

# Dynamics of Ongoing Changes in Bangladesh's Export-Oriented RMG Enterprises: Findings From An Enterprise Level Survey

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## *Abstract*

*The paper presents the findings of a recent CPD-conducted firm-level survey of Bangladesh RMG industry focusing on the sector's exports and other industry-related matters such as firm level restructuring, market concentration, capital stock, production capacity, labour and capital productivity, production cost and profits etc. both before and after the MFA phase-out. It reveals that all types of RMG firms have registered higher growth after the MFA phase-out, with large firms having an edge over medium and small ones. Exports increased in the post-MFA period, driven mainly by increased global demand, EU and US safeguards against some Chinese exports and preferential access to developed countries. The study notices a growing trend toward scaling up of operation of RMG enterprises as buyers are showing keen interest in getting supplies from a limited number of enterprises. The study reveals that this scaling up of operation of RMG enterprises would enhance productivity of enterprises and also their capacity to produce high end products. The scaling up effort would also require infusion of fresh capital, greater access to credit and fiscal and institutional support. The study recommends budgetary support similar to incentives currently provided by the Government of India to RMG and textile sectors under the Technology Upgradation Fund Scheme.*

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## 1. Introduction and Objective of the Study

The phase-out of the Multi Fibre Arrangement (MFA) on December 31, 2004, as per the Agreement on Textile and Clothing (ATC) of the WTO, has brought to an end the “managed” trade regime in global trade in apparels and textiles. Many studies envisaged that the phase out of the MFA and China’s accession to the WTO will have serious negative implications for export-oriented apparels sector of Bangladesh (Gherzi 2002, Fouquin *et al.* 2002). The estimated loss of export ranged between 6.2 per cent and 17.7 per cent of the export earnings depending on various assumptions that were considered (Lips *et al.* 2003, Mlachila and Yang 2004). Nordas (2004) estimated loss of market share for textiles in the EU to be around 2 per cent of export earnings, while that for clothing would rise by 1 per cent between 2002 and 2005. In the case of US market, share for clothing would decline by 2 per cent. Mlachila and Yang (2004) had argued that exporters will not have quota rents to cushion price falls in the case of an increased competition under the post-MFA regime. The ensuing fall in price will directly cut into profits of apparels entrepreneurs; to what extent Bangladesh would be able to absorb the shock will critically depend on the existing level of profit that was used to be enjoyed by its exporters. However, the fact of the matter is that following the MFA phase out, Bangladesh’s RMG sector has passed two and half years without any major setback. With the rise of global export of apparels and textiles, from about US\$258 billion in 2005 to US\$275.6 billion in 2006 (with a growth rate of 6.4 per cent), Bangladesh’s export has also increased. Export of apparels has increased from US\$5.7 billion in FY2004 to US\$6.4 billion in FY2005, registering a growth of 13 per cent; the sector has further increased its export to about US\$7.9 billion in FY2006 (growth 23 per cent) and about US\$9.2 billion in FY2007 (growth 16.6 per cent).<sup>1</sup>

A major trend of recent times in the RMG sector of Bangladesh is the intra-RMG diversification, as ratio of gross export earnings from woven wear to knitwear was increased from 100:34 in FY1997 to 100:98 in FY2007. Between FY2000 and FY2007 gross export earnings have more than doubled, whilst net export earnings have gone up by almost two and half times. If Bangladesh used to retain, on average, 38 cents to a dollar a decade back (FY1997), in FY2007 she retained 45 cents to dollar, a rise of 18.4%. In recent years, most of the increase in export earnings has come from increase in volume, rather than increase in price. Indeed,

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<sup>1</sup> However, the sector has experienced negative growth in export earning during the first quarter of FY2008 compared to that in the previous year. This is possibly because of getting relatively small orders from the buyers during October-November, 2006 due to unstable political situation in the country.

between FY2005-07 average price of knitwear has come down by 1.32 per cent and that of woven wear by 6.8 per cent. Consequently, this had important implications for expansion of production volume through higher capacity utilization and productivity enhancement. Bangladesh's recent success in the apparel export has been accounted for by several factors: firm level restructuring and repositioning, increasing global demand, safeguard measures against China, preferential market access in developed countries and growing backward linkages.

Global market following the phase-out of the MFA in 2005 is also showing some new trends. Market is becoming concentrated in a few large buyers and retailers; outsourcing is being narrowed down to a limited number of destinations. Fashion changes are taking place at a faster pace, especially in terms of colour and design; buyers are giving more emphasis on product diversification with lean retailing. Retailers are increasingly approaching their manufacturers with their own specification. Manufacturers are directly outsourcing their raw materials. All these changes have important implications and impact on the RMG sector of Bangladesh.

In spite of some anecdotal information and evidence on the ongoing dynamics of changes in Bangladesh's export-oriented RMG sector, systematic knowledge about the major facets of change and their consequences in terms of performance correlates are largely absent. Most importantly there is a serious lack of knowledge on restructuring at the firm level in view of the quota phase out, which the paper tries to address. More specifically, the paper identifies major features of economic restructuring that are currently taking place at the firm level particularly in terms of capital formation, changes in skill composition, changes in production cost, productivity of labour and capital, wage-productivity relation, profitability etc. Based on the analysis on firm level economic restructuring, the paper will provide some policy suggestions for the RMG sector in order to confront the future challenges.

## **2. Methodology and Outline of the Study**

The paper is based on the findings of a survey carried out at the enterprise level. The survey was conducted in the middle of 2006. Most of the questionnaire for the survey is designed to get a comparable scenario before and after the quota was lifted out in 2005. Major issues covered under the survey were structure of the enterprise, export, product composition, machineries, management, and relation with worker, compliances, and prospect of garment export, labour related issues

etc. A stratified sampling technique has been used for selection of the sample in a manner that ensured an acceptable level of confidence. A total of 190 enterprises with 85 woven units (45 per cent of the total sample), 72 knits (38 per cent) and 33 sweater units (17 per cent) were selected for the survey. Most of the sample units are located in Dhaka city and adjacent areas (80 per cent), while the rest are located in Chittagong. 33 EPZ enterprises are surveyed which covered 17 per cent of the entire survey.<sup>2</sup> A total of 469 workers were surveyed, out of which 31 per cent belonged to knit units, 47 per cent to woven units and 22 per cent to sweater units. 211 were male (45 per cent) and 258 were female (55 per cent).

