INDUSTRIAL SECTOR
SLUGGISHNESS AND CATCHING UP

Bangladesh Economic Update
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1. INTRODUCTION

This issue of Bangladesh Economic Update concentrates on the current situation and prospect of industrial sector. It also reviews the state of technology catching up. The industrial sector requires immediate attention due to sluggishness and policy ambivalence. The indicators of industrial performance such as industrial index, disbursement of term loan, opening and settlements of letter of credits (LCs), investment demand suggest sliding down.

A number of recent policy and structural problems are associated with the sluggish performance of industry. Contractionary monetary policy, inadequate infrastructure, incompatible fiscal policy, unfavourable exchange and interest rates, loan scenario accompanied with some structural bottlenecks are found to have causal effect on the present floundering performance of the industrial sector.

Fiscal and monetary policies jointly have affected the industrial sector accompanied with appreciated domestic currency and larger interest rate spread by making the available fund costly. These eased to achieve the track of inflation target that reduced from 7.39 percent in August 2013 to 7.13 percent in September 2013 with high cost of investment in industry.
Increased Loan default currently raised risk for banking sector to turn loanable fund into credit with lower rate. Regular inadequate supply of electricity, gas and other infrastructure is also blended with policy paralysis.

Savings-investment gap, lack of state's activist role, product and market diversification, under implementation of ADP and over expenditure of non development allocated budget are a few broadly visible structural bottlenecks among many others for retarding industrial performance.

Recent political developments and international actions have raised increasing burden on industry. After Rana Plaza crash industry especially RMG sector has fallen in a precarious situation for international pressure. This has been

compounded with the recent USTR decision to suspend GSP facilities for Bangladeshi products.

In terms of technological catching up Bangladesh is far behind than the other developing countries. Technological catching up can be the best way to faster industrial growth. But unfortunately there are no noteworthy improvements and step towards technological catching up.

Taking these points into consideration this issue highlights some policy supports including technological catching up in the backdrop of current state of industry. The second section of the issue represents the current scene of industrial performance. Section three attempts to find the reasons of slowdown. The fourth section is devoted to analyse the state of technological catching up of Bangladesh, with an effort to learn lessons from the emerging economies. The penultimate section provides recommendations as regards policy support.

2. CURRENT SITUATION OF INDUSTRY

The present section focuses on a number of indicative factors to encapsulate the current situation of industry. Those indicators include trends in growth of industry, share of industry in GDP, state of industrial index, scenario of investment, movements in industrial term loan, status of export and import, condition of opening of LCs and performance of business.

2.1 Trends of Industrial Growth

Growth of manufacturing industry in FY 2012-13 was 9.34 percent which was lower than those of 9.37 and 9.45 percent of FY 2011-12 and FY 2010-11 respectively.

Growth of manufacturing industry in FY 2012-13 was 9.34 percent which was lower than those of 9.37 and 9.45 percent of FY 2011-12 and FY 2010-11 respectively. However, growth of manufacturing sector witnessed an expansion in FY 2010-11 and followed deceleration in FY 2011-12 and FY 2012-13. Historical track record suggests that growth of manufacturing sector might stand at 9.22 and 9.11 percent in FY 2013-14 and FY 2014-15 respectively.

The share of industry in GDP increased by 2.73 percent in FY 2012-13 than that of the previous fiscal year and stood at 31.98 percent. The share of industry in GDP in FY 2012-13 increased

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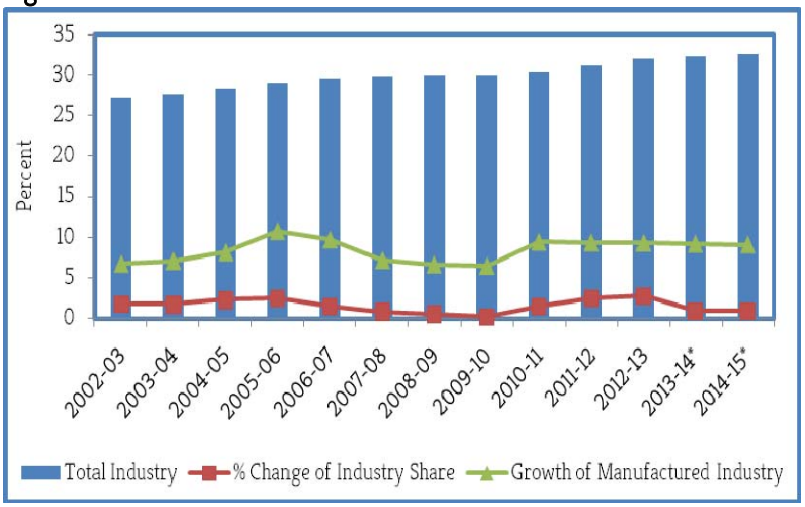
by 5.90 percent (on average) than the previous five fiscal years (FY 2007-08 to FY 2011-12). However, the share of industry in GDP increased by 6.63 percent (on average) from FY 2007-08 to FY 2011-12 compared to the average of previous five fiscal year (FY 2002-03 to FY 2006-07). If the current trend continues, share of industry in GDP in 2013-14 and 2014-15 might stand at 32.28 and 32.57 percent respectively.

Figure 1: Industrial Growth and Share on GDP



Source: Ministry of Finance, 2013

Table 1: Sectoral Shares of GDP of Different Countries in 2012

Countries	Agriculture (%)	Industry (%)	Service (%)
Bangladesh	17.5	28.5	53.9
India	17.4	26.1	56.5
Thailand	12.3	43.6	44.2
Malaysia	11.4	40.2	48.3
China	10.1	45.3	44.6
Brazil	5.2	26.3	68.5
United Kingdom	0.7	21	78.3
USA	1.1	19.2	79.7

Source: World Fact Book 2012, CIA.

Share of industry in GDP in Bangladesh is much lower compared to the emerging countries (e.g. Thailand, Malaysia, China). The share of agriculture in Bangladesh is highest compared to the countries irrespective of emerging and developed economy (Table 1). Generally, maximum share of GDP in developed countries comes from the service sector, while the emerging countries have high share of industry and relatively largest and lowest share of service and agriculture sectors respectively.

If emphasis can be given to rapid transformation to the industrial sector, the goal of graduating into a middle income country might become more likely.

