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Modelling Gender Impacts of Policy Reforms in Bangladesh: A Study in a Sequential Dynamic CGE Framework

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Abstract

The research explores the gender aspects of policy reforms in Bangladesh in a sequential dynamic computational general equilibrium (CGE) framework. This research uses the most updated SAM of Bangladesh and is the first attempt to build a gendered sequential dynamic CGE model for the Bangladesh economy. A 'home production' version of gendered CGE model for the Bangladesh economy is developed. This research tries to understand how gender interests are affected by greater exposure to trade and other policy reforms. The short-run and long-run impacts of policy reforms in the labour market and in the household in a gendered framework are also explored. The research performs two simulations to examine the impact of: (1) domestic trade liberalisation in Bangladesh, and (2) the phasing-out of Multi-fibre Agreement (MFA) on textile and garments. This research builds a gendered social accounting matrix (SAM) for the year 2000 and uses it in a sequential dynamic computable general equilibrium framework. The representative household approach is followed. It is found that domestic trade liberalisation leads to a significant expansion of the ready-made garment sectors in the economy as a result of which the share of market labour supply of unskilled female labour increases. But, this results in a fall in the shares of domestic labour supply and leisure of unskilled female members of the households. The fall in the share of leisure time may have significant negative implications for the time spent on education by this labour category. It is also observed that the long run impacts are different from the short run impacts with respect to the magnitude of the effects. In the case of second simulation, it can be noted that the phasing out of the MFA works in completely the opposite direction. The share of market labour supply of unskilled female members of the households decrease, and the shares of domestic work and leisure increase for most of the households both in the short and long run.

Keywords: Gender, trade liberalisation, market labour supply, home production, leisure, MFA phase-out.

1. Introduction

This research explores the welfare implications of policy reforms in Bangladesh in a gendered sequential dynamic computational general equilibrium (CGE) framework. In standard economic analysis, the gender aspect of policy reforms is ignored or not taken into consideration. However, there are ample evidences that the impact of any policy reform is not uniform across men and women, even within the same household. This research is the first attempt to build a gendered sequential dynamic CGE model for the Bangladesh economy.

The general objective of this research is to explore how gender interests are affected by greater exposure to trade and other policy reforms in the short and long run. In particular, this research aims to investigate the impacts of policy reforms in the labour market and in the household within a gendered framework. The major contributions of this research are threefold. First, this research shows that the long run impacts of any policy reform can be different from the short-run effects. Second, this research uses adjusted market average wage rates to impute value to the non-market activities (i.e. home production and leisure). The method used in this study is a departure from the earlier studies, which have used the average market wage rate to impute value to the non-market activities. Third, the sequential dynamic gender model used in this research has allowed to project differential growth rates of different labour categories in line with the realities of the Bangladesh economy.

The research has performed two simulations to explore the gender-impacts of the policy reforms. The first simulation entails the domestic trade liberalisation in Bangladesh; and the second simulation is the phasing-out of the Multi-fibre Agreement (MFA) on textile and garments.

The organisation of the paper is as follows. In the beginning sections a review of existing literature, an overview of the Bangladesh economy and discussions on domestic trade liberalisation and the MFA phase-out are presented. Then the current status of female employment in the Bangladesh economy is analysed. After that, the structure of the standard social accounting matrix and the extensions which have been performed to include non-market activities are presented. In the next section the features of the gendered sequential dynamic model are briefly outlined. Finally, the analysis of simulation design and outcomes are reported and discussed.

2. Literature Review

2.1. Importance of 'Gender' in Economic Analysis

The term 'gender' can be defined as the biological difference between men and women, which leads to different acts and responsibilities of men and women in the economies, societies and cultures. Gender roles change over time and vary widely within and between cultures. Gender roles, or more specifically, women's access to rights, resources and opportunities are influenced by culture, age, race, class, ethnicity, income, education and time.

The inclusion of gender concern in development policy was formalised in the early 1970s with the 'Women In Development' (WID) approach evolved from the liberal feminist framework. It was a reaction to women being seen as passive beneficiaries of development.

However, economic literature highlighted on gender issues for the first time with a purpose of understanding the reasons behind wage differentials (through 'equal pay controversy') and taking account of unpaid works of women during the 1960s and 1970s (Beneria, 1995). In recent world, it comes to the consideration that gender matters in the structural adjustment process and to analyse welfare impacts of macroeconomic policy, it is necessary to keep provision for gender differentiation in the economic analysis.

In standard economic analysis, the conventional conceptual framework and statistics used to design economic policies are gender blind. They fail to recognize that (i) women's contribution to the economy is systematically underestimated; (ii) there is an unpaid care economy in which women does most of the work of maintaining the labour force and keeping the social fabric in good order, and maintaining social cohesion; and (ii) women participate in most of paid work outside the formal sector. However, in developed countries as well as in the whole world, women produce about half of GDP in terms of their unpaid work (UNDP, 1995), which is like a 'tax in kind' levied on the domestic sector in order to reproduce the economy (Palmer, 1995).

There are plentiful evidences that the impacts of any policy reform are not uniform across men and women, even within the same household. For example, the structural adjustment processes affect women as members of household and as a social group through influencing women's domestic and market work, interrupting female child education and therefore future productivity, and stress and domestic violence which are difficult to measure (Beneria, 1995). Compared to men, several studies showed that women are more vulnerable to chronic poverty, because of gender inequalities in the distribution of income, access to productive inputs such as credit, asset management, and the labour market (Fofana *et al*, 2003). Men and women are affected differently by the changes in policies, partly because of the differences in income-earning constraints among them. For example, the globalisation process has led to increasing feminisation of labour force in many countries, particularly through the expansion of non-traditional exports. It is also true that the outcomes of economic policies are also affected by the gender biases in access to resources, i.e. land and credit, and in the terms of participation in labour markets (Erturk and Cagatay,1995)

Incorporating gender aspect in the economic analysis underpins the need for understanding the differences in gender roles, activities, needs, and opportunities in a given context. Gender based economic analysis underscores the examination of different roles and behaviour of men and women based on gender attributes. The concept of gender analysis arose from the need to mainstream women's interests while at the same time acknowledging that women could not be treated as a homogeneous group. It was realised that women's needs were better understood when viewed in relation to men's needs and roles and to their social, cultural, political, and economic context. Gender analysis thus takes into account women's roles in production[1], reproduction[2], and management of community[3] and other activities. Changes in one may produce beneficial or detrimental effects in others.

[1] The 'productive' role comprises work done by both women and men for payment in cash or kind. It includes both market production with in exchange value, and subsistence/home production with in actual use value, but also a potential exchange value. For women in agricultural production this includes work as independent farmers' peasants' wives and wage workers.

[2] The 'reproductive' role comprises the child bearing/rearing responsibilities and domestic tasks undertaken by women required guaranteeing the maintenance and reproduction of the labour force. It includes not only biological reproduction but also the care and maintenance of the work force (husband and working children) and the future workforce (infants and school going children).

There is no denying the fact that incorporating gender aspect in the economic analysis is vital in the process of formulating country's national economic memoranda, sectoral strategies, structural adjustment, country's portfolio management, poverty assessments, environmental assessment, and in sector-specific project planning, monitoring, and evaluation.

Many CGE models, which actually could be useful for gender analysis in various ways, entirely neglected the gender dimension. However, few models included gendered dimension for the analysis of welfare impact of trade liberalisation. At first the analysis was limited in including time allocation between labour and leisure (Mayer, 1991) and then extended to the inclusion of home produced goods and further to male-female allocation of time (Fontana and Wood, 2000; and Fontana, 2001 and 2002, Fofana *et al*, 2003).

2.2. Empirical Evidence on Wage Differentials in Labour Market

It is now a well established fact that, on the average, wages of women are lower than that of men in most of the countries in the world. A study reveals that the un-weighted world average of female wage as a percent of male wage is around 75 percent for all non-agricultural occupations, and somewhat lower in manufacturing (Anker, 1998). Studies on labour markets in Latin America show that, there are significant wage differentials between men and women in both the formal and the informal sectors. In Mexico, in 1995, women earned about 14 percent less than men (Pedrero, 1998). In Salvador in 1978, women in low income households earned only 41 percent that of male wage (Cavalcanti, 1981). Same pattern is also hold for Asia. Gender wage gap tends to be larger in the informal sector than the formal one. In Bangkok, for example, women's wage in the informal sector tends to be lower than that of men by 36 percent, compared to a differential of only 17 percent in formal wage employment (Sussangkarn, 1987). Within manufacturing, women's wage as a ratio of men's was 50 and 88 percent respectively in Republic of Korea and Sri Lanka in 1990 (United Nations, 1995). In Turkey while men's and women's wages are at parity in the public administration, there is a large gender wage-gap in the private sector (Tansel, 1999). In Africa, income disparities exist between men and women. Among the 'protected' wage workers, women received 70 percent of male wage in Burkina Faso, 75 percent in Cameroon, 62 percent in Guinea and Mali. In the 'unprotected' segment, the corresponding figures were respectively: 94, 64, 42, 88 and 66 percent (Lachaud, 1996). Considering Nepal, there prevails gender sensitive wage differential in almost every sector. According to the 1998/99 labour force survey, on average, male wage is 2400 rupees while for female, the amount is 1400 rupees, with female wage being less than male in every sector except armed forces and (slightly) service workers (Fofana, 2003). In Zambia in 1995 among the low education group, female wage was 65 percent of her male counterpart, and for the high education group, the discrepancy was almost removed, with women receiving 95 percent of the wage of men. In Bangladesh in 1993, women with no education earned 50 percent of wage of the same category of men, and for the high education group the figure was 70 percent (Fontana, 2003).

[3] The 'community-managing' role comprises activities undertaken primarily by women at the community level, as an extension of their reproductive role. This is to ensure the provision and maintenance of scarce resources of collective consumption such as water, health care and education. It is voluntary unpaid work, undertaken in free time. The community politics role in contrast comprises activities undertaken by men at the community level organizing at the formal political level. It is usually paid work; either directly or indirectly, through wages or increases in status and power.

A large part of the wage differential in the developing countries is due to the labour market structure. This could mean several things: differences in rewards to human capital investment; absence of labour mobility from low wage to high wage sector (e.g., access to formal sector jobs) viz., segmentation of markets; lack of access to branches of economic activity or occupations that pay higher wages (e.g., occupational segregation) and so on. That there are barriers to labour mobility, and that the labour market is segmented along formal-informal sectors, is borne out by the data on Latin America; the earning functions estimated suggest that the income tends to be significantly lower if the individual is employed in the informal sector (Psacharopoulos and Tzannatos, 1992).

Women participation increased in Asia because of labour intensive, export-oriented integration into globalisation. However women workers are still crowded into a fairly narrow range of occupations even within the export sector. This is because of significant earnings differentials between women and men workers. In some of the fastest growing economies of Asia, women earn less than 2/3 of what men workers earn, although women's education levels have risen considerably in these countries and are sometimes greater than for men (Sen, 1999).

Few studies have actually decomposed the factors behind earnings ratios. Terrell (1992) finds that discrimination against women workers explains more than 2/3 of the differential in the countries studied while human capital endowments (including education) explains less than a third. O'Neill and O'Neill (2005) examine the extent to which non-discriminatory factors can explain observed wage gaps between women and men. In general, it is found that the gender wage gap largely stems from choices made by women and men concerning the amount of time and energy devoted to a career, as reflected in years of work experience, utilisation of part-time work, and other workplace and job characteristics.