The paper is comprised of nine sections. Section three discusses sample firms' export immediately before and after the MFA phase-out, product composition and market concentration during this period. Section four analyses fixed assets of sample firms and their formation of capital during 2004 and 2005. Section five discusses on skill composition in different types of sample firms and its changes in 2005. Section 6 examines production cost of different types of sample firms and its changes after the MFA phase out. Section seven analyses the labour and capital productivity of sample firms; the interface between labour productivity and wage has also been examined in this regard. Section eight focuses on net earning of sample firms and its changes following the MFA phase out. Finally, section nine concludes with some remarks on policies.

### **3. Sample Firms' Export, Product Composition and Market Concentration during 2004 and 2005**

In the first year after the MFA phase out (in 2005) the sample firms, on average, exported about US\$4.76 million worth of products, which was about 14.4 per cent higher compared to that in 2004 (Table 1). This figure is very close to what is found in terms of growth of apparel export at national level in 2005 (10.95 per cent). Average exports of woven wear, knitwear and sweater by sample firms were US\$5.4 million, US\$4.3 million and US\$4.1 million with growth rates of 17.9 per cent, 27.5 per cent and 20.9 per cent respectively. This level of growth is similar to the growth taking place at national level in the case of knitwear exports but higher for woven wear category.<sup>3</sup>

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<sup>2</sup> Recently a number of RMG enterprises have been established outside the Dhaka city, in areas with available land such as in Narayanganj, Savar, Ashulia, Tongi, Gazipur, and Dhaka Export Processing Zone (DEPZ). This reflects the changing location pattern, where new factories are being increasingly established outside of commercial areas.

<sup>3</sup> Growth of woven and knit (knit and sweater combined) export between 2004 and 2005 was 0.08 per cent and 26.8 per cent.

All types of enterprises had higher exports in 2005 compared to that of 2004. Large enterprises exported about 23 per cent higher in 2005 compared to 2004, while the figures for medium and small categories were 17 per cent and 6 per cent higher. Large enterprises' export was more than two times higher than that of medium enterprises and about seven times higher than that of small enterprises.

**Table1: Export of Sample Enterprises (US\$ million)**

	Knit			Woven			Sweater			Total		
	2004	2005	Percent age change in 2005 over 2004	2004	2005	Percent age change in 2005 over 2004	2004	2005	Percent age change in 2005 over 2004	2004	2005	Percent age change in 2005 over 2004
Large	8.33	11.64	39.8	8.8	10.63	20.8	5.91	7	18.5	8.15	10.02	23
Medium	4.98	6.25	25.5	4.46	4.94	10.9	2.43	2.31	-4.9	3.91	4.57	17
Small	1.42	1.51	6.3	1.3	1.33	2.5	2.22	2.78	24.9	1.44	1.52	6
Total	3.34	4.26	27.5	4.6	5.42	17.9	3.39	4.1	20.9	3.93	4.76	21.1

Source: CPD-RMG Survey, 2006.

This pattern of growth reflects the recent market pattern whereby buyers are showing interest on a limited number of countries capable of meeting bulk orders. It is only the large and medium enterprises that are likely to be able to supply these orders. This trend towards concentration and further marginalisation of the small firms is likely to continue and gain pace in the near future. It is therefore important to monitor and assess whether the small firms could efficiently operate with limited production capacity given their existing level of technology, scale of production and the demand behaviour of large retailers and buying houses.

Sample firms have exported a diverse category of products that follows, in general, the structure of exports at national level. In woven categories, major types of products exported are: men's/women's trousers (29.8 per cent), men's and boy's shirts (17.5 per cent), men's and boy's jacket (12.3 per cent), women's and girl's shirts (8.8 per cent), etc. All categories of firms had major product concentration in men's and boy's trousers (share of 27.8 per cent to 31.3 per cent) and men's and boys shirts. In knit category, major product types exported by sample firms in 2005 were: basic T-shirts (29.8 per cent), polo shirts (22.8 per cent), briefs (7.6 per cent), etc. Some large firms have specialised in

manufacturing sportswear, tank tops, etc. In sweater category, major concentration was in 5 gauge (22.4 per cent), 7 gauge (27.1 per cent) and 3 gauge (18.8 per cent) products, which are relatively of mass scale nature and by and large of low sophistication. Some enterprises were found in all categories which manufactured relatively high-end 12-gauge products.<sup>4</sup> Products manufactured by EPZ or FDI-led enterprises did not vary significantly according to types from those manufactured by non-EPZ and non-FDI-led enterprises.

The sample enterprises have exported their products mainly to the EU and the USA and to some extent to Canada, Japan and a few other markets. According to Table 2, the highest proportion of entrepreneurs (72) has exported their products to two markets (38 per cent), while another 60 entrepreneurs have exported only to one market (32 per cent). The number of entrepreneurs who were exporting to more than two markets was also found to be high (53). According to a recent World Bank study, this reflects enterprise's higher productivity (World Bank 2006). Compared to 2004, market composition has slightly changed in 2005 (the number of exporter in the sample who exporting to more than two markets was 43 in 2004). Majority of large entrepreneurs (about 74 per cent) have exported to two or more markets, which is indicative their strength in terms of networking with different buyers from different markets.<sup>5</sup> About 64 per cent of medium enterprises exported to two or more markets, while 62 per cent small enterprises exported to more than two markets. Small enterprises generally tended to concentrate in one market, either EU or USA probably because of their low level of production capacity, weak marketing linkages, etc.

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<sup>4</sup> However, over the period of time, RMG enterprises have diversified product composition in all types of products. In woven category, out of 10 different types of products produced in 1985-1990, major products were men's/women's trousers and men's and boys' shirts. During 1991-95, composition of products was diversified in men's/ boy's shirts, men's/boy's jackets, men's/women's trousers and women's/girls' shirts. During 1996 - 2003 product composition has diversified further which includes men's/boy's shorts, baby's garments, women's/ girl's raincoats, etc. In case of knit category, only T-shirts, polo shirts and briefs were manufactured in the 1985-1990 period, which further diversified by including sportswear, child wear, etc in 1991-95 and much more in the next periods. Sweater production was mainly concentrated in 5, 7, 10 and 12 gauge products since its inception in Bangladesh.

<sup>5</sup> According to World Bank (2006), 26 per cent firms exported during 2004 in only one market, 39 per cent to two markets, 24 per cent to three markets and 11 per cent to all four markets. Firms that export to more destinations tend to have higher average unit values and larger in size, with the former reflecting better quality and the latter indicating greater scale of economies, both signaling higher productivity of the firms.