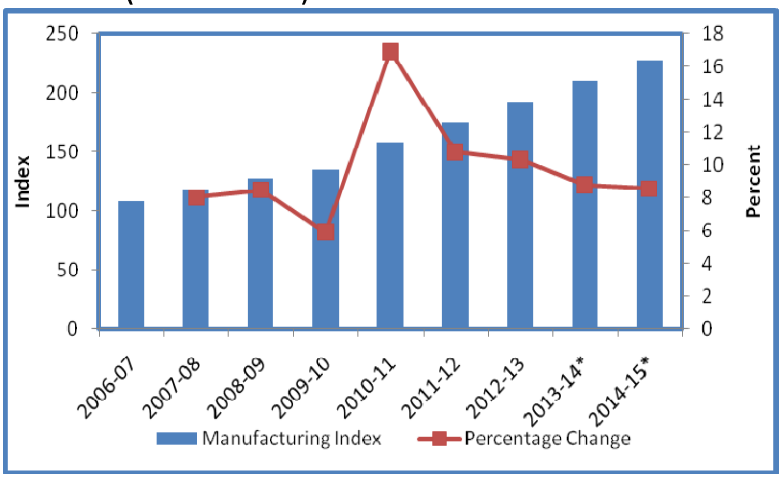
2.2. Industrial Index

The industrial production index increased from 108.76 in FY 2006-07 to 192.47 in FY 2012-13 which might further increase to 210 and 228 in FY 2013-14 and FY 2014-15 respectively.

Industrial production index, an indicator of the industrial condition within the country, increased over the period from FY 2006-07 to FY 2012-13. The index increased from 108.76 in FY 2006-07 to 192.47 in FY 2012-13 which might further increase to 210 and 228 in FY 2013-14 and FY 2014-15 respectively.

The index fall by 4.9 percent in April 2013 than that of March 2013 while it increased by 10.19 percent in May 2013 and 6.96 percent in June. The index value reached at 220.84 in June which was 187.35 and 197.01 in April and May of 2013 respectively.

Figure 2: Quantum Index of Large and Medium Manufacturing Industries (Base 2005-06)

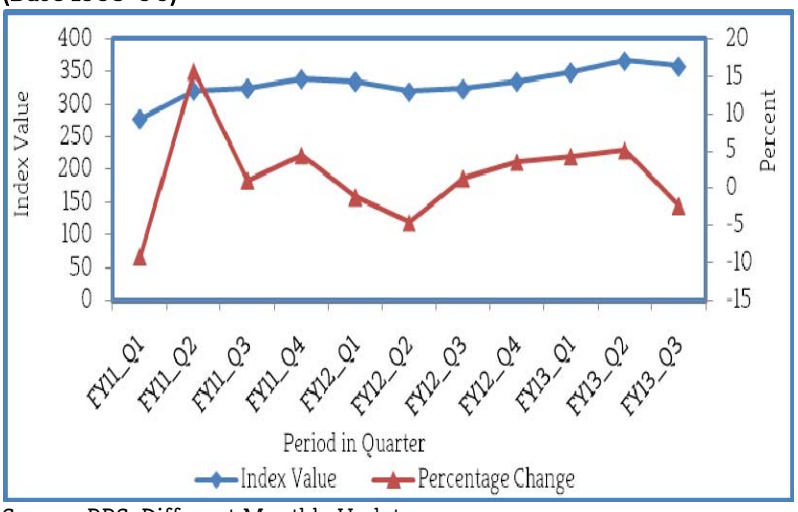


Source: BBS, 2013

The general index of small scale manufacturing industry in the third quarter (January-March) of FY 2012-13 declined to 358.03 reducing by 2.37 percent from the second quarter (366.74).

The general index of small scale manufacturing industry in the third quarter (January-March) of FY 2012-13 declined to 358.03 reducing by 2.37 percent from the second quarter (366.74). In the four quarters of FY 2010-11, there was positive growth rate over in small scale industry index. After the negative growth rate in the first two quarter of FY 2011-12, the index of small scale manufacturing industries continued to grow up till second quarter of FY 2012-13, and fell again in the third quarter.

Figure 3: Quantum Index of Small Scale Manufacturing Industries (Base 1995-96)



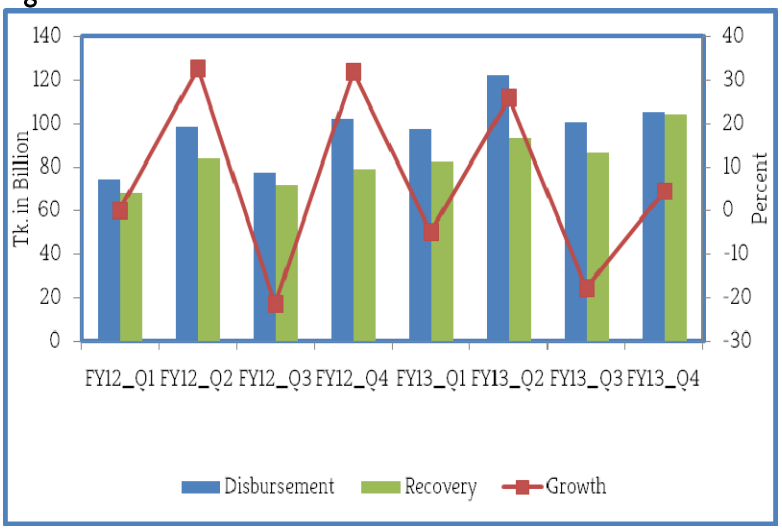
Source: BBS, Different Monthly Updates

2.3. Status of the Industrial Loan

The growth rate of industrial term loan in the last quarter of FY 2012-13 was 4.49 percent which was the lowest since the second quarter of FY 2011-12.

The disbursement of industrial term loan as well as recovery have shown regular oscillation since the second quarter of FY 2011-12 with positive growth in one quarter followed by negative growth in the following one. The growth rate of industrial term loan in the last quarter of FY 2012-13 was 4.49 percent which was the lowest since the second quarter of FY 2011-12, while third quarter of FY 2011-12, and first and third quarter of FY 2012-13 witnessed negative growth.