2.3. Empirical Evidence on Time Allocation

Available evidences suggest that globalisation has increased women's time burden and time intensity of labour. Men's time allocation in unpaid labour has not increased accordingly, which reflects that globalisation might have resulted in reduced leisure for women (Floro, 1995). It is found from the results of time use surveys conducted by the International Centre for Research on Women that in less developed countries, measurement of household welfare impact of trade liberalisation must take into account the gender-biased time allocation in domestic work, labour-market participation and leisure, because, in most cases women has to sacrifice their leisure hours to contribute to the increased income of household (Fofana, 2003).

In New Zealand in 1999 men and women spent about the same amount of time working, on average seven hours a day, or 49 hours a week. However, females spent two hours a day more than males on unpaid work, while males spent two hours a day more than females on paid work. While approximately 60 percent of males' work is paid, almost 70 percent of females' work is unpaid. An activity is classified as unpaid work if it is a productive activity that has no remuneration and satisfies the third person criterion – that is, the activity yields an output that can be exchanged (Ongley, 2001).

Valodia and Devey (2005) suggest that in South Africa time use patterns are linked to both gender and employment. Irrespective of employment, compared to their male household

counterparts, on average, women in the household spend more of their time on unpaid work and less of their time on paid work. The time use patterns are also related to employment. Where both members of the household are employed in the formal sector, on average males spend 18 units of time in paid work. Females spend less time on paid work and more time on unpaid household production (and less time on leisure activities). Interestingly, when the female member of the household is employed in the informal economy unpaid household work increases to 12.2 time units and (as is to be expected) time spent on paid work falls. This combination contrasts sharply with the opposite work combination where the male member is in informal work and the female member in formal work – although there is a reduction in time spent on paid work and increase in unpaid work the changes are not nearly as dramatic as that for informally employed females. The last combination, where both the male and female household member is employed in the informal economy is also interesting. Compared to the formal: formal combination both members of the household spend less time on paid work and more time on unpaid work. However, female members in informal: informal households spend significantly higher proportions of time on unpaid work while their male counterparts, on average, spend more time on leisure and personal activities.

In Zambia, time allocation figures for 1995 are almost equal for men and women for market oriented activities (42 percent and 45 percent respectively), while women contribute greater in terms of social reproduction (33 percent) and men enjoys more leisure (52 percent versus 22 percent)(Fontana, 2003).

It is usually found that women mainly spend their time on many unpaid services provided within households, which are not 'visible', but are crucial for social well-being and human development. It is also important to consider the time spent on pure leisure (i.e., rest and recreation) to asses the gender impact of economic policy changes. Women tend to work longer hours and have less leisure time than men. Even women and children spend more on household work (in term of time spent at work) than men's. Women's leisure time decreases when their demand for household income is necessary. Therefore, failure to account for gender leisure and home production time seriously biases the analysis of the impacts of macroeconomic policies on welfare of men and women in less developed countries. (Fofana *et al*, 2003).

In Bangladesh, most of the garment workers are either unmarried or, if married, have no or few children, who are, many a times even not with them. Many of the workers live away from their family (Kabeer and Mahmud, 2004). Therefore they are supposed to devote less time on leisure and social reproduction.

A recent time-use survey by IDRC-BER (2005) suggest that in Bangladesh in rural area men spend 35 percent of daily time in market activities, 4 percent in domestic work, 42 percent in personal care and 19 percent in leisure. The corresponding figures for the women are 17, 22, 41 and 20 percent respectively. In the urban area, men spend 36 percent of daily time in market activities, 2 percent in domestic work, 43 percent in personal care and 19 percent in leisure. The corresponding figures for the women are 12, 24, 43 and 21 percent.

2.4. Status of Women Activities and Sector wise Labour Force Participation

For various social and technical reasons, job opportunities for women, in specially the developing countries, are limited in some specific sectors. Domestic and childcare

responsibilities and limited opportunities to undergo training for new technological adaptation limit their mobility and autonomy to design labour market strategies (Beneria, 1995).

With a declining share of agriculture and industry in GDP and increased share of the services sector, the demand for female labour force increases, especially in EPZ areas. In Asian countries like Indonesia, South Korea, Malaysia, Singapore and Sri Lanka, women's participation in the official labour force has increased substantially in absolute terms during the past three decades, but still varies within 12 percent of the total (Sen, 1999). Besides, in many Asian and Latin American countries, female employment in terms of home workers in garments, specially in the peak season, range from 30 to 60 percent (Chen, Sebstad and O'Connell, 1999). These countries are found to have gendered division of labour in terms of income-generating and household works, the former dominated by men and the later by women. On the other hand, in African countries, women participation in both agricultural and non-agricultural activities is greater than men (Ilahi, 2000).

Globalisation results in female employment opportunities in manufacturing sector, though this is not the only one. Women's share in industrial employment has increased significantly worldwide over the last two decades (Ozler, 1999). In countries like Malaysia, India and Singapore, high professional services, such as banking, insurance etc, to data entry and operating services, health management organisations, mailing, airlines and tourism related services are employing increasing number of female workers. Agro-based labour-intensive sectors like horticulture, shrimp production, flower, fruits and vegetable harvesting also experiencing increased female participation (Sen, 1999). In Tanzania, gender disparities prevail in employment by sectors and areas; female contribution being greater in agricultural and rural sectors with informal work (Kessy, 1989). In some Asian countries including Bangladesh, the booming sector is that of ready made garments. The ready-made garment sector generates almost three-quarters of female wage employment in Bangladesh.

Sen (1999) reports 'push' factor of women from export oriented works due to technological shifts from lower end labour intensive to high skill intensities in countries like Mexico, Mauritius and Malaysia. This can also be a result of increased male unemployment and therefore intense competition among male and female for previously female dominated jobs.

Underemployment, disguised unemployment and low returns to labour are common in the female job market in Bangladesh. Rahman (2000) estimated that this extent of underemployment during 1995/96 was 12 percent for male compared to 71 percent for female. Among the working women in rural areas, 83 percent are unpaid family labourer, 4 percent are employees, 7 percent are self-employed and the remaining 7 percent are casual daily labourer (Afsar, 2001).

In the developing world, however, the status of female workers in the garments manufacturing industries, as reflected in their terms and conditions of the contract, is more like 'informal' sector job rather than 'formal' as often quoted. Kabeer and Mahmud (2004) highlighted both supply side and demand side aspects of increased female participation in this sector. From the supply side, the poor and landless rural female were 'pushed' to the urban based garments manufacturing sector with poverty acting over patriarchal and restrictive social structure. The demand was created basically by export oriented expansion and availability of workers under a low wage, low benefit contract. Additionally, as cited in Rahman (2000), unskilled male workers have higher opportunity cost while working in the

garments factory, and therefore prefer to work in the countryside, where the reverse is the case for female along with limited employment opportunity.

2.5. Economic Policies, Export-oriented Activities and Female Employment

Trade liberalisation has both its positive and negative effects on time allocation, income distribution and empowerment between men and women. The expansion of female-intensive export-oriented industries resulted in increased female labour demand and thereby employment and wages in some cases. Additionally, economic and trade policy reforms redistributed income and jobs among women as a group; in some cases, the expanding female-intensive industrial sectors offer lower wages and adverse contracts in the presence of surplus female workforce.

In the Asian context, the fast growing East Asian countries' labour market experienced declining female participation in the manufacturing and services sector with increased globalisation (Joekes 1995, World Bank 1993), while in some other Asian countries like Bangladesh, India, Sri Lanka, Vietnam and China, the situation is the reverse (Mitter and Rowbotham 1995, Pearson and Mitter 1993).

To enhance competitiveness, especially in labour-intensive industries like ready made garments, countries followed two approaches: to diversify export products towards high profitability and to undercut competitors by reducing mainly labour cost, both of which have discriminatory effects for female labour force in terms of employment and wage respectively (Kessy, 1989). In Malaysia for example, the proportion of women workers in EPZs was 75 percent in 1980, which reduced to 54 percent in 1990 due to export diversification (Carr and Chen, 2004). In Bangladesh, the major export sectors, Ready Made Garments, is highly female labour intensive (80 percent of workers are women) with three-quarters of the country's total female wage employment. Within the RMG sector, knitwear factories that are developing in recent years, employ relatively lower proportion of female workers (35 percent of the total) due to greater intensity of technology (Chaudhuri-Zohir, 2000). Gender inequality and wage differentials are significant here in the presence of moderate levels of protection.

In line with Fontana (2003) and Kabeer and Mahmud (2004) it can be argued that on the whole, the demand for female labour increases as the female intensity of manufacturing rises, which increases the wage rate of women both absolutely and relative to that of men. This change in the relative wage facilitates the movement of women into the market, by raising the opportunity cost of their time and thus increasing the relative price of reproduction, shifting demand towards other goods and services. This increases in women labour force participation causes increase in women's cash income, reduction in their time, meaning that their well-being is not necessarily improved by the expansion of female intensive manufactured exports. The number of hours devoted to reproduction by women and men combined also falls, which could adversely affect children and other dependents.

2.6. Female Participation in Labour Market and their Welfare

From the supply side consideration, female participation in the labour force has increased more or less in almost all Asian countries with population growth and the growth in female

labour force participation faster than male (Sen, 1999). Additionally, economic disasters during structural adjustment policies affect female members of the household, as they intensify their work hours to balance for declining family income (Erturk and Cagatay, 1995). These have negative impact on female welfare in terms of reduced leisure enjoyed by them.

An increase in the female labour force participation does not necessarily reflect female welfare increase; the maintenance of 'care economy' has absolute female labour intensity without a matched increase in male participation in the domestic work to declined female labour hours devoted there. As a result, time for personal care and leisure declines with increased female labour force participation that has a negative impact on their welfare.

Men and women may be affected differently by the macroeconomic policies implemented, depending on the sectors in which they work. When market opportunities emerge, it appears that men benefit more than women, because of the difficulties for women to access loans, assets, new technologies, knowledge, etc. The impact of these changes is more severe for women who are household heads and/or poor (Fontana et al. 1998).

Survey results on the conditions of garment workers in Bangladesh reveal that women's employment exerts benefits for their household in terms of economic solvency (for around 30percent of workers), financial support to family and bearing own expenses, children's education, 3 meals a day, regular payment of rent, capacity to save, medical expenses and remittances. The main drawbacks of their employment include effects on their health, and heavy work burden (Kabeer and Mahmud, 2004).

3. An Overview of the Bangladesh Economy

Over the last two decades Bangladesh has undergone major changes in the structure of its economy, trade, poverty and inequality. The changes in the economic structure are reported in table 1. Table 1 suggests that during the last two decades the structure of the economy changed significantly as the share of agriculture in GDP declined to 21 percent by 2004 from 33.2 percent in 1980. The fall in the share of agriculture has been accompanied by the rise in the share of industry, which increased from 17.1 percent in 1980 to 26.6 percent in 2004, thanks to the remarkable performance of manufacturing exports during the 1990s. The share of service remained stable at around 50 percent throughout the whole period.

Table 2 suggests that during the 1990s both exports and imports registered high growth rate compared to the period of 1980s. On average, export volume and export value increased by 14.9 percent and 11.3 percent respectively during the 1990s. Whereas, during the 1980s the average annual growth rate of export volume and export value were only 1 percent and 7.8 percent respectively. In the case of imports, the average annual growth rate of volume was negative during the 1980s, which registered substantially high average growth rate (20.5 percent) during the 1990s. Also, the average growth rate of import value also increased significantly, from 3.6 percent in the 1980s to 10.7 percent in the 1990s. However, during the years from 2001-2005, the annual average growth rates of export value and import value have declined (especially because of negative growth in 2002). Openness of the economy (expressed as exports plus imports as percent of GDP) increased to 36.3 percent in 2004 from around 20 percent in the early 1980s.