**Table 2: Number of Enterprises Exported in Different Market**

	One market	Two markets	More than two market	Other markets	Total
Large	12 (22.60)	21 (39.60)	18 (34.00)	2 (3.80)	53 (100.00)
Medium	19 (36.50)	21 (40.40)	12 (23.10)	0 (0.00)	52 (100.00)
Small	29 (34.10)	30 (35.30)	23 (27.10)	3 (3.50)	85 (100.00)
Total	60 (31.60)	72 (37.90)	53 (27.90)	5 (2.60)	190 (100.00)

Source: CPD-RMG Survey, 2006

As against non-EPZ units, EPZ enterprises were found to be more diverse in terms of markets for all product categories. Better global network may have contributed to this, something which is not readily available for many of the non-EPZ units.

#### **4. Sample Firms' Fixed Assets and Formation of Capital in View of MFA Phase Out**

According to the survey, fixed capital stock of the sample enterprises has substantially improved following the MFA phase out. Table 3 shows that a sample enterprise, on average, was endowed with an additional capital stock of US\$0.41 million in 2005, which was about 30 per cent higher than that of the previous year.<sup>6</sup> Sample knit units have increased their capacity by adding capital stock worth US\$0.57 million (a 49 per cent increase), followed by woven (US\$0.36 million, 21 per cent) and sweater units (US\$0.21 million, 26 per cent). It appears from the survey data that large enterprises added to the capital stock most in 2005, which was worth US\$0.97 million; addition to the capital stock by medium and small enterprises was relatively low (US\$0.25 million and US\$0.02 million, respectively). This change in capital stock in the course of a year adding to gross fixed capital formation (GFCF) for the sample units was mostly in the form of an increase in the stock of capital machineries imported from abroad. According to CPD (2006), import of capital machineries, of which a substantial part was textile and apparel machineries, increased by 53 per cent during 2004-2005 and 30 per cent during 2005-2006. The data in general follows the national trend.

<sup>6</sup> According to the US International Trade Commission Report (2004), gross fixed capital formation in the apparel sector of Bangladesh was US\$25.7 million and in the textiles sector it was US\$166.2 million.

**Table 3: Changes in Capital Stock: Gross Fixed Capital Formation (in US\$ Mln.)**

		2004	2005	GFCF	% change
Knit	Large	3.84	6.68	2.84	74.1
	Medium	1.46	1.84	0.37	25.4
	Small	0.41	0.40	-0.01	-2.1
	Total	1.15	1.72	0.57	49.5
Woven	Large	3.35	4.30	0.95	28.5
	Medium	2.02	1.99	-0.03	-1.5
	Small	0.48	0.52	0.05	9.7
	Total	1.73	2.10	0.37	21.2
Sweater	Large	1.62	1.55	-0.07	-4.4
	Medium	0.56	0.78	0.22	39.8
	Small	0.42	0.49	0.07	17.7
	Total	0.80	1.01	0.22	27.0
Total	Large	3.13	4.11	0.98	31.2
	Medium	1.37	1.62	0.25	18.2
	Small	0.44	0.46	0.02	5.4
	Total	1.36	1.78	0.41	30.4

Source: CPD-RMG Survey, 2006

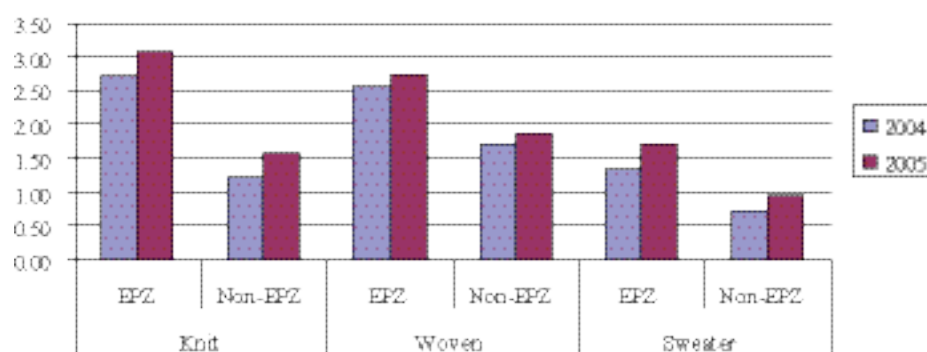
Investment in capital machineries in the sample knit enterprises, especially in the case of large units, (US\$2.84 million) went mainly to strengthen backward linkage part of the value chain in the knitwear sector, especially for upgrading the knitting section. Interestingly, small knit units had a fall in their stock of capital in 2005 compared to 2004. According to their owners, this was because they had shifted some of the capital machineries from the existing units to the newly established ones which were of larger size. Large woven units were endowed with substantial additional capital stock during 2005. This investment went for expanding the scale of operation and to improve quality of production. A low level of GFCF in small enterprises in all the sub-sectors is possibly explained by the availability of lower levels of invisible surplus in the hands of this particular set of entrepreneurs. This was likely to have an adverse impact, perhaps left them behind the pace for up-gradation and restructuring of those particular small-scale units.

The data shows that EPZ enterprises have a higher stock of capital compared to that of non-EPZ enterprises (Figure 1). Between 2004 and 2005, stock of capital in EPZ enterprises increased by 10.2 per cent, while the change in non-EPZ



enterprises was about 16.1 per cent. More investment by non-EPZ enterprises in capital machineries was a sign of maturity of the domestic RMG sector concentrated in the DTA which was likely to have a positive impact for the sector. Sample FDI-led enterprises, on the other hand, had capital stock worth US\$3.13 million, which was 16 per cent higher than that of sample EPZ enterprises. Although the rate of change in the capital stock in FDI-led enterprises was relatively low (about 8 per cent), however, the change in absolute figure was impressive. Addition to the existing capital stock in large enterprises, located in both EPZ and non-EPZ areas, was likely to have a positive impact on future productivity and efficiency.

**Figure 1: Stock of Machineries in EPZ and Non-EPZ Enterprises**



Source: CPD-RMG Survey, 2006

## 5. Skill Composition in Sample Firms and Its Changes after MFA Phase Out

According to the level of skill of workers, 20 per cent workers in sample enterprises belonged to unskilled category, who are mostly helpers in various sections of the factory.<sup>7</sup> The proportion of semi-skilled workers is about 30 per cent, who mainly work as junior operators. Skilled workers are senior operators who comprised of 44 per cent of total workers. Professional and management level staff comprised of 5.7 per cent of the total labour force.<sup>8</sup> Proportion of

<sup>7</sup> Workers working at various levels/different grades (Grade I to Grade VII) are broadly categorised as 'professional', 'skilled', 'semi-skilled' and 'unskilled' labourers.