Figure 4: Status of Industrial Term Loan

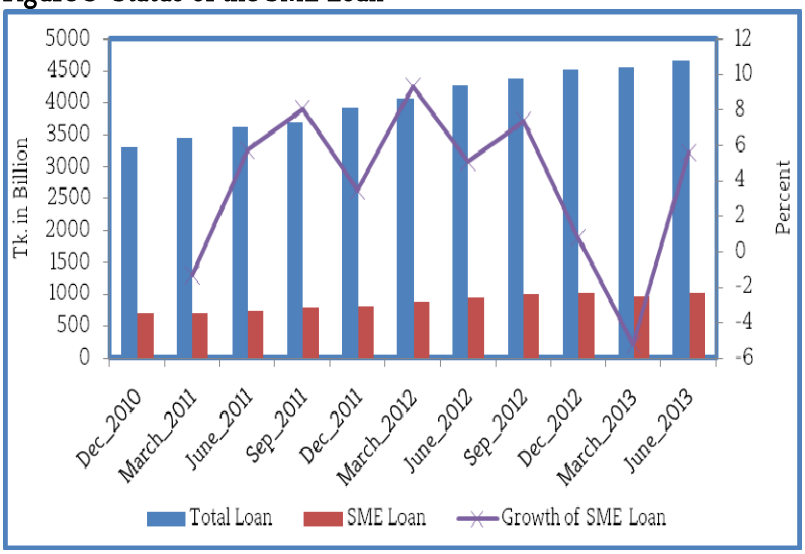


Source: Bangladesh Bank, September 2013.

SME loan increased to Tk. 1008.64 billion in June 2013 from Tk. 955.23 billion in March 2013.

SME loan increased to Tk. 1008.64 billion in June 2013 from Tk. 955.23 billion in March 2013 from 5.25 percent fall in March 2013. SME loan roamed around 20 to 22 percent as a share of total loan from December 2010 to March 2013, despite SME sector's greater contribution in total industrial GDP.

Figure 5: Status of the SME Loan



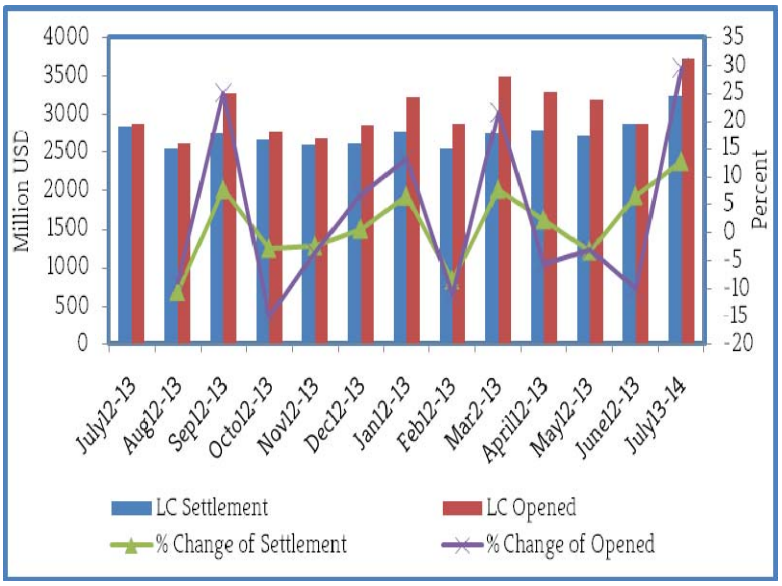
Source: Bangladesh Bank, 2012, 2013

2.4. Letter of Credit (LC) Condition

Import payment in July of FY 2013-14 was USD 3056.60 million which was USD 2835.90 million in July of FY 2012-13.

Import payment shows a downward trail in FY 2012-13 compared to FY 2011-12 in terms of opening and settlement of LCs. However, import payment in July of FY 2013-14 was USD 3056.60 million which was USD 2835.90 million in July of FY 2012-13. Industrial raw materials, machineries for miscellaneous industries, petroleum and petroleum products, consumer goods, and intermediate goods fell both in terms of opening of fresh LCs and settlements during July-June, FY 2012-13 compared to July-June, FY2011-12. Only opening of fresh LCs for capital machineries increased by USD 665.17 million over the period.

Figure 6: Fresh LC Opening and Settlement for Different Import Sectors



Source: Bangladesh Bank, August 2013

2.5. Manufactured Trade Gap and Capital Machineries Import Payment

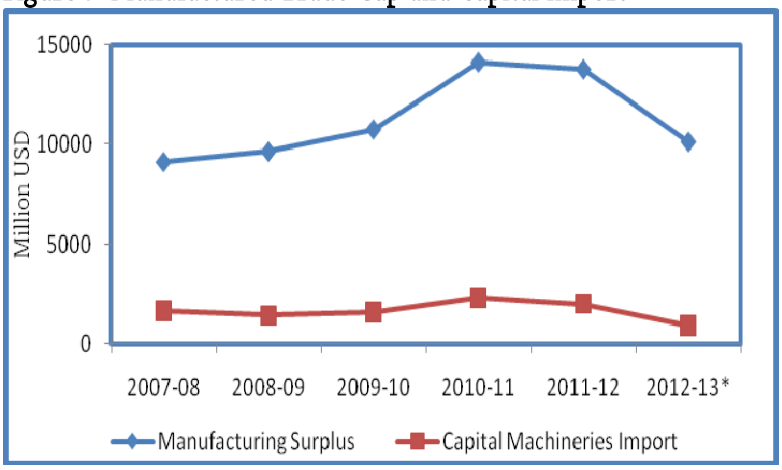
Between FY 2011-12 and FY 2012-13, manufactured export earnings declined by 63 percent, while the import payment decreased by 46 percent.

In FY 2012-13, manufacturing trade surplus reduced by 26.27 percent. Between FY 2011-12 and FY 2012-13, manufactured export earnings declined by 63 percent, while the import payment decreased by 46 percent. As a consequence, international trade surplus reduced to USD 10147 million in FY 2012-13 from USD 13758 million in FY 2011-12. Therefore, a sharp decline in export earnings compared to import earnings has led to a decrease in manufacturing trade surplus.

Import of capital machineries reduced from USD 2005 million in FY 2011-12 to USD 915 million in FY 2012-13, equaling a reduction of 54.36 percent.

Import of capital machineries reduced from USD 2005 million in FY 2011-12 to USD 915 million in FY 2012-13, equaling a reduction of 54.36 percent. Evidence of significant positive correlation of 0.45 between import payment of capital machineries and export earnings gap suggests that the importance of import of capital machineries in short run and technological catching up for the long run on growth of industry. Lower import of capital machineries has been affecting industrial production inversely as Bangladesh economy depends on foreign capital goods.