Table 3 presents the intertemporal poverty and inequality in the Bangladesh economy. This table provides information on the head-count index of poverty for both the rural and urban areas. Also, Gini indices on the basis of consumption are given to show the changes over time in inequality in the rural and urban areas. Table 3 suggests that during 1992-2000, the national head-count ratio of poverty declined by 9 percent, indicating a reduction in poverty by an annual average of 1 percent in this period as against an annual average 0.23 percent decline during 1984-1989. This suggests that the fall in the national poverty rate is higher during the 1990s compared to that in the 1980s. It is also observed that both urban and rural poverty declined during the 1990s, although, the incidence of rural poverty remained higher than that of urban poverty. It also appears that over the entire period, since the early 1980s, the improvement in the poverty incidence is rather slow with substantial variations in different sub-periods and between rural and urban areas. With respect to the inequality it is evident that the Gini index of consumption expenditure remained largely unchanged till 1992 for both rural and urban areas. But, the urban Gini index for consumption expenditure rose from 32 percent in 1992 to 36.6 percent in 2000. On the other hand, for the rural areas it rose from 25.5 percent to 29.7 percent during the same period.

4. Domestic Trade Liberalisation in Bangladesh

There have been significant lowering of the tariff rates in Bangladesh during the 1990's. Figure 1 shows that between 1973 and 1980 the annual average of simple average tariff rate was around 100 percent, indicating that the trade regime was highly restricted. The tariff rate began to decline during the early 1980's, but had a sharp rise during the late 1980's. In 1989, the average tariff stood at 114 percent. Since 1989, the simple average tariff began to fall, with a dramatic reduction during the 1990's. In 2000 the average dropped to only 22 percent.

One important aspect of the tariff structure in Bangladesh relates to the use of import taxes which have protective effects (also known as para-tariffs or, in WTO terminology, 'other duties and charges') over and above the protection provided by customs duties (World Bank, 2004). These taxes are the Infrastructure Development Surcharge (IDSC), the Supplementary duties (SD), the Regulatory duties, the VAT exemptions for specified domestic products and the License fee (abolished in 2003). Although these taxes have been imposed as a 'temporary' solution to earn extra revenue, in the absence of equivalent taxes on domestic production they provide extra protection. Some of these para-tariffs, such as the IDSC, are applied across-the-board to all or practically all imports, and can be considered as general or normally applied protective taxes which affect all or nearly all tariff lines. Others are selective protective taxes in that they are only applied to selected products, for example the 'supplementary' and 'regulatory' duties. The base for the taxes varies. In some cases it is the 'assessable value' (usually the c.i.f. price or the c.i.f. price plus landing charges), in others it is the assessable value plus customs duties. The para-tariffs employed during 1990's and early 2000's in Bangladesh are summarised in table 4. It appears from table 4 that, despite the lowering of customs duties during the late 1990's and the early 2000's, the presence of para-tariffs did not significantly lower the total protection rate.

There have also been reductions in the non-tariff barriers to imports. Table 5 suggests that, in Bangladesh, the number of commodities under the 4-digit HS code, that were subject to quantitative restrictions (QRs), declined from 478 in 1986 to 124 under the Import Policy of 1997-2002. Also, in terms of percentage of coverage, it is found that in 1986 there were QRs for 38.54 percent of all commodities under the 4-digit HS code, which came down to only 10

percent during 1997-2002. In the sub-categories of 'banned', 'restricted' and 'mixed' items it can also be observed that there was a significant decline in the coverage of commodities during the 1990's. However, there is a rise in the number of commodities covered for non-trade reasons during 1997-2002.

There have been moves towards a more market-determined exchange rate regime. The policy of multiple exchange rate system was replaced by a unified exchange rate in 1992 and the domestic currency (Taka) was pegged to a currency-weighted basket. Since 1992 a policy of creeping devaluation had been followed to maintain exchange rate flexibility and export competitiveness. The currency (Taka) was made convertible for all current account transactions. Finally, in 2003 Bangladesh initiated a fully flexible exchange rate system.

Under the export-oriented industrialisation strategy, different export promotion measures were put in place with the aim of diversification of the export basket, improving quality of exports, stimulating higher value added exports, and developing industries for backward linkages. The export-promoting measures undertaken are: special bonded warehouses facilities, establishment of export processing zones, duty drawback scheme, rebate on insurance premiums, income tax rebate, export-credit guarantee scheme, incentives for exporting non-traditional industrial products, export promotion fund, Value Added Tax refunds, tax holiday, and retaining foreign exchange from export earnings. However, there are debates on some of these measures whether they are consistent with other trade liberalisation measures undertaken in the economy.

5. Phasing Out of the MFA and the Implications for Bangladesh Economy

Ready-made garments (RMG) exports have been Bangladesh's one of the dominant sources of foreign exchange earnings in the last decade. From a small base of only 865 million dollars in 1991, RMG exports have grown to 4857 million dollars in 2001, accounting for 75 percent of export earnings and 48 percent of total foreign exchange earnings in 2001. Table 6 suggest that Bangladesh's export basket is very much concentrated around RMG export. Therefore, any shock on RMG export is very much likely to have significant impact on total export earnings as well as on foreign exchange earnings in Bangladesh.

There are considerable debates among the economists about the implications of the phasing out of the Multi-Fibre Agreement (MFA) for developing countries (Hertel, *et al,* 1996; Hertel and Martin, 2000, Yang *et al,* 1997). Studies which envisage positive impacts suggest that the vast majority of these countries will be benefiting from the removal of trade restrictions on textile and clothing, with some gaining proportionately more than others through increased market share and the rent transfer effect of bilateral quotas. However, sceptics raise some concerns that the distribution of welfare gains from trade liberalisation in textile and clothing will be skewed, where countries like China, Indonesia and South Asian countries are likely to gain more compared to countries of Latin America and sub-Saharan Africa. Moreover, the higher-cost exporting countries, such as Hong Kong, South Korea, Taiwan who enjoy the largest share of exports to the markets of developed countries under the MFA, are likely to cede ground to lower-cost exporting countries like China and India. There is, however, a concern that the relatively new and low-cost exporting countries, like Bangladesh and Sri Lanka, may lose considerable market share because of their small size, lack of product diversification and low productivity.

The expiry of the Multi-Fibre Arrangement (MFA) regime in January 2005 has brought a great deal of uncertainty about Bangladesh's future export earnings and sustainability of macro balances with potential adverse consequences on economic growth. The abolition of MFA quotas has exposed Bangladesh to fierce competition from a large number of countries whose exports have so far been severely constrained by quantitative restrictions imposed by developed countries. During the first ten months into the post-MFA period, for which data and information are available, Bangladesh has somewhat managed to maintain a modest growth of its RMG exports, largely due to a robust performance of knitwear exports. Notwithstanding this, it may still be too early to predict anything about the country's future export prospect. China, the main threat in the global quota-free apparel market, continues to face export restrictions in the EU and the US. A particular clause embodied in the Protocol of China's accession to the WTO enables the US to restrict imports of textile and clothing products from the former until 2008 and fearing that many other countries (like the EU) could take advantage of this precedent, importers in important markets might not want to rely wholly on China for procurement immediately after the MFA-phase out. However, from 2008, when keeping restrictions on China will be difficult as per the WTO rules, only then the real competitive pressure in the market will be realized. It needs to be mentioned here that most academic empirical studies predicted adverse consequences of MFA phase-out on Bangladesh and convincing arguments to defy those predictions have not yet been found. For example, Lips *et al* (2003), using the GTAP model, analyse the impact of the Agreement on Textile and Clothing (ATC) and a worldwide tariff reduction on textiles and wearing apparels on Bangladesh. The simulation results indicate that phasing out of very restrictive export quotas leads to remarkable increase of wearing apparel productions in India and China, whereas, wearing apparel output in Bangladesh is reduced by more than 10% and Bangladesh faces a welfare loss. Yang and Mlachila (2004), using the GTAP model, also evaluate the effects on the Bangladeshi economy of phasing out of textile and clothing quotas. The simulation results suggest that the planned abolition of the quotas in 2005 will alter the competitiveness of various exporting countries. As Bangladesh relies heavily on textile and clothing exports, therefore, is potentially very vulnerable to this change in competitiveness. Assessing the quota restrictiveness and the export similarity, and analysing Bangladesh's supply constraints, the paper concludes that Bangladesh could face significant pressure on its balance of payments, output, and employment when the quotas are eliminated.

It has become another concern about the raising cost of raw-materials for RMG exports of Bangladesh after the removal of MFA. The ratio of the value of imports of raw-materials for RMG exports to the value of total RMG exports in Bangladesh is quite high (about 70 percent in 2000), which indicates lower value-addition in RMG sector. Bangladesh imports raw materials for RMG from countries such as India, China and Thailand under back-to-back L/C facilities. It is projected that under a quota free regime these countries will prefer to substitute export of raw-materials (i.e., grey fabrics) to countries such as Bangladesh by export of apparels to North American markets. It suggests that, Bangladesh is going to face a double challenge in the areas of accessing raw materials at competitive prices and competing with hitherto restricted countries under a quota-free context. It is now an issue of critical importance for the future of Bangladesh RMG industry that whether the Bangladesh RMG export sector will be able to withstand the challenge posed by these newly emerging competitors in the post-MFA phase. This certainly depends on the strength of the Bangladesh textile sector in general and RMG in particular.

It is estimated that about 1.6 million labourers are engaged in about 3000 RMG units in Bangladesh. We have already understood the importance of RMG sector for the economy of

Bangladesh. Therefore, the concerns about the future of RMG sector in Bangladesh are also linked with the implications for welfare and poverty in Bangladesh after the MFA phase out. A number of CGE studies have looked into the implications of WTO agreements on textile and clothing for the economy of Bangladesh. In a comparative static CGE framework Arndt *et al* (2002), assume a significant decline in RMG exports followed by phasing out of MFA regime and simulate for a 25 percent decline in RMG exports (including knitwear). The simulation results imply that that reduced revenues from Bangladesh RMG exports affect all households through a reduction in labour demand in textile industries, the resulting fall in consumer demand and output for other sectors, and a depreciation of the real exchange rate that raises the costs of imported goods.

6. Women in Bangladesh

Table 7 suggests that in Bangladesh, agriculture sector accounts for the largest share in total employment, with 49.4 percent of labour (58.5 percent of female labour and 46.8 percent of male labour) in 2002-03 is employed in this sector. In the urban area, men are mostly employed in the service sectors (particularly trade services and transport and storage activity) and in agriculture and forestry, while women are more employed in the agricultural and manufacturing sector (which is predominantly the ready-made garment sector) and in the community and personal services. In the rural area, agriculture is the primary source of employment for both men and women. The second important activity for men and women in the rural area is the trade services and the manufacturing respectively.

Table 8 indicates that women represent one fourth of all total labour force in Bangladesh. In the urban area agriculture, manufacturing, education, health and social works and community and personal services are the female labour-intensive activities. On the other hand, in the rural area agriculture, manufacturing, education, health and social works and community and personal services are the female labour-intensive activities.