<sup>8</sup> According to SEDF study (2006), more than 75 per cent of the respondents of the sample firms mentioned that about 75-100 per cent of their employees are skilled, which appears to be too general a statement (from the enterprise perspective) considering the different layers in the job hierarchy.

unskilled workers was relatively low in large enterprises (16 - 18 per cent) while their proportion was higher in medium and small enterprises (18-26 per cent); proportion of skilled workers was found to be higher in large enterprises (46-53 per cent). EPZ enterprises were employing more skilled workers compared to non-EPZ enterprises (average per cent of highly skilled workers is about 49 per cent in 2005). It appears that large factories and factories located in EPZ generally tend to have operated with a higher share of skilled workers in the workforce. This is likely to have implications in terms of productivity when compared with small and medium enterprises. No significant difference in the distribution of workforce according to skill categories could be discerned between 2004 and 2005.

**Table 4: Skill-wise Proportionate Distribution of Workers**

		Professional	Skilled	Semi-Skilled	Unskilled
Knit	Large	5.4	46.5	30.8	17.3
	Medium	5.6	34.4	33.1	26.9
	Small	5.7	40.3	31.8	22.2
	Total	5.7	40.0	31.9	22.4
Woven	Large	6.0	53.3	24.7	16.0
	Medium	4.7	41.6	32.7	21.0
	Small	6.4	48.3	27.2	18.3
	Total	5.9	48.4	27.6	18.1
Sweater	Large	6.0	46.6	29.1	18.3
	Medium	5.5	42.3	29.6	22.7
	Small	5.2	36.2	42.0	16.7
	Total	5.6	42.7	31.7	20.0
Total	Large	5.9	50.2	27.1	16.9
	Medium	5.2	39.5	31.9	23.4
	Small	6.0	43.5	30.5	20.0
	Total	5.8	44.3	29.9	20.0

Source: CPD-RMG Survey, 2006

There were some changes in the composition of workforce in 2005 compared to the previous year (Table 5). Enterprises were employing more skilled workers and professionals presumably to efficiently handle new machineries acquired in recent times and ensure higher levels of production. As a whole, the share of professional and skilled workers has increased by 4 per cent and 3 per cent, respectively, while that of unskilled and semi-skilled workers has declined by about 4 per cent and 2 per cent, respectively. The change in worker composition was found to be

prominently visible in the case of medium enterprises (share of professionals increased by 11 per cent, mainly in knit units) and small enterprises (share of skilled workers increased by 5 per cent and unskilled workers declined by 6 per cent). Large enterprises experienced an increase in the share of professionals, skilled and semi-skilled workers, but only marginally. The change in worker composition was relatively high in the case of woven enterprises, as the share of unskilled workers in these enterprises fell by 7 per cent and that of semi-skilled workers by 4 per cent, especially in medium and small enterprises; the share of professional and skilled workers increased by 5 per cent. In view of the increasing competition in the market and new acquisition of technology, change in skill composition favoring a more skilled work force is becoming critically important for Bangladesh's RMG sector.

Labour composition in EPZ enterprises has undergone some changes with the share of unskilled workers coming down by 8 per cent and the share of skilled workers going up by 3 per cent, and that of professionals by 9 per cent (Table 6). Sample woven units in the EPZ have increased the share of professionals in the work force by 14 per cent, while sample knit and sweater units increased skilled workers by 4 - 8 per cent, respectively. Sample knit units of EPZ, on the other

**Table 5: Changes in Skill Composition between 2004 and 2005**

		Professional	Skilled	Semi-skilled	Unskilled
Knit	Large	-1.5	0.6	4.9	-8.7
	Medium	5.7	4.1	-13.8	7.5
	Small	-6.4	1.9	5.9	-6.1
	Total	2.7	1.6	1.0	-3.0
Woven	Large	3.8	0.1	-2.3	1.9
	Medium	-8.9	14.6	0	-18.8
	Small	14.1	7.7	-8.8	-8.1
	Total	5.3	5.1	-4.1	-7.4
Sweater	Large	-2	8.3	-3.9	-11.1
	Medium	5.1	-7.8	9.6	3.3
	Small	6.4	10.1	-6.4	4.2
	Total	4.5	1.6	-1.1	-1
Total	Large	1.5	0.7	0.2	-2.7
	Medium	10.6	1.8	-1.2	-3.4
	Small	3.5	5.4	-2.4	-5.9
	Total	4.2	3.1	-1.5	-4.3

Source: CPD-RMG Survey, 2006

**Table 6: Changes in Skill Composition between EPZ and Non-EPZ Enterprises between 2004 and 2005**

		Change (per cent)			
		Professional	Skilled	Semi-skilled	Unskilled
Knit	EPZ	2.0	7.2	-1.2	-12.6
	Non-EPZ	0.6	1.7	0.7	-2.1
	Total	0.7	2.4	0.6	-3.2
Woven	EPZ	13.6	1.4	-3.1	-4.8
	Non-EPZ	0.3	5.1	-2.8	-7.2
	Total	3.8	4.1	-2.9	-6.7
Sweater	EPZ	0.0	4.5	6.6	-5.6
	Non-EPZ	5.2	1.1	-2.2	-0.1
	Total	4.5	1.6	-1.1	-1.0
Total	EPZ	9.0	3.2	-1.5	-7.5
	Non-EPZ	1.3	3.0	-1.2	-3.7
	Total	2.7	3.0	-1.2	-4.2

Source: CPD-RMG Survey, 2006

hand, have seen a reduction of unskilled workers by 13 per cent and woven units by 5 per cent and sweater units by 6 per cent. Worker composition in the sample EPZ enterprises has shifted towards more skilled component.

## 6. Sample Firms' Cost of Production and Their Changes after MFA Phase Out

Industrial Cost: Industrial cost of production usually comprises of cost of fabrics, accessories, raw materials, embroidery, dyeing, washing and finishing, cost of electricity and other public utilities, etc., which accounted for as much as 80 per cent of the total output of sample enterprises. Cost of fabrics accounts for the single largest share in total output, which was 55 per cent. According to Table 7, average industrial cost of sample enterprises was US\$2.9 million; the cost in a woven enterprise was relatively higher (US\$3.4 million) because of high cost of imported fabrics. Industrial cost was relatively low in the knitwear (US\$2.6 million) and sweater (US\$2.2 million) units, since these enterprises were able to procure the required amount of fabrics from low cost domestic sources.