Figure 7: Manufactured Trade Gap and Capital Import



Source: Ministry of Finance, 2013

2.6. Business Performance

Bangladesh is opening up its economy for the world without extending the internal protection to infant industries. According to Doing Business, Bangladesh moved down five steps in 2013 from the 2012. The country achieved 129th position in 2013, which was 124 in 2012 while neighbouring India maintained the previous position, and Malaysia improved two steps. A close examination of the ten indicators of this index reveals that four indicators kept unchanged, while five items became worsened. Only one indicator, which actually measures trading across border has shown improvement. Without improvement in infrastructure and domestic competitiveness, it is questionable that whether such opening is good for the industrial sector.

Table 2: Doing Business Position

	Bangladesh		India		Malaysia	
Ranking	2013	1012	2013	2012	2013	2012
Rank	129	124	132	132	12	14
Starting a Business	95	89	173	169	54	42
Dealing with Construction Permits	83	83	182	183	96	116
Getting Electricity	185	185	105	99	28	27
Registering Property	175	175	94	97	33	62
Getting Credit	83	80	23	23	1	1
Protecting Investors	25	24	49	46	4	4
Paying Taxes	97	95	152	149	15	25
Trading Across Borders	119	120	127	125	11	12
Enforcing Contracts	182	182	184	184	33	31
Resolving Insolvency	119	116	116	109	49	48

Source: Doing Business Ranking, 2013

2.7. Summary of Trends

The situation of industry in the recent time depicts the following trends:

The share of industry in GDP increased by 2.73 percent in FY 2012-13 than that of the previous fiscal year.

First, the growth rate of manufacturing industry followed a declining trend in the last two fiscal years although the share of industry in GDP slowly recovered the decelerated growth in previous three fiscal years. The share of industry in GDP increased by 2.73 percent in FY 2012-13 than that of the previous fiscal year.

Second, after showing positive growth rate for four consecutive quarters, industrial index for small and cottage industry has fallen in the third quarter of FY 2012-13.

Third, in case of disbursement of industrial term loan, the growth rate recovered with 4.49 percent positive change in the last quarter of FY 2012-13 from the previous larger fall 17.76 in third quarter of same fiscal year 2012-13.

The rate of growth in private sector credit stood at 11.33 percent in August of FY 2013-14 that was 19.92 percent during the same month in the previous fiscal year.

Fourth, import in important areas, such as industrial raw materials, machineries for miscellaneous industries, petroleum and petroleum products, consumer goods, and intermediate goods declined in FY 2012-13 both in terms of opening of fresh LC and settlement compared to FY 2011-12.

Fifth, import of capital machineries observed a reduction from USD 2005 million in FY 2011-12 to USD 915 million FY 2012-13, equaling a reduction of 54.36 percent. Evidence of significant positive correlation of 0.45 between capital goods import payment and export earnings gap points the importance of capital machineries import in short run and technological catching up in the long run for growth of industry.

The credit growth in the overall domestic sector slumped to 12.31 per cent in August 2013 than that of 19.01 per cent in the corresponding month of 2012.

Sixth, in terms of technological catching up, Bangladesh is far behind than the other developing countries. But unfortunately there is no noteworthy improvement and step toward technological catching up.

Seventh, political and international issues have also become the concern for industry. Couples of threat have been arisen for the industrial sector in recent time including currency exchange pressure, GSP, and political instability amongst others.

3. REASONS FOR SLOW DOWN

The major indicators of industrial performance considered in this study present a picture of industrial performance in recent time. Identification of the causes of deterioration and possible source of further slowdown are, therefore, imperative for concentrated policy inducement to retrieve from present condition and animate the industry.

3.1 Policy Issues

Policy issues are the key factors for convincingly defined performance of industry instead of incongruence. The inconsistent monetary, infrastructural, fiscal, currency, interest rate policies are the fundamental reasons of floundering performance of industry.

3.1.1 Monetary Policy

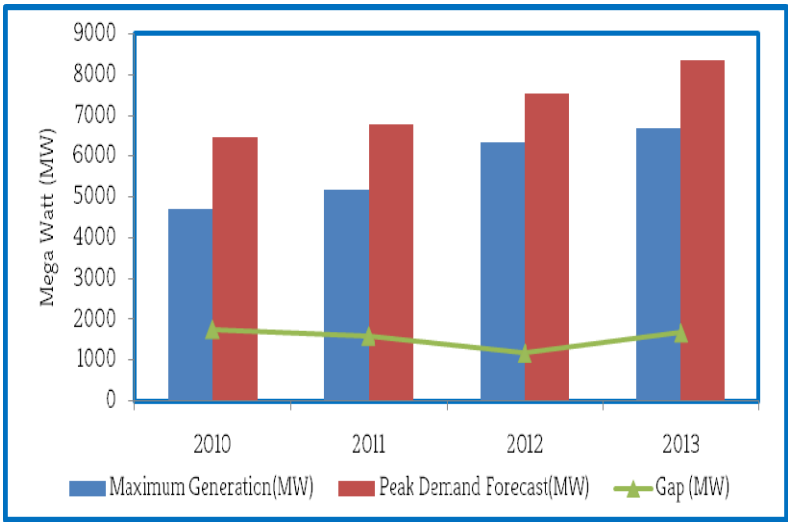
The contractionary monetary policy of central bank to curb inflation and resolve balance of payment is exerting pressure on industrial sector. Cost of loan for the private sector is increasing due to such policy. The contractionary monetary policy aimed at lowering inflation rate is on the track but it has effected a high cost for overall economy and the present reaction of industrial sector has went beyond the objective of monetary policy with stagnant investment.

3.1.2 Infrastructure

The government allocated high amount of Tk. 113.5120 billion, 5.1 percent of total development and non development budget expenditure, for power and energy sector in proposed budget of FY 2013-14.

Power is thought to be the driving factor of industrial production. However, the gap between peak demand and maximum generation is extensively high resulting from substantial gap between capacity and maximum generation of power. The gap increased in calendar year 2013 than that of the previous two calendar years. Realising the importance of power, the government allocated high amount of Tk. 113.5120 billion, 5.1 percent of total development and non development budget expenditure, for power and energy sector in proposed budget of FY 2013-14. This amount is 18.94 percent more than Tk. 95.44 billion in FY 2012-13. The implementation of ADP is 2 percent in July-August period of FY 2013-14.

Figure 8: Peak Demand and Maximum Generation Gap



Source: Bangladesh Power Development Board, 2013

In addition, the economy has been suffering from increased price of electricity that has transformed into the increased cost of production. Moreover, owing to large allocation of government budget in power sector, less is allocated for socio-economic infrastructure like health, education, agriculture etc. Other infrastructural facility e.g., gas, transport are also insufficient for robust industrial performance.