7. A Numerical Representation of the Bangladesh Economy for 2000

This research has used the 2000 SAM of Bangladesh as a database for the Bangladesh dynamic gender model. The SAM has been constructed using (i) the 1999–2000 input-output table[4]; (ii) the Household Income and Expenditure Survey (HIES) 1999–2000 (BBS, 2000a); (iii) the Labour Force Survey 1999–2000 (BBS, 2000b); and (iv) the National Income Estimates (BBS, 2002).

The Bangladesh SAM 2000 includes 26 sectors and six factors of production: skilled and unskilled male and female labour and agricultural and non-agricultural capital. The SAM also decomposes households into nine groups based on location (urban or rural) and assets (land or education). Rural households are further disaggregated into five groups: landless (no cultivable land), marginal farmers (up to 0.49 acre of land), small farmers (0.5 to 2.49 acres of land), large farmers (2.50 acres of land and more), and non-agricultural. On the other hand, urban households are classified into four groups: illiterate (no education), low education (grades one to nine), medium education (grades 10 to 12), and high education (high school graduate and above). Table 9 summarises the basis features of 2000 SAM of Bangladesh

[4] Prepared by the Sustainable Human Development Project, Planning Commission, Government of Bangladesh

The basic structure of the 2000 Bangladesh SAM is summarised in table 10. Tariff rates vary across the sectors and range from as low as 0 percent (paddy sector) to as high as 101 percent (Clay products). The tariff rates on Woven and Knit RMG are only 0.87 and 1.35 percent, respectively. Woven ready-made-garment (RMG) has the highest sectoral import penetration ratio (86 percent), followed by cement (46 percent). The import penetration in Knit RMG is 20 percent. The highest shares in total imports are for Miscellaneous Industry (40 percent), followed by petroleum products (12 percent). For woven and Knit RMG, percent share in total imports is negligible, 2 percent and 0.88 percent, respectively. The sectoral export orientation ratio is the highest for woven RMG (99 percent) and the second highest in the Knit RMG (83 percent). Together woven and Knit RMG exports account for 67 percent of total exports. In the case of value addition together the service and Miscellaneous Industries account for 67 percent of total value added in the economy. The contribution of the RMG sector in total value-added is only 3.3 percent. The aggregate agricultural and the manufacturing sectors contribute 17 percent and 31 percent of the total value added respectively. The share of intermediate consumption in total demand is highest for the paddy sector (114 percent). This figure is greater than 100 because of the negative stock variation in this sector. For Woven and Knit RMG, it is 11 percent, while share of intermediate demand in absorption is 65 and 70 percent respectively.

The income composition of households, which is derived from SAM 2000, is presented in table 11. It appears that all the nine household categories receive most of their income from factor remuneration. For the poorer households, such as landless, households with illiterate head, marginal farmers, non-agriculture, and small farmer households, male unskilled labour is the primary source of income. In contrast, households with medium, and high-educated heads receive most of their incomes from non-agricultural capital and male skilled labour income. Households with low-educated heads are heavily dependent on incomes from both male unskilled labour and non-agricultural capital. For the large farmers, agricultural capital income is the principal source of their income. It also appears that the income from skilled female labour constitute very low share in all households' incomes. The incomes from unskilled female labour, however, have some notable contributions in few households' (landless and households with illiterate heads) total income. These considerable differences in income sources for different households are expected to generate varying income and poverty effects when different policy shocks are introduced in the model.

Table 12 reports the figures of initial endowments of the households on four categories of labour force. It appears that male skilled labour is primarily supplied by the rural non-agricultural households and the urban households with medium-educated heads. In the case of unskilled male labour the rural landless and non-agricultural household and the urban households with illiterate and low education heads are major suppliers. On the other hand, non-agricultural households and the medium educated households provide the major portion of the skilled female labour supply. Finally, non-agricultural, urban households with illiterate heads and landless households are the principal source of unskilled female labour.

8. The Construction of an Extended Gendered SAM in Bangladesh

The standard 2000 SAM of Bangladesh has been extended to include the non-market activities by using the time-use information from BER (2005). The time-use survey of BER

(2005) provides the information on time spent on different activities and those are grouped into four major categories: market work, domestic work, leisure and personal care. Table13 lists the types of different activities under these four major categories. Table 14 presents the time allocation figures under four major activities for four labour categories within nine household groups. The figures presented in table 14 reflect gender bias in market participation and household work. The market participation of the female members in the household is lower than their male counterparts. However, there is not significant difference in time allocation among high and low skilled male groups in the case of time devoted to market work. On the contrary, the market participations of the skilled female members are higher than those of the unskilled female members for all household categories. For all male categories, the household working hours are very low, around 1 hour a day, with the highest figure is only 1.24 hours for the skilled male in the rural landless agricultural farmers, and the lowest figure is 0.57 hours for the unskilled male in the urban households with medium and high educated heads. On the other hand, for female group the time devoted to household work is between 4 and 6 hours a day, and varies negatively with skill level.

The time allocation for leisure is, on the whole, higher for female members of the households compared to their male counterparts. For personal care, the time allocation is almost similar for all the categories, with a small gender bias – women enjoying 9 to 10 hours a day, while men enjoying 10 hours, or slightly more.

The information provided in table 14 has been used to extend the standard SAM 2000 of Bangladesh to include non-market activities in the SAM. Average market wages are calculated separately for male and female by skill categories. Given the fact that there is unemployment and underemployment in the economy, the average market wage rate may not reflect the true opportunity cost of the non-market activities. In order to counter this problem a logit regression model of the following type has been applied to calculate the probability of being employed for each individual in the households, after controlling for a number of household and individual characteristics:

$$dumemp_i = \beta_0 + \beta_1 cdis_i + \beta_2 lyuedu_i + \beta_3 lyfedu_i + \beta_4 lymedu_i + \beta_5 male_i + \beta_6 lpce_i + \beta_7 llandh_i + \beta_8 lage_i + \beta_9 sqlage_i + \beta_{10} lhhsize_i$$

where,

$dumemp$ = Employment dummy (0 = no market participation, 1 = market participation)
$cdis$ = A dummy variable for chronic disease (0 = no chronic disease, 1 = suffering from chronic disease)
$lyuedu$ = Natural logarithm of years of education
$lyfedu$ = Natural logarithm of years of father's education
$lymedu$ = Natural logarithm of years of mother's education
$male$ = A dummy variable (0 = female, 1 = male)
$lpce$ = Natural logarithm of monthly per capita expenditure
$llandh$ = Natural logarithm of land-holdings
$lage$ = Natural logarithm of age
$sqlage$ = Square of natural logarithm of age
$lhhsize$ = Natural logarithm of household size.

The regression results are reported in Annex 1. From the regression the predicted probabilities of market participation for all individual household members are calculated. These calculated probabilities have been averaged over the skill and gender categories for each nine household groups. Table 15 provides the information on these average probabilities. These calculated average probabilities have been taken into consideration to adjust the average market wage rate for each labour category. The adjusted average market wage rates have been used to impute hourly wages for the time spent on various non-market activities.

9. Model features

This study develops a gendered sequential dynamic CGE model[5]. A sequential dynamic model is basically a series of static CGE models that are linked between periods by exogenous and endogenous variables updating procedures. Capital stock is updated endogenously with a capital accumulation equation. Below a brief description of the static, dynamic and gendered aspects of the model is presented.

9.1. Static Aspects

- In each sector there is a representative firm. A nested structure for production is adopted. Sectoral output is a *Leontief* function of value added and total intermediate consumption. Value added is in turn represented by a CES function of capital and composite labour.

- Household demand is represented by a linear expenditure system (LES) derived from the maximisation of a *Stone–Geary* utility function. Minimal consumption levels are calibrated using guess-estimates of the income elasticity and the *Frisch* parameters. Household saving is a fixed proportion of the total disposal income.

- Imperfect substitution between foreign and domestic goods is assumed, which is captured by the standard *Armington* assumption with a constant elasticity of substitution function (CES) between imports and domestic goods. On the supply side, constant elasticity of transformation (CET) between exports and domestic sales is assumed. Furthermore, a finite elasticity export demand function is incorporated that expresses the limited power of the local producers in the world market.

- The government receives direct tax revenue from households and firms and indirect tax revenue on domestic and imported goods. Its expenditure is allocated between the consumption of goods and services (including public wages) and transfers. The model accounts for indirect or direct tax compensation in the case of a tariff cut.

- General equilibrium is defined by the equality (in each period) between supply and demand of goods and factors and the investment-saving identity. The nominal exchange rate is the numéraire in each period.

[5] This model is benefited from Annabi et al (2005) and Fofana et al (2003).

9.2. Dynamic Aspects

- In every period the capital stock is updated with a capital accumulation equation. It is assumed implicitly that the stocks are measured at the beginning of the period and that the flows are measured at the end of the period.

- Investment by sector of destination is considered rather than investment by origin (product). The capital accumulation rate (ratio of investment to capital stock) is increasing with respect to the ratio of the rate of return to capital and its user cost. By introducing investment by destination, the equality condition with total investment by origin in the SAM is maintained. Besides, investment by destination is used to calibrate the sectoral capital stock in the base run.

- In the dynamic model of Annbi *et al.* (2005) total labour supply increases at the exogenous rate that is simultaneously the population growth rate and the labour force growth rate. However, most gendered CGE models have endogenous labour supply (leisure demand). Indeed, the labour market entry/exit of women and men, and the related wage changes, are the key aspects to be studied in a gendered CGE model. Therefore, in the present research it is assumed that the MAXHOURS (the total maximum time available to be divided between domestic work, leisure and market labour activities) increases at an exogenous rate. On the other hand, the minimal level of consumption within the LES function also increases (as do other nominal variables, like transfers) at the same rate.

- The exogenous dynamic updating of the model includes nominal variable (that are indexed), government savings and the current account balance. The equilibrium between total savings and total investment is reached by means of an adjustment variable introduced in the investment demand function. In the baseline all the variables are increasing, in level, at the same rate and the prices remain constant. This method is used to facilitate welfare and poverty analysis since all prices remain constant along the business as usual (BaU) path.

- The model assumes current account balance to be fixed only in the first year. However, this assumption is relaxed for the subsequent years and current account balance is assumed to increase at an exogenous rate.

9.3. Gender Aspects

In line with Fofana *et al.* (2003) we incorporate the 'home production' version of gender aspects in our dynamic model. We disaggregate male and female labour and allow them to be imperfect substitutes in sectoral production. Household supplies of male and female labour are endogenously determined by the household. In this context, total labour time is divided into three categories: market work, leisure and domestic work. The assumptions to develop a 'home production' version of gender model include the followings:

- Male and female non-market labour time (leisure and domestic work) are imperfect substitutes in the household utility function.

- Leisure and domestic work time, which are distinguished for each household member (men and women), are imperfectly substitutes.
- Market and home goods are imperfect substitutes in the household utility function.
- Home goods are produced using only labour (male and female) and do not require intermediate inputs or capital.
- Times spent in various activities (leisure, home production, and market activities) are mutually exclusive, i.e. the same hour cannot be used, simultaneously, in two different activities.
- In equilibrium and for each gender, the marginal utility of time is equal across different activities (leisure, home production, and market work in different sectors).

The information contained in the BER Intra-Household Survey of allocation of resources 2005 has been used to estimate the time devoted by men and women to home production. In line with Fontana and Wood (2000), Fontana (2001 and 2002) and Fofana *et al.* (2003), the maximum time available for men and women is calculated as the total time in a day (24 hours) minus the daily time spent on personal care. That means, the maximum time available or the MAXHOURS is equal to the sum of the time spent on market activities, domestic production and leisure. Generally, the data for the minimum consumption of home goods is not available. We thus, in line with Fofana *et al*. (2003) arbitrarily fix this value at 30 percent of total home goods consumed in the household.