Industrial cost of production in the sample enterprises increased by 21 per cent in 2005, following quota phase out (Figure 2), mostly because of the rise in the costs

**Table 7: Cost of Production (US\$ per year)**

	2004				2005			
	Labour cost	Industrial cost	Non-Industrial cost	Total	Labour cost	Industrial cost	Non-Industrial cost	Total
Knit	460,000 (17.7)	2,080,000 (79.0)	90,000 (3.3)	2,630,000 (100)	530,000 (16.1)	2,630,000 (80.3)	120,000 (3.6)	3,270,000 (100.0)
Woven	600,000 (16.6)	2,930,000 (80.6)	100,000 (2.8)	3,630,000 (100)	690,000 (16.1)	3,440,000 (80.8)	130,000 (3.1)	4,260,000 (100)
Sweater	490,000 (20.5)	1,810,000 (75.6)	100,000 (4.0)	2,390,000 (100)	580,000 (19.8)	2,230,000 (76.3)	110,000 (3.9)	2,920,000 (100)
Total	540,000 (17.7)	2,420,000 (79.3)	100,000 (3.0)	3,050,000 (100)	610,000 (16.7)	2,930,000 (80.1)	120,000 (3.3)	3,660,000 (100)

*Note:* Industrial costs include cost of raw materials, packaging materials, fuel and electricity, spares and subcontracting; non-industrial costs include costs for advertisement, facilitation charges, selling and distribution costs, bank interest and taxes.

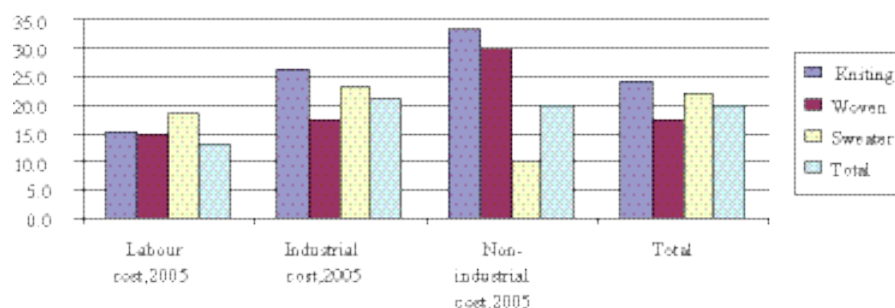
*Source:* CPD-RMG Survey, 2006

for manufacturing an additional 20 per cent apparel output in 2005. The rise of industrial cost was relatively higher in knit and sweater units, 26.4 per cent and 23.2 per cent, respectively, reflecting higher levels of production in these two sectors following the MFA phase out. Besides, the share of industrial cost in the overall output has gone up marginally in all types of sample enterprises following the quota de-restrictions, which was 1.3 per cent in knit units, 0.2 per cent in woven units and 0.7 per cent in sweater units.

Similarly, non-industrial costs such as costs for commission on L/C, commission of c & f agents, duties, interests and transport cost have increased by about 20 per cent in 2005. According to a bank official, banks revised upward various charges related to opening and settlement of L/C, PSI charges, etc. in 2004 (Table 8).<sup>9</sup>

It has been indicated by various studies that industrial cost has been increasing over time (Table 9). According to ISS study conducted in 1992, industrial cost was 73 per cent of total output, while it was 64 per cent in 1995 (BIDS 1995).

<sup>9</sup> Banks have again revised all L/C related charges (commission charge, other charges, etc.) in 2006.

**Figure 2: Changes in Production Costs in 2005 Over 2004**

Source: CPD-RMG Survey, 2006.

**Table 8: Various Charges and Commissions Taken by Bank for Opening and Accepting LC**

	2004 (Tk.)	2003 (Tk.)
LC Commission	0.5%	0.5%
FCC	1400.00	1400.00
SWIFT	3500.00	3500.00
Courier (if SWIFT not used)	1500.00	1500.00
PSI	300.00	Nil
ACCEPT Commission (Usance LC only)	0.5%	0.5%
Charges	1900.00	850.00

Source: Conversation with a bank official, December, 2006

Relatively low share of industrial cost in the 1990s reflected the higher profit margin in manufacturing apparels under the quota system. Following the quota phase out, profit margin has come down significantly, leading to a rise in the share of industrial cost in the overall value of output.

To compare, industrial cost in the case of Cambodian garment units was found to be 61 per cent on average in 2003 (60.9 per cent in 2000) (Yamagata 2006).<sup>10</sup> In Sri Lanka, non-labour cost (industrial and non-industrial costs) accounted for 80-85 per cent of total cost of production. In 2002, Indian manufacturers spent about

<sup>10</sup> According to World Bank (2003), cost for materials and accessories for manufacturing Denim Jeans in Cambodia was 65 per cent and other inputs were 18 per cent.

**Table 9: Distribution of Costs and Profit Margin (per cent per Factory)**

Indicators	BIDS Study (1995)	ISS Study (1992)
Industrial Costs	64.00	73.00
Non-Industrial Costs	5.00	3.00
Wage Bill	7.00	11.00
Profit Margin	24.00	13.00
Total Output	100	100.00

*Note:* Industrial costs include cost of raw materials, packaging materials, fuel and electricity, spares and subcontracting; non-industrial costs include costs for advertisement, facilitation charges, selling and distribution costs, bank interest and taxes.

*Source:* ISS 1993, Bhattacharya 1996

74-85 per cent as industrial and other costs in their RMG units.<sup>11</sup> Relatively low share of industrial cost in enterprises in Cambodia compared to that of Sri Lanka and India during early 2000 was perhaps because of the quota rent enjoyed by Cambodian manufacturers at the time.

**6.2 Labour Cost:** Sample enterprises have spent about US\$0.61 million in 2005 for payment of wage bill of workers (Table 7). This cost was about 16.7 per cent of the total output.<sup>12</sup> As the survey data shows, sample enterprises, on average, paid about Tk.3,688 per month as wage bill to a garment worker. The labour cost in a sample woven enterprise was US\$0.69 million (16.1 per cent); in the case of knit enterprise it was US\$0.53 million (16.1 per cent) and sweater enterprise, it was 0.58 million (19.8 per cent). The share of labour cost in a sweater factory was relatively high, which was equivalent to about one-fifth of overall output value as manufacturing of sweater is relatively more labour intensive, and worker's payment per unit of output was relatively high.

Labour cost in the sample enterprises in 2005 was about 13 per cent higher compared to the previous year. This rise in the labour cost reflected the rise in overall production in 2005; however, this rise was relatively low compared to that of industrial and non-industrial costs. However, more importantly, share of wage bill in overall output value has marginally declined in all types of enterprises in knit enterprises by 1.6 per cent, in woven enterprises by 0.5 per cent and in sweater

<sup>11</sup> According to Jassin O'Rourke Group 2002 (extracted from Abernathy et al. 2005), costs for fabrics, trimming, and shipping constitute about 71-80 per cent in the case of manufacturing men's jeans and cotton ring spun T-shirt.