3.1.3 Fiscal Policy

Budgetary expenditure frequently exceeds the proposed allocation in Bangladesh with non-development expenditure exceeding the allocation and the development expenditure falling short of the allocation. This structural bottleneck of budget implementation affects the economy retarding the long-term infrastructural development and capacity.

Total allocation for ministry of industry in FY 2013-14 is Tk. 22.87 billion including Tk. 21.17 billion for development and Tk. 1.70 billion for non-development purposes.

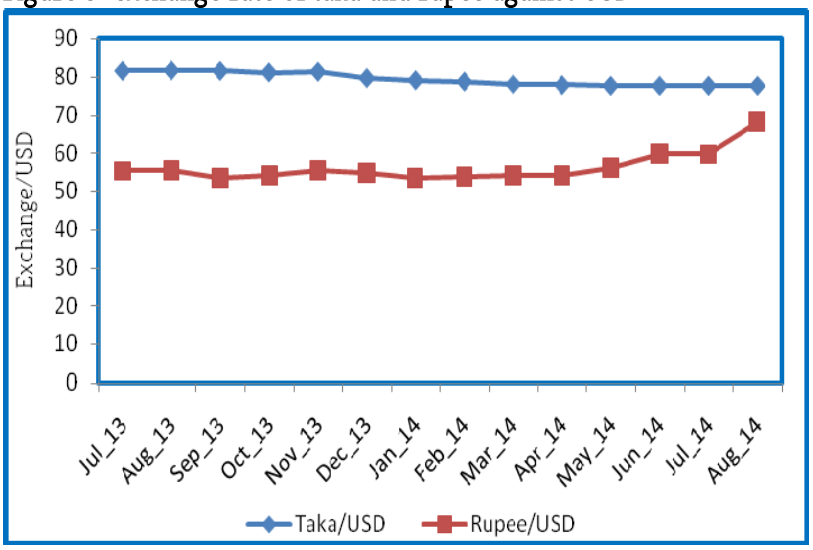
Total allocation for ministry of industry in FY 2013-14 is Tk. 22.87 billion including Tk. 21.17 billion for development and Tk. 1.70 billion for non-development purposes. In FY 2012-13, the revised budget was Tk. 18.39 billion including Tk. 15.58 billion for development and Tk. 2.81 billion for non-development although the allocation was Tk. 17.37 billion for development and Tk. 1.07 billion for non-development purposes in the current budget.

The currency of Bangladesh witnessed appreciation and exchange rate stood at Tk. 77.75/USD in August of FY 2013-14 from Tk. 81.72/USD in August of FY 2012-13.

3.1.4 Currency Movement

Recently, the currency of Bangladesh witnessed appreciation and exchange rate stood at Tk. 77.75/USD in August of FY 2013-14 from Tk. 81.72/USD in August of FY 2012-13 vis-à-vis depreciation of Indian Rupee. The appreciation based on remittance inflow and shortfall of import payment may make the currency having depressing affect on industry. Industrial sector of Bangladesh is dependent on import of capital machineries and intermediate industrial goods. From this viewpoint, appreciation of taka is desirable for cheap import. But in the upside down, the economy is likely to suffer from lessened export competitiveness and remittance earning.

Figure 9: exchange rate of taka and rupee against USD



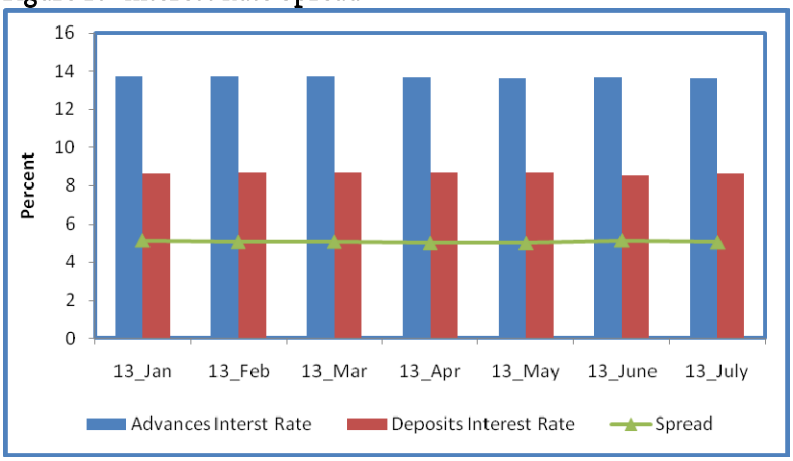
Source: Bangladesh Bank, September, 2013

Interest rate spread stood at 5.13 and 5.02 percent in June and July of calendar year 2013 while Bangladesh Bank avowed to keep interest rate spread within 5.0 percent in the July-December 2013 term.

3.1.5 Interest Rate Spread

High interest rate spread is an underlying characteristic of the financial market of Bangladesh. Although interest rate spread has reduced somewhat over time, but is still considered to be high. Interest rate spread stood at 5.13 and 5.02 percent in June and July of calendar year 2013 while Bangladesh Bank avowed to keep interest rate spread within 5.0 percent in the July-December 2013 term. High interest rate spread induce individuals to save less in one hand and entrepreneurs to invest less on the other. The subsequent effect of high spread is the low savings and investment where the scenario of investment is rather depressing currently.

Figure 10: Interest Rate Spread



Source: Bangladesh Bank 2013

3.1.6 Loan

In 2012, the non-performing loan was 10.03 percent of total loan which was 6.12 percent in 2011.

The excess liquidity was 9.8 percent up to June 2012 which was 9.3 percent same as of 2011.

Loanable fund and loan default raised the jeopardy for industrial performance and for further deterioration. Increasing loan default threatens the financial market while current lack of investment demand supports the stockpiling of loanable fund. In 2012, the non-performing loan was 10.03 percent of total loan which was 6.12 percent in 2011. The excess liquidity was 9.8 percent up to June 2012 which was 9.3 percent same as of 2011. Weighted average of advance interest rate on scheduled banks increased to 13.77 percent in 2012 from 12.80 in 2011. Loan scenario that is depressing the industrial performance might have helped to reduce the rate of inflation to 8.69 percent in 2012 from 10.91 percent in 2011 (yearly average).

3.2 Structural Issues

Some structural issues are also responsible for the poor performance of the industrial sector of the country. Savings-investment condition, lesser role of the state and meagre diversification of products and destinations are major structural drawbacks.