In this present dynamic model, where the MAXHOURS of all labour categories increase at an exogenous rate, we assume a higher rate of growth of MAXHOURS of the unskilled female labour category compared to those of other labour categories. This assumption takes into account the reality of Bangladesh economy where over the last decade there has been an increasing market participation of the unskilled female labour because of the expansion of the ready-made garment industries.

The model also tries to infer a link between the market participation of unskilled female labour and female education. If the increasing market participation of unskilled female labour is accompanied by declining share in leisure, then it can be argued that there will be less available time for education for the unskilled female members of the households as time spent on education is considered to be included in the leisure activities.

10. Simulation Results

Following simulations were performed to analyse the impacts of policy reforms.

Simulation 1 **(Domestic Tariff Liberalisation):** The effects of complete elimination of domestic tariff.

Simulation 3 **(MFA Phase-out):** The effects of MFA phase-out. The shocks on export and import prices and on export volumes are taken from the GTAP model. It is, however, important to note that though as mentioned earlier, the MFA phase-out has not been fully implemented because of the restrictions on China until 2008, in this model we have assumed a full phasing out of the multi-fibre agreement.

It can, however, be noted that, in contrast to the static CGE models, which make counterfactual analysis with respect to the base run (generally the initial SAM), a dynamic CGE model allows the economy to grow even in the absence of a shock. This scenario of the economy (without a shock) is termed as the business-as-usual (BAU) scenario. The counterfactual analysis of any simulation under the dynamic CGE model is, therefore, done with respect to this growth path. One of the salient features of the dynamic model is that it takes into account not only efficiency effects, as also present in the static models, but also accumulation effects. The accumulation effects are linked to the ratio between the rate of return to the capital stock and the cost of investment goods. The results of the simulation exercise are reported in tables 16-20.

10.1. Simulation 1: Domestic Trade Liberalisation

This simulation is performed by eliminating all domestic sectoral tariffs in the economy. The sectors with higher initial tariff rates are expected to experience higher reductions in domestic import prices.

Impacts on Macroeconomic Variables

It appears from table 16 that domestic trade liberalisation leads to a modest and a stronger increase in real GDP in the short and long run respectively. However, aggregate welfare declines in the short run and registrars a slight positive increase in the long run, as compared to the business-as-usual simulation. The relatively modest impact on real GDP and a negative impact on welfare in the short run are explained by the fact that trade liberalisation leads to a contraction of the import-competing and highly protected sectors, while capital cannot be quickly reallocated to the expanding export-oriented sectors. Both imports and exports record strong positive growth, particularly in the long run. Because of tariff elimination reduced domestic import prices result in a fall in consumer prices both in the rural and, slightly more, in the urban area.

Impacts on Wage Rates and Capital Rental Rates

The impacts on gendered wage rates by skill categories are also reported in table 16. It appears that in the short run wage rates of skilled male, unskilled male and skilled female decline by greater margins than that of unskilled female. The reason behind this is because of the fact that trade liberalisation leads to an expansion of the unskilled female intensive export-oriented economic activities, while the skilled and unskilled male and skilled female intensive economic activities are mostly the import competing sectors. In the long run wage rates of all the labour categories decline (though by lesser margins) except that of unskilled female labour. This labour category experiences a positive growth in wage rate in the long run. It is because of the fact that as the readymade garment sectors registrar considerably stronger growth in the long run, they create extra pressure on the demand for unskilled female labour which raises its wage rate. Both in the short and long run trade liberalisation leads to a fall in agricultural capital rental rate more than that of the non-agricultural capital. This indicates a reallocation of capital from the agricultural sectors to the non-agricultural sectors.

Impacts at the Sectoral Level

Table 17 suggest that there are reductions in the domestic prices of imports followed by tariff elimination. As a result of reduced import prices the demand for imported goods increases. It appears that (table 18) the sectors with high initial tariff rates (for example, livestock-poultry-fish-forestry, ata and flour mill, print, clay, leather, petroleum sectors) experience stronger increases in import penetration. In the long run, import volumes grow more (or contract less) in almost all sectors.

The model has assumed that a fixed current account balance in the short run which subsequently increases at an exogenous rate. Therefore, the increase in imports is also matched by an increase in exports. In the short run, all the export-oriented sectors expand, but the expansion is more prominent for the woven and knit RMG sectors. In the long run, however, the expansion of these two RMG sectors is dramatic. All other export oriented sectors also registrar positive growth in the long run, but with some reduced margins. It is, therefore, appears that in the long run, two RMG sectors flourishes with 35 percent for woven-RMG and 24 percent for knit-RMG increases in export volumes compared to the BaU scenario.

The general picture of the sectoral impact is that output contracts in most of the import competing sectors, while it expands in all the export-oriented sectors, with the dramatic expansion in the two RMG sectors both in the short and long run. The reason behind this is because of the fact that value-added price and capital rental rates decline by greater extents both in the short and long run in all the import competing sectors. On the other hand, the woven and knit RMG sectors experience increase in the price of value added and capital rental rate in the short run and though value-added price and capital rental rate decline in the long run, the extent of reduction are much smaller that those in other sectors.

Impacts on Employment

It appears from table 18 that because of the contraction of the import competing sectors and expansion of the export-oriented sectors labour factors are also reallocated from the former type sectors to the later type sectors. The demand for all categories of labour increase in the export-oriented sectors both in the short and long run. It is noteworthy that, in the short run compared to the BAU scenario, the demand for unskilled female labour increases significantly in the woven and knit RMG sectors. This increasing trend is maintained in the long run. The long run increase in the demand for unskilled female labour in the woven RMG sector is higher than the short run increase. However, for the knit RMG sector the long run increase is lower than that of in the short run. The significant increase in the demand for unskilled female labour is likely to have profound impacts on market labour supply, domestic work and leisure of the unskilled female members in the households, which we discuss later.

Impacts on Household Income and Welfare

Table 19 suggests that there is a fall in nominal income for all households in both the short and long run. However, poorer households (for example, the urban households with illiterate or low-educated heads and rural landless or marginal households) experience smaller reduction given their reliance on unskilled male and female labour wages. Urban households

with medium- and high-educated heads as well as rural large farm households turn out to be the largest losers. In the short run all households experience fall in real consumption as nominal incomes fall more than the fall in consumer prices. However, in the long run the effects become just the opposite. All households, except rural large farm households, experience increase in real consumption. The poorer households experience larger increase in real consumption. The figures of EVs also indicate similar pattern and suggest that the benefit of trade liberalisation is enjoyed by the poorer household categories.

Impacts on Gendered Allocation of time

It appears from table 20 that trade liberalisation leads to a reallocation of time spent on market work, domestic work and leisure for the male and female members within the households. As trade liberalisation results in an expansion of the unskilled female labour intensive RMG sectors an increase in the share of the market labour supply in MAXHOURS (maximum total available time for market work, domestic work and leisure) of unskilled female members is observed for all household categories in both the short and long run. However, all households, except landless, non-agricultural households and urban households with illiterate heads, experience higher increases in these shares of unskilled female members in the long run. The reason behind higher growth rates of market labour supply of unskilled female labour of these household categories compared to the aforementioned three categories of households is because of the fact that the former categories of households have relatively lower endowment of unskilled female labour in the base year. On the other hand, because of the contraction of the import-competing industries, which are predominantly heavy industries and employ bulk of the skilled and unskilled male labour, the market supply of these labour categories decline for most of the household categories. Furthermore, though the supply of market labour of skilled female labour increase for most of the households, in the long run the pattern is not maintained and it declines for most of the household categories.

As a result of the increase in the share of market labour supply in MAXHOURS, the shares of domestic labour supply and leisure decline for the unskilled female members in all households both in the short and long run. Though, the long run changes are relatively less pronounced than the short run changes. This means that the unskilled female members now devote less time in household work and leisure. The decline in the relative share of time spent on leisure activities for the unskilled female members in the household may have important negative implications for their time spent on education. On the other hand, the shares of time spent on domestic work and leisure increase for the other labour categories for most of the households.

10.2. Simulation 2: MFA Phase Out

The GTAP model has been used to perform this simulation. In the GTAP global model the phasing out of MFA is simulated and the resultant changes in world import and export prices and world export demand for Bangladeshi products are then introduced in our gendered dynamic model as external shocks in the economy. The GTAP simulations results indicate a significant fall in the export prices of woven and knit RMG of Bangladesh as well as a large decline in the world demand for exports of woven and knit RMG from Bangladesh. However, it also appears that despite the fall in export prices, there are increases in demand for exports

of other products from Bangladesh. Therefore, though there is a strong negative impact because of the fall in export prices and export demands of RMG, there are likely to be some positive effects generating from the increase in the world demand for other Bangladeshi exports.

Impacts on Macroeconomic Variables

Real GDP increases very modestly both in the short and long run. However, the aggregate welfare fall both in the short and long run. Both exports and imports and exports record strong positive growth, particularly in the long run. Because of tariff elimination reduced domestic import prices result in a fall in consumer prices both in the rural and, slightly more, in the urban area.

Impacts on Wage Rates and Capital Rental Rates

It appears that the wage rates of all the labour categories fall in the short run, with higher rates of reduction in the long run. But, the fall in wage rate of unskilled female labour is more prominent than those of other labour categories. It is because of the fact that since the unskilled female labour intensive RMG sectors suffer this is likely to generate lesser demand for the unskilled female labour in the economy. In the long run wage rates of all labour categories decline by higher margins. Both in the short and long run this scenario leads to a fall in agricultural capital rental rate more than that of the non-agricultural capital.

Impacts at the Sectoral Level

At the sectoral level exports and production decline significantly in the woven and knit RMG sectors. However, other export-oriented sectors and some other import competing sectors increase. Both the value-added price and capital rental rates for woven and knit RMG sectors decline by greater extents both in the short and long run. As a result, these two sectors contracts in the short run and the extents of the contraction rise in the long run.

Impacts on Employment

Because of the contraction of woven and knit RMG sectors there is a significant decline in demand for unskilled female labour in these two sectors in the short run and it continues in the long run. Though there has been an increase in the demand for unskilled female labour in other sectors in the economy, including the agricultural sectors, the import-competing sectors, and few export-oriented sectors such increase in the demand is unlikely to generate any significant rise in market supply of unskilled female labour primarily because of the fact that these sectors have very low base of employment of unskilled female labour. On the other hand, the demands for all other labour categories increase because of the expansion of these sectors which are primarily intensive of these labour categories.

Impacts on Household Income and Welfare

In the short run incomes of all household decline and the extents of fall in incomes are higher than those of CPIs. Therefore, all households experience fall in real consumption. In the long run the negative effects become more acute. The figures of EVs also suggest welfare loss of all households both in the short and long run.

Impacts on Gendered Allocation of time

As a result of the decline in unskilled female labour demand from the woven and knit RMG sectors and insufficient scopes of employment in other sectors the share of market labour supply of unskilled female labour decline for most of the household categories in the short run and continue to decline even in the long run. On the other hand, the share of market supply of labour increases for all other labour categories. The unskilled female members in most of the households experience increase in the shares of domestic work and leisure. In short, because of the contraction of the RMG sectors and insufficient absorption of released labour from these sectors to other sectors in the economy, the unskilled female members in the households are forced to reduce their market participation and increase time spent on domestic and leisure activities.

