crucial requirement for successful industry policy is that private enterprises and economic elites play a role in its formulation and implementation. This he calls "embedded autonomy". This concept affirms that the State should proactively partner with the private sector and non-governmental bodies, but it also emphasises that the State must at the same time resist being captured by such interests so that it can ensure that the aims of the society as a whole are addressed rather than those of private entities.

Rodrik (2004) also emphasises the importance of State-business collaboration to reduce information asymmetries and co-design an industry policy that can truly tackle the obstacles faced by the private sector. There are several elements of State-business relations, such as reciprocity, credibility, and trust – that are important for industry policymaking (Maxfield and Schneider, 1997). However, the State needs to strike the right balance between being sufficiently close to the private sector – in order to collaborate with it and understand its challenges – and at the same time being sufficiently far from it – in order to avoid rent-seeking and corruption (in line with the embedded autonomy concept introduced by Evans, 1995). *All this presupposes State capabilities*.

5. Summary and way forward

5.1 Summary

There has been little progress on structural economic transformation in Asian LLDCs. The process was hampered by problems surrounding transition to market economy, especially in the central Asian LLDCs which were former Soviet republics. Their embrace of privatisation and liberation reforms decimated their industrial capabilities, and a number of them experienced premature deindustrialisation. High resource dependence and commodity price booms also contributed to deindustrialisation – a phenomenon known as "Dutch disease". Some of the Asian LLDCs also face the challenge of smallness, especially in terms of domestic market and availability of labour force.

5.2 Way forward

Given the fact that little progress has been made on structural transformation in Asian LLDCs, they face a much more daunting task of structural transformations than the developed countries at their early phase of transformation. On this, three suggested ways forward are in order (Strengthening state capacity, fostering regional cooperation and managing conflicts, and providing international supports).

(i) Strengthening state capacity

Historically the State played a central role either indirectly as a provider of public goods, such as an enabling policy and regulatory environment, or directly as an entrepreneur producing goods & services and innovating new ways. The State also provided a vision for change, and remains a significant user of goods & services. In recent past, the State has been more visible, especially in the rapid transformation of North-East and South-East Asian newly industrialised economies, thus being referred to as "Developmental State". However, questions have been raised about the ability of LLDCs to emulate developmental States of East Asia.

In this context, one necessary pre-requisite for managing transition and navigating structural transformation is having adequate state capacity to navigate the processes. Although alignments with market signals are important, they cannot be left to the largely market based proses or fully dependent on the market forces. This factor is particularly enhanced by the fact of geographically unique locations and being within the status of developing or least developed countries resulting in multiple development challenges requiring strong state capacity.

This, however, has been a main problem with Asian LLDCs as in most cases they are new countries after the dissolution of Soviet Union undergoing systemic transition, poor small countries and countries with state fragility and long conflict history of conflict; all are complicated by geographical (given) disadvantage.

In addition to the more traditional roles of the state, state capacity is crucial in navigating regional cooperation that is key to dealing with their landlocked-ness. With the long standing debate surrounding the role of the state in development, given LLDCs structural transformation challenges, strengthening state capacity is simply a necessity.

The historical experience suggests six different, but inter-related, roles of the state in the process of structural transformation: the state as creator of institutions, the state as policy reformer, the state as guardian of macroeconomic stability, the state as entrepreneur, the state as manager of conflicts, and the state as productive factor enhancer (Chowdhury 2018).

In the context Asian LLDCs a pragmatic evolutionary way forward can be followed in building state capacity as suggested by UNCTAD (2014).[15] On this, three lessons can be learned from successful East Asian countries as noted by Evans (1998). First, *institutional capacity develops over time through learning*. The technical capacities of Governments were not particularly advanced when East Asian developmental States embarked on their development process. They were built up over time, through policies of meritocratic recruitment, continuity of personnel and an incentive-based career structure commensurate with the private sector.