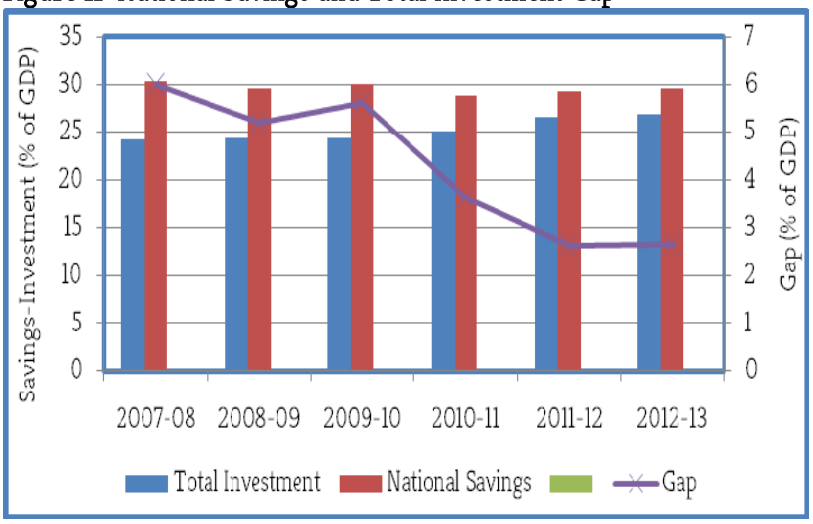
3.2.1 Savings-Investment Gap

The national savings and total investment gap extended to 2.67 percent of GDP in FY 2012-13 from 2.64 percent in the previous fiscal year.

One of the crucial reasons for decelerating growth in Bangladesh is rising savings-investment gap. The national savings and total investment gap extended to 2.67 percent of GDP in FY 2012-13 from 2.64 percent in the previous fiscal year. Private investment reduced by 1.05 percentage point of

GDP from 20.04 percent in FY 2011-12 to 18.99 percent in FY 2012-13, while total investment increased by 0.30 percentage point of GDP due to increased role of public sector investment. Industrial sector of Bangladesh economy is private sector oriented. Performance of all major indicators reflects that the private sector has been depressing with lower investment due to the extended gap.

Figure 11: National Savings and Total Investment Gap



Source: Ministry of Finance, 2013

3.2.2 Role of the State in Industrialisation

Private sector is spurred into effective and sufficient action by the pioneering and facilitative proactive role of state. But in Bangladesh government plays the role of facilitator with some incentive but has not pro-actively played the leadership role. While private sector tradeoffs between profit and risk, the government thinks about the wellbeing and capacity of the nation. The entrepreneurial risk taken by state cannot be welcomed by profit motive private sector. The lack of government's entrepreneurial role in technology, innovation and large size investment seems one of the fundamental reasons of low capacity and investment. In FY 2013-14, government allocated 0.81 percent lower development and non development allocation than the previous fiscal year allocation for ministry of Science and Technology. Total allocation is Tk. 3.67 billion which is 0.16 percent of total budgetary allocation which is not supportive for technological development.

In FY 2013-14, government allocated 0.81 percent lower development and non development allocation than the previous fiscal year allocation for ministry of Science and Technology.

3.2.3 Lack of Diversification

Only nine products contributed 93 percent of total manufactured export earning in FY 2012-12. Out of these nine products only readymade garments contributed 90 percent in FY 2012-13.

The industrial production as well as market is not sufficiently diversified. In FY 2012-13, 66 percent of total export earning was only from nine countries including USA, Canada, Japan and six European countries while all the remaining countries of the world contributed to remaining 34 percent of export earning in Bangladesh. Similarly, only nine products contributed 93 percent of total manufactured export earning. Out of these nine products only readymade garments contributed 90 percent in FY 2012-13. The lack of product and market diversifications acts as major stumbling bock for progress of the economy.

4. TECHNOLOGICAL CATCHING UP AND COMPARATIVE ANALYSIS

Bangladesh is lagging behind in technological catching up and there is no mentionable effort to steer catching up process.

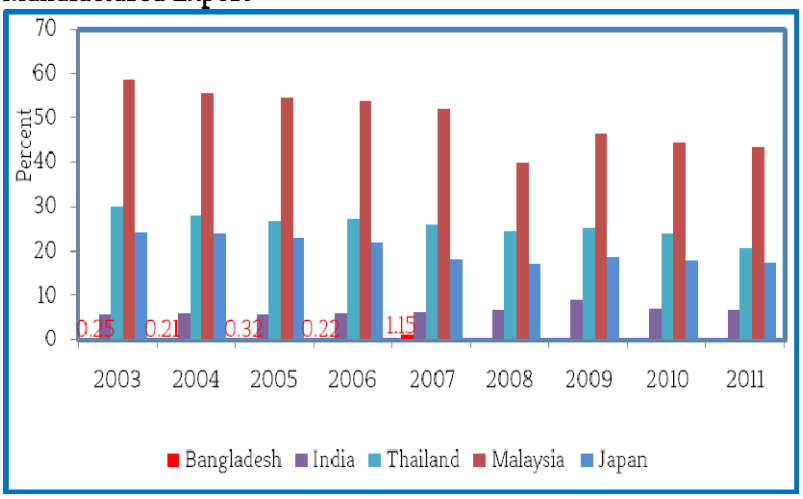
4.1. Bangladesh in Technological Catching Up

Government allocated Tk. 3.67 billion as development and non development expenditure for ministry of science and technology which is 3 percent higher and 0.84 percent lower than the revised and proposed budget of FY 2012-13 respectively.

India allocated Rs. 62.75 billion in science and technology in 2013 which is 5 percent and 24.75 percent higher than those of the proposed and revised budget of the previous year

Share of technology in total manufactured export, per capita GDP and ranking in different index manifest the poor condition of technological advance in Bangladesh and calls for more policy initiatives in this area. In 2007, Bangladesh exported 1.15 percent high technology manufactured goods of total manufactured export which was 6.40 percent for India, 25.96 percent for Thailand, 52.28 percent for Malaysia, and 18.41 percent for Japan. With this lower share of high technology export, government allocated Tk. 3.67 billion as development and non development expenditure for ministry of science and technology which is 3 percent higher and 0.84 percent lower than the revised and proposed budget of FY 2012-13 respectively. India allocated Rs. 62.75 billion in science and technology in 2013 which is 5 percent and 24.75 percent higher than those of the proposed and revised budget of the previous year although India experiences good performance in technology (The Economic Times, 2013).