11. Conclusion

The research has explored the gender aspects of policy reforms in Bangladesh in a sequential dynamic computational general equilibrium (CGE) framework. A 'home production' version of gendered CGE model for the Bangladesh economy is developed. This research has tried to understand how gender interests are affected by greater exposure to trade and other policy reforms. The short-run and long-run impacts of policy reforms in the labour market and in the household in a gendered framework are also explored. The research has performed two simulations to examine the impact of: (1) domestic trade liberalisation in Bangladesh, and (2) the phasing-out of Multi-fibre Agreement (MFA) on textile and garments. This research has built a gendered social accounting matrix (SAM) of Bangladesh for the year 2000 and has used it in a sequential dynamic computable general equilibrium framework. The representative household approach has been followed for the welfare analysis. It has been found that domestic trade liberalisation leads to a significant expansion of the ready-made garment sectors in the economy as a result of which the share of market labour supply of unskilled female labour increases. But, this results in a fall in the shares of domestic labour supply and leisure of unskilled female members of the households. The fall in the share of leisure time may have significant negative implications for the time spent on education by this labour category. It is also observed that the long run impacts are different from the short run impacts with respect to the magnitude of the effects. In the case of second simulation, it can be noted that the phasing out of the MFA works in completely the opposite direction. The share of market labour supply of unskilled female members of the households decrease, and the shares of domestic work and leisure increase for most of the households both in the short and long run.

Table 1: Changes in the Economic Structure during 1980-2004

Sectors	Share in GDP at constant 1995-96 prices (in percent)				
	1980	1990	1995	2000	2004
Agriculture	33.2	29.5	26.0	25.6	21.0
Industry	17.1	20.8	24.3	25.7	26.6
Services	49.7	49.7	49.7	48.7	52.4
Total	100	100	100	100	100

Source: BBS Statistical Yearbook, Various Years

Table 2: Structural Change and Growth in Merchandise Trade

							Average Annual Growth (%)		
	1981	1985	1990	1995	2000	2004	1980-90	1990-99	2001-05
Exports (as % of GDP)	5.3	5.6	6.1	10.9	14.0	15.5			
Imports (as % of GDP)	14.5	13.2	13.5	17.3	19.2	20.8			
Openness (Exports + Imports as % of GDP)	19.8	18.8	19.6	28.2	33.2	36.3			
Export Volume							1.0	14.9	
Export Value							7.8	11.3	7.8
Import Volume							-4.3	20.5	
Import Value							3.6	10.7	9.64

Source: World Bank (2000, 2002, 2005), ADB (2005)

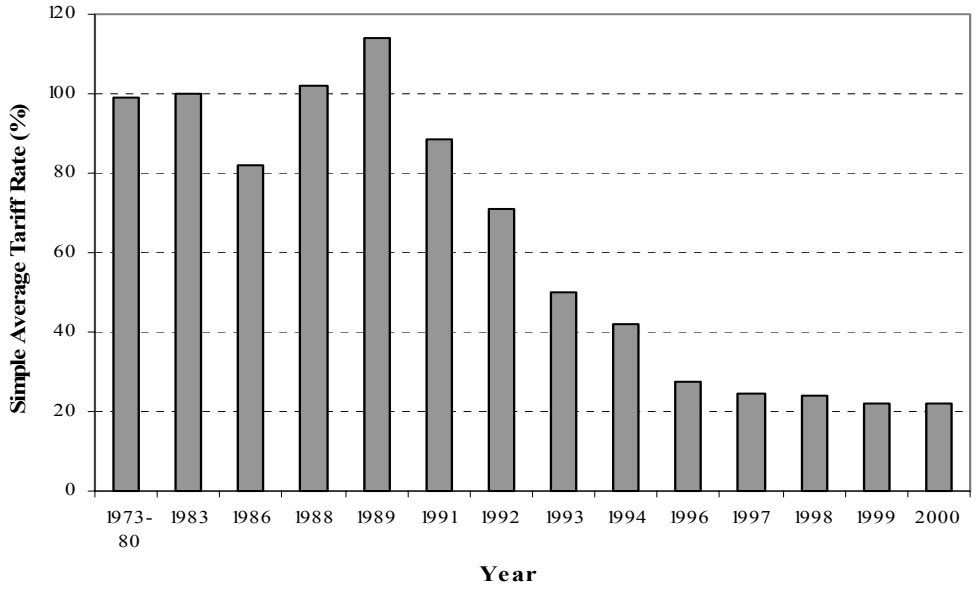
Table 3: Poverty and Inequality in Bangladesh

	Exchange Rate (1 US$ =) Taka	Poverty line Income (Tk/Person/Month)	Mean Consumption (Tk/Person/Month)	Head Count Ratio (%)	Gini index (%) (Consumption)
Urban					
1984	24.94	301.72	396.53	50.2	29.8
1989	32.14	453.65	695.19	43.9	32.6
1992	38.20	534.99	817.12	44.9	31.9
1996	40.90	650.45	1,372.47	29.4	37.5
2000	50.31	724.56	1,291.53	36.6	36.6
Rural					
1984	24.94	268.92	284.84	59.6	24.6
1989	32.14	379.08	435.39	59.2	26.5
1992	38.20	469.13	509.67	61.2	25.5
1996	40.90	541.77	661.47	55.2	27.5
2000	50.31	634.48	820.20	53.0	29.7
Memorandum Item					
National Head Count Ratio		1984 -58.5 % and 1989 -57.1 % (Annual reduction rate –0.23%)		1992 -58.8 % and 2000 - 49.8 % (Annual reduction rate –1%)	

Note: The figures are based on the Household Expenditure Surveys of the Bangladesh Bureau of Statistics (BBS). The poor have been estimated using the cost of basic needs (CBN) method and are taken as those living below the poverty line which corresponds to an intake of 2,122 kcal/person/day and a non-food allowance corresponding to the non-food expenditure among household whose food expenditure equals the food poverty line.

Source: Khondker, Mujeri and Raihan (2006).

Figure 1: Trend in the Simple Average Tariff Rate



Source: World Bank (2000)

Table 4: Average Custom-duties and Para-tariffs in Bangladesh

Year	All tariff lines			Industrial tariff lines			Agriculture tariff lines		
	Customs Duties	Para-tariffs	Total protection rate	Customs Duties	Para-tariffs	Total protection rate	Customs duties	Para-tariffs	Total protection rate
1992	70.64	2.98	73.62	69.72	3.44	73.16	76.64	-0.01	76.63
1993	57.93	2.59	60.52	57.34	2.99	60.33	61.83	-0.03	61.80
1994	43.47	2.43	45.90	43.13	2.84	45.97	45.58	-0.17	45.41
1995	34.24	3.30	37.55	33.52	3.54	37.06	37.49	2.23	39.72
1996	28.70	3.26	31.96	28.40	3.47	31.87	30.07	2.28	32.36
1997	28.24	3.38	31.61	27.79	3.58	31.37	30.25	2.48	32.73
1998	27.27	5.88	33.15	26.80	5.98	32.78	29.42	5.42	34.83
I999	26.59	5.82	32.41	26.23	5.92	32.15	28.19	5.37	33.56
2000	22.40	6.99	29.39	21.86	7.33	29.19	24.87	5.41	30.28
2001	21.10	7.43	28.54	20.39	7.84	28.23	24.53	5.46	30.00
2002	21.02	8.41	29.43	20.28	8.47	28.75	24.60	8.15	32.74
2003	19.91	6.51	26.42	19.08	6.74	25.82	23.85	5.44	29.29
2004	18.82	10.29	29.11	18.02	8.81	26.82	22.56	17.22	39.77

Source: World Bank (2004)

Table 5: Removal of the Quantitative Restrictions (QRs) (at 4-digit HS code)

Year	Total QRs in place	% of QRs in Total no. of Commodities	Trade reasons			Non-trade reasons
			Banned	Restricted	Mixed	
1986	478	38.54	275	138	16	49
1987	550	44.35	252	151	86	61
1989	433	34.91	165	89	101	78
1992	193	15.56	78	34	25	56
1994	109	8.79	7	19	14	69
1995-1997	120	9.67	5	6	17	92
1997-2002	124	10	5	6	17	96

Note: A total of 1,240 four-digit tariff headings exist under the Harmonized System (HS).
Source: Khondker, Mujeri and Raihan (2006).

Table 6: Dynamics of Bangladesh RMG Exports

	1991	1994	1995	1996	1997	1998	1999	2000	2001
RMG Export (Million US$)	865.4	1553.3	2228.5	2547.1	3001.2	3781.6	4021.3	4351.3	4857.3
Total Export (Million US$)	1717	2533.9	3472.6	3882.4	4418.3	5160.5	5312.2	5748.1	6467.8
RMG Export as percent of Total Export	50.4	61.2	64.1	65.5	67.8	73.2	75.7	75.7	75.1

Source: Export Promotion Bureau (EPB), Bangladesh

Table 7: Employed Persons by Sex, Locality, and Industry in 2002-2003 (in percent)

	Urban			Rural			Bangladesh		
Major Activity	Male	Female	All	Male	Female	All	Male	Female	All
Agriculture, Forestry	20.9	42.4	25.9	54.9	63.9	56.9	46.8	58.5	49.4
Fishing	1.3	0.1	1	3.5	0.2	2.8	3	0.2	2.4
Mining and Quarrying	0.1	0	0.1	0.3	0	0.2	0.2	0	0.2
Manufacturing	11.3	23	14	6.5	15.4	8.4	7.6	17.3	9.8
Electricity, Water and Gas	0.5	0.3	0.5	0.2	0	0.1	0.3	0.1	0.2
Construction	6.4	1.2	5.2	3.5	0.9	2.9	4.2	1	3.5
Trade Services	26.1	3.4	20.8	14.3	1.7	11.5	17.1	2.2	13.8
Hotel	2.5	0.6	2	1.2	0.2	1	1.5	0.3	1.3
Transport and Storage	12	0.6	9.3	7.6	0.1	6	8.7	0.3	6.8
Finance, Business, Services	1.7	0.6	1.4	0.2	0.1	0.2	0.6	0.2	0.5
Real Estate	1.2	0.2	1	0.3	0	0.3	0.5	0.1	0.4
Public Admin	5.8	2	4.9	1.6	0.5	1.4	2.6	0.9	2.2
Education	3.4	6.3	4	2.2	2.2	2.2	2.5	3.2	2.7
Health & Social Workers	1.8	2.6	2	0.8	1.1	0.9	1	1.5	1.1
Community, Personal Services	5	16.6	7.7	2.8	13.6	5.1	3.3	14.4	5.8
All Sector	100	100	100	100	100	100	100	100	100

Source: Labour Force Survey 2002-2003

Table 8: Disaggregating Employment by Gender in 2002-2003 (in percent)