Second is the *focus on a small number of key agencies and institutions*. There was a deliberate strategy to build a few strategically important agencies instead of improving government effectiveness across the board and all at once.[16]

Third, *there is no one-size-fits-all magic bullet*. One major lesson of efforts at institutional reform is that "institutional innovations do not travel well" (Rodrik, 2005, p. 994). Andrews, Pritchett and Woolcock (2015, p. 124) also found, "There are no easy or quick-fix solutions. Building state capability is an idiosyncratic process that looks different in each and every country; the specific institutional structures that come to have local legitimacy and effectiveness are highly dependent on a complex interplay of local context, history, politics and culture".[17]

(ii) Fostering regional cooperation/integration as well as managing conflict

As the LLDCs are constrained by the geography, close regional cooperation with the transit countries is a sine qua non for improved connectivity in transport, energy, and information and communications technology; all are important for structural transformation (Popov 2018). It has to be noted that regional cooperation is indirectly linked to structural transformation, while its direct connection is with overall functioning and dynamism of the economy, which in turn favourable for

[15] UNCTAD (2014), *The Least Developed Countries Report 2014: Growth with structural transformation: A post-2015 development agenda*, Geneva: UNCTAD

[16] As Evans (1998, p. 73) observed: "a substantial share of the benefits of superior bureaucratic performance may be obtained by focusing reforms on a relatively small set of economic agencies."

[17] Also see Andrews, Pritchett and Woolcock (2017).

structural transformation. At the same time, regional corporation should also be utilised to manage regional conflict emanating from the geographical factor.

In Central Asia for example, former Soviet Union LLDCs are now less industrialised and export lesser relative values, which was largely due to the dismantling of regional cooperation previously put in place by the existence of Soviet Union as a dominant ruling power. After the independence and with subsequent transition, the economies were less integrated and coordinated. Popov (2018) describes these central Asian countries experienced regressive developments in their industrial structure – deindustrialisation, "resource-ialisation" and "primitivisation" of the structure of their exports. Therefore, the challenge is how to bring back regional cooperation and integration among Central Asian LLDCs and their transit countries in the present context of many independent states with their own political entities and dynamics. In this context, the current regional cooperation and integration seem to be more daunting compare with the past time of Soviet Union era and the existing UN Special Program for the Economy of Central Asia (UN SPECA) can play a strategic role.

In Southeast Asia, Lao PDR is part of the Association of Southeast Asian Nations (ASEAN) that should facilitate the country dealing with its transit countries for economic dynamism. Lao PDR in the only LLDC-LDC in Southeast Asia making its development challenges more severe than the other two LDCs in the region: Cambodia and Myanmar.

"ASEAN economic integration should create more opportunities for Lao PDR to grow and diversify in different directions. Within the AEC, there should be expansion of infrastructure and the regional value chain. Lao PDR has been able to attract a number of multinational companies during the past few years, which has resulted in rapid growth in the assembly and equipment parts sectors (such as camera parts), indicating Lao PDR's potential to effectively participate in regional and global value chains." (UNDP 2017)[18]

On the other side of regional cooperation and integration is regional conflict primarily arising from the geographic nature of sharing land borders. Soon after the collapse of Soviet Union and newly independent countries emerged in Central Asia, Armenia and Azerbaijan engaged in a territorial and ethnic conflict concerning Nagorno-Karabakh region bordering the two countries. The conflict has not been fully resolved and the danger of resumed large-scale hostilities is still present.

Another example is water conflict among the five former Soviet Republics LLDCs in Central Asia: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. 'When they were still a part of the Soviet Union, the upstream republics—Kyrgyzstan and Tajikistan—which have an abundance of water, would release some from their reservoirs in the spring and summer to generate electricity and nourish crops both on their own land and in the downstream republics, which

[18] *National Human Development Report: Graduation from Least Developed Country Status*, LAO PDR, 2017

would return the favour by providing gas and coal each winter.'[19] But, the system ended with the dissolution of the Soviet Union and since then has resulted in regional (water) conflicts in the region leaving some facing water shortages and others chronic power cuts.

Fostering regional cooperation and integration while managing regional conflict is not only for creating regional dynamism but more importantly to avoid race to the bottom (beggar thy neighbour) situation among countries of the same region.

(iii) The role of the international community including the UN

With the embedded characteristics of low state capacity and weak regional cooperation, Asian LLDCs need support from the international communities, facilitated by the UN, to enable them to strengthen their state capacities and help foster strong regional cooperation and integration.

Support for strengthening state capacity can be implemented through technical assistances and aid. This would mean reversing the declining trend of net aid inflows, particularly to least developed LLDCs.

International community should also assist in improving regional cooperation framework and facilitation. United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP) can play a vital role in this regard. UN-ESCAP has been promoting regional cooperation to enhance South-South trade, investment and transfer of technology, while seeking a bigger role for regional Aid for Trade projects.

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