Figure 12: Share of High-end Technology Export in Total Manufactured Export



Source: World Development Indicator, 2012

In terms of innovation, Bangladesh is heading towards low pace of technology catching up arising from negligible efforts. Losing 18 steps in global innovation rank, it reached at 130th position in 2013 from the previous 112th position in 2012. In competitive industrial performance (CIP), Bangladesh and India maintained the same rank in 2009 and 2010, while the other emerging countries Thailand, Malaysia and developed country like Japan improved the position. In knowledge index, Bangladesh lost 3 step of rank over twelve years, which include education, innovation and Information and Communication Technology.

Table 3: Rank of the Countries

Index, Score	Year	Bangladesh	India	Thailand	Malaysia	Japan
Global Innovative Index	2013	130 (24.52)	66 (36.17)	57 (37.63)	32 (46.92)	22 (52.23)
	2012	112 (26.1)	64 (35.7)	57(36.93)	32 (45.9)	18 (61.3)
CIP Index	2010	78 (0.0254)	43 (0.0747)	23 (0.1712)	21 (0.1834)	1 (0.5409)
	2009	78	43	26	22	2
KI	2012	137 (1.48)	110 (2.89)	66 (5.25)	48 (6.25)	22 (8.53)
	2000	134 (1.83)	104 (3.0)	60 (5.07)	45 (6.45)	17 (8.87)

Score is in parenthesis

Source: JOHNSON, INSEAD, WIPO, 2012, 2013; UNIDO 2013; World Bank 2012

Finally, low per capita purchasing power is one of the indicative factors of her slow rate of technological catching up. Percentage change between 2000 and 2011 in per capita purchasing power GDP in countries with higher income like

Percentage change between 2000 and 2011 in per capita purchasing power GDP in countries with higher income like USA and Japan were 0.07 and 6.13 respectively whereas this percentage change was higher in countries with comparatively lower income like Bangladesh (61.65), India (86.00) and Thailand (38.86).

USA and Japan were 0.07 and 6.13 respectively whereas this percentage change was higher in countries with comparatively lower income like Bangladesh (61.65), India (86.00) and Thailand (38.86). Higher figure of percentage change in the developing and emerging economies depicts the scope of catching up. However, percentage change in income in Bangladesh is comparatively high but it is lower than India. Although India has higher income than Bangladesh, the country (India) is continuing the pace of increasing income that depicts the focus of India in technological catching up which lacks Bangladesh.

Table 4: Per Capita Purchasing Power GDP (USD2005)

	2000	2005	2010	2011	Change 2000-2011(%)
USA	39545	42516	42079	42486	0.074371
Bangladesh	970	1165	1488	1568	61.64948
% of USA	2.45	2.74	3.54	3.69	50.61224
Thailand	5497	6675	7673	7633	38.85756
% of USA	13.90	15.70	18.23	17.97	29.28058
India	1722	2209	3039	3203	86.00465
% of USA	4.35	5.20	7.22	7.54	73.33333
Japan	28889	30441	30965	30660	6.130361
% of USA	73.05	71.6	73.59	72.17	-1.20465

Source: World Development Indicator, 2012

4.2. Comparative Technological Catching Up and Lessons for Bangladesh:

Malaysia, Thailand, Singapore, and Japan can be considered role model for Bangladesh in the catching up process. Initially a primary product dependent Malaysia turned into manufacturing and service oriented economy. Technological catching up took place through spillover effect of foreign firms operation and massive skill development efforts undertaken by the government. Research and development expenditure as percent of GDP reached to 1.07 in 2011 from 0.5 in 2000 in Malaysia, resulting from increasing importance of R&D at the policy level (MASTIC, 2013).

Thailand transformed from agricultural based economy of 1960s to an industrialized one in 1990s. Thailand imported sophisticated technology, assembled them within the country

and exported high technology oriented product, reflected in the high technology share of export with comparatively low expenditure on R&D. Research and development expenditure. It also cared for infrastructure development, environment and human resource. Recently, information and communication, biotechnology, nanotechnology, and material technology are on priority in Thailand. The present Thaksinomics runs under two perspectives – (a) competing globally and inclusive rural economy.

Singapore has emphasized much on technological development, and R&D expenditure represented 2.28 percent of GDP in 2011 which was 2.09 percent in 2010 (Agency for Science, Technology and Research, 2012). Singapore has also been emphasizing on most up to date technological development while trying to develop efficient human resource for the production of high-technology products.

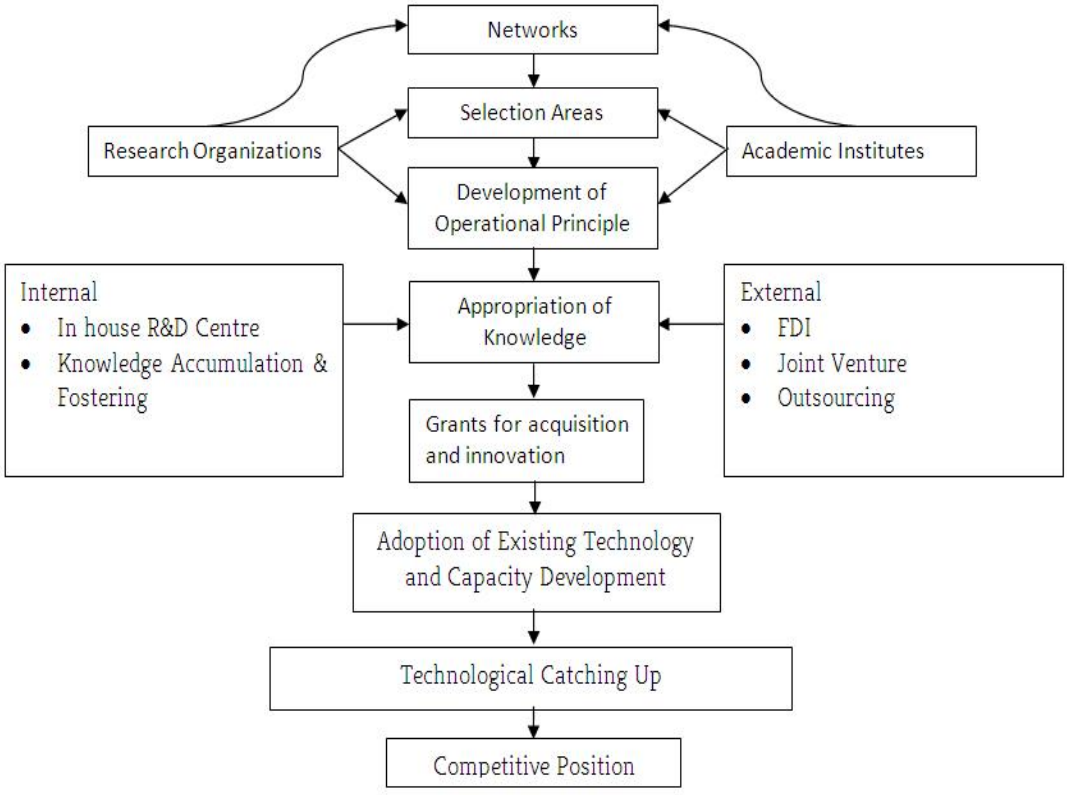
Japan acquired matured technology from the developed countries at the initial stage of catching up. In Japan, engineering and in house R&D are highly prioritized. The country followed a synchronized system of investment, R&D, innovation, management and marketing, which drove them towards development with catching up. R&D expenditure in Japan in 2011 is 3.67 percent of GDP which is 17.38 trillion yen (Ministry of Internal Affairs and Communication, 2013). Keiretsu, a set of companies with interlocking business relationships and shareholdings, is one of the key factors acted behind the catching up. A concise list of factors that have acted behind the success of these four countries is presented in Table 6.