	Urban			Rural			Bangladesh		
Major Activity	Male	Female	All	Male	Female	All	Male	Female	All
Agriculture, Forestry	61.76	38.28	100.0	75.45	24.55	100.0	73.71	26.29	100.0
Fishing	98.15	1.85	100.0	98.40	1.60	100.0	98.37	1.63	100.0
Mining and Quarrying	100.00	0.00	0.0	100.00	1.37	100.0	97.56	1.22	100.0
Manufacturing	61.66	38.27	100.0	60.22	39.78	100.0	60.72	39.28	100.0
Electricity, Water and Gas	85.71	14.29	100.0	97.96	2.04	100.0	91.84	8.16	100.0
Construction	94.62	5.56	100.0	93.29	6.71	100.0	93.77	6.29	100.0
Trade Services	96.14	3.86	100.0	96.70	3.30	100.0	96.50	3.50	100.0
Hotel	92.73	7.27	100.0	95.04	4.96	100.0	94.14	5.86	100.0
Transport and Storage	98.50	1.50	100.0	99.45	0.55	100.0	99.14	0.83	100.0
Finance, Business, Services	90.32	9.68	100.0	94.12	5.88	100.0	91.48	8.52	100.0
Real Estate	96.23	3.77	100.0	96.55	3.45	100.0	95.88	3.61	100.0
Public Admin	90.36	9.45	100.0	92.59	7.41	100.0	91.40	8.60	100.0
Education	63.59	36.41	100.0	78.70	21.44	100.0	73.16	26.84	100.0
Health & Social Workers	69.59	30.41	100.0	71.78	28.22	100.0	70.83	28.97	100.0
Community, Personal Services	49.70	50.18	100.0	42.04	57.90	100.0	44.57	55.43	100.0
All Sectors	76.65	23.36	100.0	78.16	21.84	100.0	77.79	22.21	100.0

Source: Labour Force Survey 2002-2003

Table 9: Features of 2000 SAM of Bangladesh

Set	Description of Elements
Activities	
Agriculture (7)	Paddy, Grains, Jute, Commercial Crops, Tea, Other crops, Livestock-Poultry-Fish- Forestry
Industries (18)	Rice Milling, Ata and Flour Mill, Other Food, Tea Product, Leather products, Jute Textile, Yarn, Mill Cloth, Clothing, Woven Ready Made Garments, Knit Ready Made Garments, Printing and Publishing, Chemicals, Fertilizer, Petroleum Products, Clay Products, Cement, Miscellaneous Industry.
Services (1)	Services.
Institutions	
Households (9)	- Rural Agriculture: 4 categories according to land ownership: Landless, Marginal Farmer, Small Farmer, and Large Farmer. - Rural Non-Farmer: 1 category according to occupation - Urban: 4 categories according to the level of education of the household's head: Illiterate, Low Education, Medium Education, and High Education.
Others (2)	Government, Rest of the World
Factors of production	
Labour (4)	Unskilled Male: Class 0-IX Unskilled Female: Class 0-IX Skilled Male: Class X and above Skilled Female: Class X and above
Capital (2)	Agricultural capital Non agricultural capital

Table 10: Basic Structure of the SAM 2000

Sectors	Tariff rates	Import penetration ratio	Import share	Export orientation ratio	Export share	Value-added share	Share of intermediate demand in absorption	Share of intermediate demand in Output
Paddy	0.00	0.00	0.00	0.00	0.00	5.88	51.44	114.40
Grains	17.98	16.26	1.33	0.00	0.00	0.67	58.54	102.47
Jute	0.00	0.00	0.00	21.03	2.07	0.70	50.74	55.06
Commercial	6.40	17.19	7.43	0.82	0.47	3.65	56.57	48.78
Tea Product	0.00	0.00	0.00	13.06	0.15	0.07	56.78	68.06
Other Crops	12.34	16.94	1.10	0.61	0.05	0.61	52.39	53.29
Livestock-Poultry-Fish-Forestry	23.95	3.10	2.13	3.99	4.39	5.25	66.83	52.76
Rice Milling	2.20	1.98	1.73	0.00	0.00	2.76	85.67	1.73
Ata and Flour Mill	41.60	1.28	0.03	0.00	0.00	0.15	70.52	84.84
Other Food	12.73	35.59	8.50	4.81	1.20	0.84	82.53	70.32
Tea Product	27.57	14.81	1.44	3.10	0.42	0.95	51.40	96.48
Leather Products	20.47	42.98	12.07	1.32	0.33	0.75	93.47	64.95
Jute Textile	20.12	10.19	0.50	4.05	0.29	0.29	75.54	78.44
YARN	16.76	15.76	1.66	0.00	0.00	0.47	78.10	101.11
Mill Cloth	5.61	16.52	1.75	0.00	0.00	0.58	71.34	91.34
Clothing	0.00	0.16	0.02	0.00	0.00	1.05	68.57	10.81
Woven RMG	0.87	85.97	2.05	98.70	40.24	2.04	65.04	7.96
Knit RMG	1.35	20.68	0.88	83.30	26.83	1.36	70.07	3.14
Printing and Publishing	66.94	1.28	0.03	0.00	0.00	0.15	70.52	84.84
Chemical	24.63	35.59	8.50	4.81	1.20	0.84	82.53	70.32
Fertilizer	2.89	14.81	1.44	3.10	0.42	0.95	51.40	96.48
Petroleum Products	55.26	42.98	12.07	1.32	0.33	0.75	93.47	64.95
Clay Products	100.99	10.19	0.50	4.05	0.29	0.29	75.54	78.44
Cement	72.86	46.47	2.45	0.00	0.00	0.22	82.37	107.13
Miscellaneous Industry	16.31	20.41	40.38	0.95	2.34	16.83	54.12	40.15
Services	10.35	0.74	2.41	1.90	9.83	50.70	32.64	65.96

Source: SAM 2000 for Bangladesh.
Notes: The model assumes that the elasticity of substitution between capital and labour = 1.2; the elasticity of substitution between skilled and unskilled labour = 0.8; and the capital stock depreciation rate = 5 percent. Import penetration ratio = ratio of imports to domestic demand, Export orientation ratio = ratio of exports to output

Table 11: Income Composition of the Households

	Percentage Contributions to the Household Income from										
Household Categories	Male Skilled labour	Male Unskilled labour	Female Skilled labour	Female Unskilled labour	Non-agricultural capital	Agricultural capital	Dividends	Intra-household transfers	Public transfers	Remittances	Total
Rural											
Landless	3.12	80.53	0.06	10.10	0.00	0.00	-	5.30	0.37	0.51	100.00
Marginal farmers	4.58	55.07	0.15	4.08	24.80	2.01	-.	8.38	0.35	0.57	100.00
Small farmers	16.55	35.84	0.52	1.82	24.57	15.67	-	4.26	0.10	0.66	100.00
Large farmers	9.01	5.01	0.88	0.27	34.43	49.74	-	0.41	0.01	0.24	100.00
Non-agriculture	22.06	36.10	0.96	4.35	27.79	4.79	-	2.96	0.38	0.61	100.00
Urban											
Illiterate	1.61	56.24	0.08	11.17	28.79	0.00	-	1.66	0.05	0.40	100.00
Low education	6.63	37.09	0.68	3.98	41.27	6.69	-	2.94	0.26	0.45	100.00
Medium education	29.23	0.46	1.59	0.74	58.75	7.88	0.06	0.37	0.74	0.18	100.00
High education	19.64	0.05	0.45	0.21	59.72	14.95	0.20	1.14	3.43	0.21	100.00
All	15.31	31.14	0.76	3.95	35.00	10.32	0.02	2.52	0.53	0.43	100.00

Source: SAM 2000 for Bangladesh.
Note: '-' denotes not applicable to this household category.

Table 12: Initial Endowment of Labour Force (in percent)

Household Categories	Male Skilled labour	Male Unskilled labour	Female Skilled labour	Female Unskilled labour
Rural				
Landless	1.26	16.03	0.53	15.84
Marginal farmers	1.01	5.96	0.65	3.48
Small farmers	10.38	11.06	6.55	4.44
Large farmers	5.21	1.42	10.28	0.61
Non-agriculture	37.58	30.25	33.01	28.74
Urban				
Illiterate	1.13	19.48	1.19	30.49
Low education	5.66	15.57	11.79	13.17
Medium education	29.00	0.23	31.96	2.85
High education	8.76	0.01	4.03	0.37
All	100.00	100.00	100.00	100.00

Source: SAM 2000 for Bangladesh.

Table 13: List of activities in the BER (2005) Time-use Survey Questionnaire

	MARKET WORK	
1.	Work as employed	
2.	Work in own business	
3.	Ploughing /Field preparation/cropping/fertilizer/manual irrigation, carrying crops and such other physical intensive works	
4.	Other overseeing of crops	
5.	Digging/ stone crushing/ brick breaking/carrying weights	
6.	Tending animals	
7.	Fetching water	
8.	Collecting fire-woods	
9.	Fishing	
10.	Construction (supervision works)	
11.	Weaving, sewing, textile care	
12.	Handicrafts	
13.	Travel (on foot)	
14.	Travel (cycling/boating)	
15.	Travel (other mechanized vehicles)	
	DOMESTIC WORK	
16.	Buying/Shopping	
17.	Cooking/baking	
18.	Regular household activities (house cleaning/ feeding animals/operating tube well/ chopping firewood)	
19.	Washing (laundry), cleaning, do the dishes	
20.	Care of other children/adults/elderly	
	LEISURE	
21.	School (including home assignments)	
22.	Playing games	
23.	Leisure time (smoking, music , Playing)	
24.	Socialization/Meeting Relatives	
25.	Social Service /Club activities	
26.	Political Activities	
27	Prayer time	
28.	Other, specify	
	PERSONAL CARE	
29.	Sleeping	
30.	Eating, drinking, bathing, personal care	
Total Engagement (Hour)		**24**

Table 14: Time allocation in the gendered SAM 2000, Bangladesh.

		Average Hours spent on different activities in total 24 hours a Day				
Household Classification	Skill-Gender Classification	Market Work	Household Work	Personal Care	Leisure	Total
Rural Agricultural Landless	Male Unskilled	8.57	0.96	10.53	3.92	24.00
	Male Skilled	8.07	1.24	10.19	4.51	24.00
	Female Unskilled	3.83	5.38	10.39	4.41	24.00
	Female Skilled	2.13	5.76	9.28	6.83	24.00
Rural Agricultural Marginal farmers	Male Unskilled	8.99	1.19	10.14	3.67	24.00
	Male Skilled	8.32	0.95	9.82	4.90	24.00
	Female Unskilled	3.45	5.93	10.38	4.24	24.00
	Female Skilled	6.84	3.73	9.56	3.87	24.00
Rural Agricultural Medium Farmers	Male Unskilled	8.46	0.95	10.25	4.33	24.00
	Male Skilled	7.96	1.00	9.92	5.12	24.00
	Female Unskilled	3.69	6.00	10.12	4.20	24.00
	Female Skilled	5.28	5.17	9.64	3.92	24.00
Rural Agricultural Large Farmers	Male Unskilled	9.26	0.91	9.58	4.24	24.00
	Male Skilled	7.49	0.81	9.94	5.77	24.00
	Female Unskilled	3.50	6.36	10.13	4.02	24.00
	Female Skilled	3.45	4.35	9.95	6.24	24.00
Rural Non-Farm	Male Unskilled	8.94	0.98	10.18	3.90	24.00
	Male Skilled	8.35	1.06	9.88	4.70	24.00
	Female Unskilled	4.13	5.85	10.14	3.89	24.00
	Female Skilled	4.95	4.79	9.85	4.42	24.00
Urban Illiterate	Male Unskilled	9.79	0.77	10.03	3.41	24.00
	Male Skilled	7.86	0.81	10.63	4.71	24.00
	Female Unskilled	2.27	6.24	10.48	5.01	24.00
	Female Skilled	4.27	4.45	10.59	4.69	24.00
Urban Low Education	Male Unskilled	9.51	0.93	9.91	3.65	24.00
	Male Skilled	7.66	0.46	9.97	5.91	24.00
	Female Unskilled	2.74	6.34	10.25	4.67	24.00
	Female Skilled	3.22	4.20	10.58	6.00	24.00
Urban Medium Education	Male Unskilled	8.07	0.57	10.46	4.90	24.00
	Male Skilled	8.19	0.99	10.05	4.77	24.00
	Female Unskilled	1.93	7.43	9.86	4.79	24.00
	Female Skilled	3.61	4.78	10.46	5.14	24.00
Urban High Education	Male Unskilled	9.77	0.57	10.05	3.61	24.00
	Male Skilled	8.48	0.89	9.89	4.73	24.00
	Female Unskilled	1.51	6.57	9.43	6.48	24.00
	Female Skilled	3.88	5.35	9.96	4.81	24.00