<sup>12</sup> According to Siddiqui (2004), labour costs in a US-based apparel sector accounted for about 20-25 per cent of the garments production costs (1999), while in France and Germany for 55 per cent (1999).

enterprises by 0.7 per cent. However, the payment of wage bill was relatively higher in 2005 compared to that of the 1990s, as reported in various studies. According to ISS study (1991), proportionate share of wage bill was 11 per cent in the early 1990s, which, according to a BIDS study conducted in 1995, was only 7 per cent.

The rise in workers' wage bill in 2005 was on account of both rise in payments for wages, overtime work and replenishment in the workforce. The changing composition of workforce in the sample units (towards more semi-skilled and skilled workers as was mentioned earlier) could have raised the wage bill to some extent. As mentioned earlier, although worker's wage was high in sweater enterprises and rise of labour cost in these enterprises was relatively higher compared to that in knit and woven enterprises, incidence of labour unrest, as reported in national dailies during 2006, was also high in this sector. This indicates that the issue of labour unrest is not only related with worker's wages, but also related to other non-wage issues such as high overtime work, lack of leisure and holidays, overall working environment, etc.<sup>13</sup>

In Cambodia, labour costs accounted for 11.8 per cent in 2003, which was relatively higher in 2000 (15 per cent). Labour cost in a denim jeans factory in Cambodia was 15 per cent (World Bank 2003). In Sri Lanka, labour cost accounted for 15-20 per cent of total production cost. This was much lower in India, at 7-8 per cent, although the cost was relatively higher in the 1990s (12 per cent) (USITC 2004). In China, labour cost in T-shirt manufacturing units was about 20-29 per cent of the output value. In Bangladesh, workers' wage bill under the newly enacted minimum wage structure will increase, leading to an increase in production cost.

## **7. Labour and Capital Productivity at the Sample Firms and Their Changes after MFA Phase Out<sup>14</sup>:**

Productivity analysis was carried out from various angles including productivity of capital, labour and total factor productivity. In a highly labour-intensive

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<sup>13</sup> Paul-Majumder (2007) shows that demand for weekly holiday is a major reason for worker's unrest during 2006.

<sup>14</sup> Following analysis is based on 125 samples that were developed from the total 190 samples, considering the balance between different ratios such as output-raw material ratio, capital-output ratio, machine-worker ratio and worker-line ratio. Since production in the garment factory is a dynamic variable and thereby collection of raw materials, machines etc., there are some difficulty in finding out the exact amount of raw material, machinery that are used by some factories for a specific period, for which the consistency check is being done and a subset of 125 samples is created for this part of analysis.



production process, labour-productivity is considered to be the most important indicator of productivity analysis. However, productivity of capital in terms of output-capital ratio and value-added-capital ratio is also important. Productivity of labour and capital is also influenced by various factors such as location, ownership, level of compliance with standards, etc. which also has to be considered.

7.1 Labour-Productivity: Labour productivity can be estimated by using a proxy i.e. value added per worker. It was found to be US\$1,563 in sample enterprises in 2005 (Table 10).<sup>15</sup> Labour productivity in sample knit, woven and sweater units was found to be US\$2,122, US\$1,298 and US\$, 376, respectively. It appears that higher labour productivity in knit units was because of enhanced level of production with support of strong backward linkage in knitting units. On the other hand, labour productivity of large, medium and small RMG units was found to be US\$1,900, US\$1,682 and US\$1,151 respectively, which indicates that large sample enterprises were 13 per cent more productive in terms of value addition compared to medium enterprises, and as high as 65 per cent more productive compared to small enterprises.<sup>16</sup>

Labour productivity of EPZ enterprises was found to be 9 per cent higher than non-EPZ enterprises, while it was 27 per cent higher in FDI-led enterprises compared to non-FDI enterprises. A higher labour productivity in, large EPZ and FDI-led enterprises is the resultant effect of their strong market linkage, state of technology, scale of operation, use of skilled workforces and possibly for having better compliance standards at the factory level.

Labour productivity was relatively high in most of the competing countries. According to Mlachila and Young (2004), labour productivity in Chinese enterprises was US\$5,000 during 2001. In Cambodia, growth in value added per worker was 12 per cent per year between 1999 and 2003. Value added per worker was US\$ 2,700 in 2003. Highest productivity levels were found in relatively smaller Cambodian enterprises (Sok 2004). In Pakistan, value added per worker in the garment sector was US\$5,896 in 1996 (UNIDO 1998). Productivity rate in Pakistan was about 20 - 25 per cent below compared to that in China. In India, labour productivity was US\$2,052 in 1999. A study by McKinsey and Company

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<sup>15</sup> Value added per worker was US\$900 in 2004 (Razzaque 2005), which indicates a rise in the labour productivity in the apparel sector.

<sup>16</sup> The differences in productivity between large and small enterprises was much higher in the case of sweater and woven units, presumably for having less in-factory backward linkage support for small enterprises.

(2004) found that Indian exporters' productivity was at a meager 35 per cent of U.S. levels (China was at 55 per cent of U.S. levels). The main reason for poor productivity of Indian enterprises was diseconomies of scale and inefficiency (Hashim 2005). In Indonesia, lower labour productivity was stated to be partially linked to inefficiencies in both cutting rooms and sewing units. Moreover, management information systems (MIS) of Indonesian enterprises were fragmented and inefficient. Interview conducted by James, Ray and Minor (2003) suggests that workers in Chinese factories were twice as productive as that of Indonesia.

However there was a wide gap between labour productivity and workers' wages. According to Table 11, the gap was as high as US\$900 when the yearly production was taken into account. The gap was higher in knit units (US\$1,300), followed by woven (US\$750) and sweater (US\$650) units. Again, the gap was much higher in case of enterprises with relatively a higher productivity such as large (US\$1,047), FDI-led (US\$994) and EPZ (USD\$822) enterprises. The gap between productivity and wage was relatively less in less productive enterprises, such as small enterprises (US\$740).