Table 5: Precise Characteristics of Catching Up Economies in Matrix

	Malaysia	Thailand	Singapore	Japan	Bangladesh
State Role	Incentive to venture capital, R&D, export; facilitate industrial input import; least foreign exchange control; no foreign investors restriction, human development; free zone; patent, trademark, product licensing & so forth	State Role in the economy with incentive in investment and trade	Incentive to attractive investment, export; R&D, venture fund, capital; international oriented policy; least restriction in entrepreneurial activity; support to product design and technology development, patent	R&D, grants; incentive for small business; intellectual protection	Minimum
R&D Expenditure	Moderate	Moderate	High	High	…..
Linkage	Backward and forward Linkage	Exist	Horizontal, forward and backward	Keiretsu	Weak
Foreign Firms	MNCs; no restriction in new investment in manufacturing but specific for national industries	Foreign firms with some key restriction	High value added and R&D intensive MNC; no restriction	Lower within country than Japanese outside the country	MNCs with least restriction
Innovation	Prioritized	Prioritized	Prioritized	Highly Innovative	Substantially Low
FDI	Stronger FDI inflow	High FDI inflow	Higher inflow & high bidirectional flow	FDI outflow is stronger	Recent in downbeat inflow
Technology Transfer	Strong commitment	High	High	High	Less
Science and Technology Policy	To Achieve Vision 2020	For knowledge based sustainability	Aggressive Policy for R&D	Policy to vigour direct industrial performance	Less implemented policy
Others	Acquire & Adapt Foreign Technology	Thaksinomics	SME priority	Well synchronization	Lack of organization

A review of the experience of the above countries demonstrates that Bangladesh needs to grab technology with effective supports and to initiate innovation process. Direct capital investment, technology import affect the technological advance whereas international linkages like joint venture, technology outsourcing standardization effect indirectly. To usher in technological advancement, network development among the stakeholders is important. In this respect government can play direct as well as indirect role with private sector. There should have to be higher allocation for research and development. Support should be given in development of synchronized channels to seize the international technological advances. FDI investment also plays supportive role in international technology grabbing through spillover effect. FDI policy, therefore, should emphasize on technological consideration when dealing with the investors. Knowledge development and learning intensity are factors of catching up and should be vitalised with enhanced infrastructure, financial and human capital. The Figure – 1 illustrates a process of technological catching up.

Figure - 1: Process of Technological Catching up



5. POLICY SUPPORT

The following policy support is needed to strengthen the situation of the industrial sector:

Concentration on Infrastructure: Concentration should be given to all the supportive infrastructure of industry i.e. electricity, gas, water, education, health. Using the available fund, best solutions are required to search for reducing current and intertemporal cost of infrastructure. The entire physical infrastructure including road, rail, and water transport should be focused in terms of quality, quantity and security.

Diversification of Market and Product: Concentration of Bangladesh in nine countries and nine products (aforementioned) is one of the major obstacles in running in the track en route to achieving sustainable growth of Industry. For attaining sustainable industrial growth, product as well as market should be diversified and explored by focusing domestic capability, and national and international prospects and risks associated with future markets.

Actions in the RMG sector: Bangladesh should take actions about the RMG and other prospective products to gain GSP facilities from developed countries. The arisen peril of RMG sector regarding workers' security, wage and so forth should be solved convincingly with active involvement of stakeholders.

Technology catching up: The Sixth Five Year Plan has identified several problems related to technology. The realisation, however, should come with the intention of proper support to R&D. As Bangladesh is a country with low resource base, in this backdrop, a complete strategic action plan should be prepared identifying the sectors and time line to meet up the objectives in technology. Long run efficient development of human resources is a prerequisite for industry.

Innovative policy in power sector: Government has high budgetary allocation in power sector. Although the policies have solved the power crisis to some extent immediately, they have created new problems such as higher electricity prices, budgetary pressure, etc. Interventions have to be selected

based on prospect and viability of Bangladesh economy and opportunity cost for long term solution of the power crisis.

Consider social cost of industry: To satisfy industrial objectives, time-befitting quick decisions and proper implementation is important. For instance, the tannery industry is in the process to shift, but the shift is suffering from time lag and consequently low investment.

6. CONCLUSIONS

The present study brings to the fore that the industry sector of Bangladesh is maintaining an unsatisfactory rate of growth. Current incongruence in the industrial sector has raised the scope to scrutinise the problems and prospects to facilitate the synchronisation of understanding and implementation. The study finds four clusters of weaknesses that resulted in sluggishness of the industrial sector of Bangladesh. Concentration should be given to all the supportive infrastructure of industry i.e. electricity, gas, water, education, health using the available fund. Export oriented product as well as market should be diversified and explored. Innovative policy, both short and long run, should be taken to overcome the power crisis. Last but not the least; concentration should be given to technological catching up to boost the industrial sector. But above all, to maintain successful industrilisation, the government has to play proactive role in terms of regulation, incentives and entrepreneurial pathways.

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