A separate exercise has been carried out to identify factors responsible for labour productivity. Labour productivity was found to be highly related with wage; one unit rise in wage would increase labour productivity by 1.3 units. The other important determinant was having research facility in the sample enterprises. Enterprises having some research facility were found to be relatively more productive compared to those not having such facilities. Enterprises having R&D facility were engaged in analysing production processes and workers' motion in order to enhance overall production and other activities. In view of this finding, it

**Table 10: Value Added (\$) Per Worker**

	Knit	Woven	Sweater	Overall	Knit	Woven	Sweater	Overall
	Average				Standard Deviation			
FDI	2277	1824	1550	1932	519	1670		1293
Non-FDI	2104	1225	1367	1522	1191	812	1043	1053
EPZ	2081	1539	1550	1675	874	1265		1146
Non-EPZ	2130	1202	1367	1535	1198	797	1043	1067
Large	2211	1886	1570	1900	1106	1185	679	1054
Medium	2459	1397	1461	1682	1337	809	1177	1137
Small	1832	782	229	1151	1018	547	154	924
Overall	2122	1298	1376	1563	1137	952	1016	1079

Source: Authors' estimation based on CPD-RMG Survey Data

**Table 11 : Productivity-Wage Differential (US\$)**

	Knit	Woven	Sweater	Overall
FDI	-1215.1	-917.7	-790.0	-994.1
Non-FDI	-1302.2	-730.8	-642.0	-886.5
EPZ	-991.3	-764.0	-790.0	-822.1
Non-EPZ	-1355.1	-750.8	-642.0	-917.1
Large	-1181.9	-1047.5	-894.4	-1047.1
Medium	-1456.7	-858.4	-568.9	-923.2
Small	-1267.5	-431.0	-150.6	-738.8
Overall	-1292.6	-752.6	-649.3	-896.4

Source: CPD-RMG Survey, 2006

appears that an increase in wage rates could have a positive impact in terms of performance of RMG enterprises.

7.2 Productivity of Capital: On average, value added per unit of capital by sample enterprises was US\$2.5 (Table 12). Capital productivity of the sample enterprises of knit, woven and sweater sectors was US\$3.1, US\$2.1 and US\$2.2, respectively. Capital productivity of large, medium and small enterprises was US\$1.7, US\$2.5 and US\$2.9, respectively, which indicated that relatively large scale and better equipped enterprises were less strong in terms of productivity of capital. On the other hand, capital productivity of FDI enterprises (US\$1.43) was lower than non-FDI enterprises (US\$2.56), while it was lower in EPZ enterprises (US\$1.73) compared to non-EPZ enterprises (US\$2.62). Thus, the higher levels of production in EPZ, FDI and large size enterprises were less contributed by capital machineries and more by labour and labour related compliance issues.

It is important to understand investment-nature of EPZ, FDI led and Non-EPZ large enterprises. Large scale investment by these enterprises on capital machineries has contributed most in strengthening backward linkage part of their enterprises and these investments are relatively more capital-intensive. Thus, value addition of a backward linkage industrial unit is relatively less compared to that by a garment making unit with lower levels of investment on capital machineries (for readymade garment only). This may have an impact on productivity differential between those who invest on backward linkage part and

**Table 12: Value Added Per Unit of Capital**

	Knit	Woven	Sweater	Overall	Knit	Woven	Sweater	Overall
	Average				Standard Deviation			
Large	1.16	1.23	3.20	1.73	0.85	0.85	1.84	1.44
Medium	2.39	2.99	1.84	2.54	2.31	3.76	1.07	2.89
Small	4.50	1.99	0.44	2.91	4.28	4.43	0.36	4.39
FDI	2.02	1.18	1.19	1.43	1.42	0.84		1.00
Non-FDI	3.18	2.25	2.30	2.56	3.55	3.79	1.66	3.41
EPZ	2.26	1.61	1.19	1.73	2.27	1.76		1.78
Non-EPZ	3.19	2.32	2.30	2.62	3.57	4.09	1.66	3.51
Overall	3.07	2.12	2.24	2.45	3.41	3.56	1.63	3.26

Source: Authors' estimation based on CPD-RMG Survey Data

those who are concentrating on cutting and making (C&M) only. This higher return for small units explain why entrepreneurs found more lucrative to invest in C&M business, rather than going for more investment in capital intensive backward linkage activities. However, with lead time, compliance issues etc. are becoming critically important factors, this trend is expected to be reversed.

## 8. Sample Firms' Income and Its Changes after MFA Phase Out

Sample enterprises have earned a profit of US\$0.28 million in 2005 on average. According to Table 13, profit in the sample RMG units has increased by about 16.7 per cent in 2005 compared to 2004; profit in knit enterprises has increased by about 24 per cent, in woven enterprises by 14.3 per cent and in sweater enterprises by about 16.7 per cent. In contrast to the apprehension of a declining rate of profit after the phase out, enterprises were found to earn relatively higher level of profit in 2005 compared to that they did in 2004, perhaps because of the higher levels of production in value and volume terms.

The rate of profit earned by the sample enterprises was about 7 per cent of gross output and 27 per cent of CM (gross margin) value (Table 13). The SEDF study (2005) found that gross margins in woven and knit enterprises were 24.1 per cent and 20.1 per cent, respectively, which were close to the findings of present study.<sup>17</sup> According to Razzaque (2005), gross margin of RMG enterprises was 7.8 per cent in 2004.

<sup>17</sup> Gross margin for sample enterprises of woven and knit sector was 27.9 per cent and 28.9 per cent respectively.

**Table 13: Gross Profit, Profit as Percentage of CM and Profit as Percentage of Gross Output**

	2004			2005			Changes in the profit between 2004 and 2005
	Total profit, 2004	Profit as % of cutting and making	Profit as % of gross output	Total profit, 2005	Profit as % of cutting and making	Profit as % of gross output	
Knit	0.21	27.09	6.14	0.26	28.95	7.43	23.8
Woven	0.28	28.68	6.16	0.32	27.89	6.90	14.3
Sweater	0.18	24.02	5.45	0.21	23.40	6.75	16.7
Total	0.24	27.33	6.03	0.28	27.45	7.05	16.7
No. of Samples	187			187			

Source: CPD-RMG Survey, 2006

It is evident from the survey that the rate of profit as percentage of CM (gross margin) has declined in 2005 for all types of enterprises except knit. (Table 13). In sample knit units it had increased by 1.86 per cent, in woven units it declined by 0.79 per cent and in sweater units by 0.62 per cent. Though not significant, a decline in profit margin, which went against the trend set in recent years, was a new experience for many RMG entrepreneurs in Bangladesh.

Sample enterprises of all sizes have earned profit in 2005 (Table 14). Large enterprises (as would be expected, because of their large scale operation) have earned higher levels of profit (US\$0.52 million) compared to that of medium (US\$0.35 million) and small enterprises (US\$0.08 million). The share of profit in overall output was 6.9 per cent for large enterprises, 7.8 per cent for medium enterprises and 5.9 per cent for small enterprises. The share of profit of small enterprises has declined by 3 per cent in 2005, especially for woven enterprises (-14.0 per cent).

Firms located in EPZ and FDI-led enterprises have earned more profits compared to that of non-EPZ factories. On average, an EPZ enterprise has earned a profit of US\$0.54 million and an FDI-led enterprise has earned US\$0.59 million. This amount of profit was about 2.5 times higher compared to what a non-EPZ enterprise earned in 2005 (US\$0.22 million). However, change in the profit level in non-EPZ enterprises between 2004 and 2005 was relatively higher (19.8 per cent) compared to that of EPZ and FDI-led enterprises (12.4 and 13.6 per cent respectively).

Rate of return of sample enterprises, defined as the ratio between profits earned in 2005 and fixed capital used by sample enterprises in 2005, shows some

interesting trends.<sup>18</sup> According to survey findings, the rate of return of sample enterprises was about 18 per cent. Sample sweater units have earned relatively higher rates of return (23.4 per cent), followed by knit (18.3 per cent) and woven units (16.5 per cent). This level of return was close to the rate of interest charged by banks in the case of bank borrowing for industrial purposes (13-15 per cent, as of October 2006). Since enterprises are largely dependent on borrowings from banks, potential entrepreneurs would find it less lucrative to set up and operate small scale woven factories with borrowed funds.

**Table 14: Profit Earned by Different Categories of Enterprises**

		2004		2005	
		Profit (million US\$)	Share in gross output %	Profit (million US\$)	Share in gross output %
Knit	Large	0.61	8.07	0.55	6.70
	Medium	0.33	7.37	0.55	8.97
	Small	0.08	6.09	0.08	5.84
	Total	0.22	7.35	0.26	7.44
Woven	Large	0.53	7.24	0.59	7.00
	Medium	0.31	7.01	0.34	7.01
	Small	0.09	7.32	0.08	5.91
	Total	0.29	7.22	0.32	6.90
Sweater	Large	0.28	7.30	0.32	6.98
	Medium	0.18	7.30	0.14	6.53
	Small	0.14	6.94	0.16	6.42
	Total	0.20	7.25	0.21	6.75
Total	Large	0.49	7.44	0.52	6.94
	Medium	0.27	7.23	0.35	7.80
	Small	0.09	6.72	0.08	5.95
	Total	0.25	7.26	0.28	7.05
Number of sample		169		187	

Source: CPD-RMG Survey, 2006

A related finding of the CPD's survey is that the rate of profit (profit per unit of output) was significantly influenced by ownership, location and year of operation. EPZ enterprises tended to earn higher profit compared to that of non-EPZ enterprises, but FDI-led enterprises tended to earn profit at a lower rate compared to non-FDI enterprises. In other words, EPZ-local enterprises earned higher profit

<sup>18</sup> Initial fixed capital, in this case, is the average of fixed capital used in 2004 and that in 2005.

compared to EPZ-FDI enterprises. Year of operation was also found to be important in determining the rate of profit. The longer the enterprise was in operation, the less was the earnings from profit. This could happen perhaps because newer firms were better equipped and endowed with more modern business practices and capital endowment.

## **9. Conclusion**

The study is an attempt to document and analyse the restructuring taking place at firm level after the MFA phase-out by carrying out an indepth firm-level survey of 190 firms. The study has focused on firm-level economic restructuring especially in the areas of export, market concentration, capital formation, skill composition, labour productivity, and profitability etc. during the period immediately before and after the MFA phase-out. Thereby the study attempts to appreciate the level of preparedness of the sector to maximize potential rewards subsequent to quota phase-out and to confront future challenges and risks, especially through lifting safeguard measures against China after 2008. A number of factors has been mentioned in the paper which explain Bangladesh's better performance after the MFA phase out, such as rising global demand for apparels and textiles, imposition of safeguard measures for certain categories of Chinese products in the EU and in US markets, shift in the structure of apparels production favouring knitwear where Bangladesh has strong backward linkage induced comparative advantage, preferential market access in developed countries that provides Bangladesh a considerable competitive edge over non-GSP recipient exporters, and firm level restructuring and repositioning etc. However, firm level restructuring, a major determinant of Bangladesh's better performance would not be understood without full knowledge on firm level dynamics and changes taking place during this phase.

The paper reveals that all types of sample enterprises have achieved higher level of growth in apparel export after the MFA phase out; however, export growth of large enterprises was substantially higher compared to medium and small enterprises. Buyers are increasingly showing interest to concentrate in a limited number of sources, for which scaling up of operation of RMG enterprises is required. It is the large and medium enterprises that are likely to be able to supply these orders. This trend towards concentration and further marginalization of the small firms is likely to continue and gain pace in near future. The survey revealed that scaling up of operation would enhance, inter alia, productivity and profitability not only for small enterprises, but also for medium and large scale

enterprises. It would enhance capacity to manufacture high-end products. Analysis shows that transition of a small-scale enterprise to a medium-scale would require an additional capital stock of \$1.16 million per enterprise and the entrepreneur's profit may meet only 7 per cent of the required capital. Comparable figures for a medium scale enterprise would be \$2.49 million and about 14 per cent, respectively. Since it would be difficult for an enterprise to move up from one level to another in all sub-processes simultaneously, the small and medium enterprises may have to take the effort in a gradual or phased manner. Scaling up efforts of RMG enterprises need to be supported through access to credit, land acquisition, fiscal measures and institutional support.

A substantial addition of capital stock especially in sample large enterprises during 2005 went for expanding the scale of operation, development of backward linkage spinning and weaving and to improve quality of production. A low level of fixed capital formation (GFCF) in small enterprises on the other hand, was likely to have adverse impact; perhaps fell them behind the pace for upgradation and restructuring. Setting up a dedicated 'Technological Upgradation Fund' to be managed through collaboration of the trade and industry bodies is gaining prominence in this context. Budgetary support provided by Indian government for textile and apparel manufacturers under the "Technology Upgradation Fund Scheme (TUFS)" could be a good example for Bangladesh in this regard.

Labour productivity, a crucial element of competitiveness in the global market, was found to be very low (US\$1563 per annum) in the sample RMG enterprises. The study reveals that higher level of labour productivity was in EPZ, FDI-led and large enterprises but the difference between productivity and wage (wage-productivity gap) was higher in those enterprises as well. The study found that labour productivity was highly correlated with wage and one unit rise of wage was expected to increase labour productivity by 1.3 units. Thus improvement in labour-output gained through technological upgradation needs to be accompanied by improvements in both wages and working environment. Hence a new wage structure for RMG workers needs to be implemented immediately and speedily.



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