Source: BER (2005)

Table 15: Average predicted probability of labour market participation from the Logit model

Household Classification	Skill-Gender Classification	Average predicted probability of labour market participation
Rural Agricultural Landless	Male Unskilled	0.8157
	Male Skilled	0.7136
	Female Unskilled	0.2528
	Female Skilled	0.1949
Rural Agricultural Marginal farmers	Male Unskilled	0.7908
	Male Skilled	0.7106
	Female Unskilled	0.1828
	Female Skilled	0.0848
Rural Agricultural Medium Farmers	Male Unskilled	0.7219
	Male Skilled	0.7294
	Female Unskilled	0.1666
	Female Skilled	0.0754
Rural Agricultural Large Farmers	Male Unskilled	0.6692
	Male Skilled	0.6846
	Female Unskilled	0.1249
	Female Skilled	0.056
Rural Non-Farm	Male Unskilled	0.7896
	Male Skilled	0.7248
	Female Unskilled	0.2147
	Female Skilled	0.0999
Urban Illiterate	Male Unskilled	0.8181
	Male Skilled	0.7602
	Female Unskilled	0.2146
	Female Skilled	0.0583
Urban Low Education	Male Unskilled	0.8334
	Male Skilled	0.6631
	Female Unskilled	0.2072
	Female Skilled	0.084
Urban Medium Education	Male Unskilled	0.4412
	Male Skilled	0.7707
	Female Unskilled	0.21
	Female Skilled	0.1124
Urban High Education	Male Unskilled	0.4983
	Male Skilled	0.7643
	Female Unskilled	0.195
	Female Skilled	0.1273

Source: Logit regression model using the BER (2005) database

Table 16: Macroeconomic Impacts (Percentage deviation from the BAU path

Variable	Simulation 1		Simulation 2	
	SR	LR	SR	LR
Real GDP	0.36	1.15	0.27	0.24
Aggregate welfare	-0.09	0.14	-0.14	-0.19
Imports	10.57	16.58	-4.42	-5.35
Exports	15.45	24.22	-1.84	-3.01
Urban CPI	-6.25	-3.23	-3.69	-4.16
Rural CPI	-5.09	-2.97	-3.62	-4.09
Male skilled wage rate	-7.16	-1.36	-4.91	-5.77
Male unskilled wage rate	-6.82	-1.12	-4.87	-5.73
Female skilled wage rate	-5.68	-0.95	-4.70	-5.39
Female unskilled wage rate	-1.16	5.06	-6.69	-7.80
Agricultural capital rental rate	-7.84	-6.72	-3.45	-3.79
Non-agricultural capital rental rate	-6.73	-5.30	-2.76	-3.10

Source: Simulation results.
Note: SR and LR refer to years 2006 and 2020 respectively.
Aggregate welfare is the sum of equivalent variations of nine household categories

Table 17: Effects on Sectoral Prices (Percentage deviation from the BAU Path)

	Variable	Year	PDDY	GRNS	JUTE	COMC	TEAG	OCRP	LIFR	RICE	ATAF	OTFD	TEAP	LEAT	JUTX	YARN	MCLT	CLTH	WRMG	KRMG	PRNT	CHEM	FERT	PETR	CLAY	CEMT	MISC	SERV
Simulation 1	Price of Import																											
	World export demand																											
	Price of world export																											
	Price of FOB export	SR			-1.20	-1.12	-1.20	-1.24	-1.17			-1.01		-1.31	-1.20				-1.53	-1.50		-1.03		-0.65	-0.99		-1.41	-1.25
		LR			-0.83	-0.64	-0.80	-0.49	-0.62			-0.37		-0.97	-0.76				-2.97	-2.12		-0.05		1.34	0.28		-0.80	-0.70
	Producer price	SR	-6.74	-7.64	-5.22	-6.35	-6.36	-7.83	-6.95	-5.92	-7.25	-6.67	-6.43	-5.00	-5.35	-4.90	-3.51	-6.26	-1.58	-2.43	-7.84	-8.61	-6.68	-12.46	-10.14	-15.95	-8.30	-7.16
		LR	-3.75	-3.94	-3.61	-3.52	-4.15	-4.15	-3.97	-2.80	-4.29	-3.39	-3.36	-3.71	-3.30	-3.26	-3.21	-3.67	-3.04	-3.27	-4.83	-4.16	-4.16	-4.26	-4.12	-4.29	-5.17	-3.69
	Price of value added	SR	-7.25	-8.80	-4.16	-6.67	-5.77	-9.22	-7.87	-7.11	-6.40	-8.85	-7.37	-1.38	-4.73	-2.69	2.06	-7.44	7.37	5.29	-7.18	-13.06	-6.21	-32.54	-17.60	-33.29	-7.53	-6.69
		LR	-4.24	-4.19	-4.07	-4.14	-4.52	-4.98	-5.10	-4.27	-4.35	-4.43	-4.00	-5.26	-3.75	-4.57	-3.16	-4.80	-1.99	-3.11	-3.94	-4.49	-4.60	-5.14	-4.69	-5.63	-4.52	-3.09
	Rate of return to capital	SR	-7.81	-10.61	-1.82	-6.83	-5.30	-10.55	-8.45	-7.64	-6.33	-10.46	-8.18	1.81	-2.39	-0.72	11.98	-7.93	19.51	15.34	-7.56	-17.44	-5.85	-43.29	-24.21	-49.82	-8.20	-6.87
		LR	-6.58	-6.68	-7.06	-6.63	-6.79	-6.91	-6.85	-6.60	-6.52	-6.77	-6.57	-7.61	-6.96	-6.26	-5.45	-6.63	-4.49	-6.51	-6.37	-6.87	-6.80	-7.10	-6.99	-9.12	-6.81	-6.31
Simulation 2	Price of Import		0.00	0.10	0.00	-0.10	0.00	0.10	-0.20	-0.20	0.00	0.00	0.00	0.30	0.70	0.70	0.70	0.70	-0.20	-0.20	0.10	0.10	0.10	-0.10	0.20	0.20	0.20	-0.10
	World export demand				17.2	17.2	23.3	23.3	11.9			18.9		36.7	-9.4				-21.6	-21.6		20.1		13.3	28.4		28.4	18.3
	Price of world export				-2.70	-4.00	-3.70	-3.70	-3.80			-3.30		-3.40	-3.30				-2.70	-2.70		-3.00		-1.40	-3.60		-3.60	-4.40
	Price of FOB export	SR			-1.75	-2.75	-2.09	-2.04	-2.93			-2.02		-1.39	-4.25				-4.56	-4.58		-1.76		-0.90	-1.70		-1.63	-3.04
		LR			-1.84	-2.87	-2.13	-2.22	-3.01			-2.12		-1.50	-4.31				-4.37	-4.52		-1.91		-1.08	-1.84		-1.78	-3.11
	Producer price	SR	-4.05	-3.55	-4.06	-3.67	-4.00	-3.34	-3.69	-4.09	-3.45	-3.56	-4.19	-4.30	-4.32	-3.40	-3.86	-3.84	-4.53	-4.19	-3.50	-3.41	-3.63	-3.48	-3.68	-3.23	-3.44	-4.22
		LR	-4.34	-4.25	-4.54	-4.35	-4.25	-4.21	-4.15	-4.39	-3.92	-4.11	-4.48	-4.83	-4.65	-3.98	-4.16	-4.09	-4.33	-4.12	-3.96	-4.15	-4.37	-4.27	-4.32	-4.43	-4.17	-4.65
	Price of value added	SR	-4.50	-3.66	-4.23	-3.69	-4.65	-3.15	-3.87	-4.59	-4.36	-3.71	-4.62	-3.88	-4.69	-3.66	-4.96	-4.60	-6.63	-6.26	-4.36	-2.86	-3.46	-2.21	-3.41	-1.82	-3.53	-4.59
		LR	-4.61	-4.62	-4.72	-4.62	-4.55	-4.39	-4.36	-4.62	-4.57	-4.56	-4.70	-4.51	-4.79	-4.44	-4.85	-4.44	-5.30	-5.08	-4.71	-4.57	-4.52	-4.39	-4.51	-4.50	-4.52	-4.99
	Rate of return to capital	SR	-4.18	-2.64	-3.53	-2.68	-4.46	-2.26	-3.41	-4.25	-3.98	-2.84	-4.28	-3.28	-4.45	-3.04	-4.99	-4.39	-7.31	-6.62	-3.86	-1.33	-2.49	-0.81	-2.41	0.70	-2.58	-3.98
		LR	-3.82	-3.78	-3.77	-3.78	-3.81	-3.75	-3.78	-3.81	-3.83	-3.77	-3.82	-3.85	-3.76	-3.85	-3.96	-3.82	-4.16	-3.75	-3.85	-3.74	-3.76	-3.73	-3.75	-3.57	-3.75	-3.85

Source: Calculated from simulation results

PDDY = Paddy, GRNS = Grains, JUTE = Jute, COMC = Commercial Crop, TEAG = Tea, OCRP = Other Crops, LIFR = Livestock-Poultry-Fish-Forestry, RICE = Rice Milling, ATAF = Ata and Flour Mill, OTFD = Other Food, TEAP = Tea Product, LEAT = Leather Products, JUTX = Jute Textile, YARN = Yarn, MCLT = Mill Cloth, CLTH = Clothing, WRMG = Woven RMG, KRMG = Knit RMG, PRNT = Printing and Publishing, CHEM = Chemical, FERT = Fertiliser, PETR = Petroleum Products, CLAY = Clay Products, CEMT = Cement, MISC = Miscellaneous Industry, SERV = Services

SR and LR refer to years 2006 and 2020 respectively.

Table 18: Effects on Sectoral Volumes (percentage deviation from the BAU path)

	Variable	Year	PDDY	GRNS	JUTE	COMC	TEAG	OCRP	LIFR	RICE	ATAF	OTFD	TEAP	LEAT	JUTX	YARN	MCLT	CLTH	WRMG	KRMG	PRNT	CHEM	FERT	PETR	CLAY	CEMT	MISC	SERV
Simulation 1	Imports	SR	0.00	11.56	0.00	-0.33	0.00	3.75	22.38	-5.94	51.33	5.80	29.58	21.53	18.64	20.74	16.07	-9.52	-1.36	-7.32	90.47	13.13	-5.40	30.43	117.41	32.43	9.50	3.44
		LR	0.00	17.96	0.00	4.47	0.00	8.78	28.36	-0.71	60.27	10.80	36.73	25.07	24.53	29.39	28.17	-5.01	1.31	-9.33	102.27	19.82	-1.77	41.31	136.34	44.07	14.57	10.31
	Exports	SR	0.00	0.00	12.78	11.89	12.85	13.24	12.49	0.00	0.00	10.64	0.00	14.06	12.86	0.00	0.00	0.00	16.67	16.28	0.00	10.88	13.36	6.77	10.51	0.00	15.20	13.35
		LR	0.00	0.00	8.64	6.61	8.36	5.03	6.37	0.00	0.00	3.83	0.00	10.26	7.92	0.00	0.00	0.00	35.17	23.93	0.00	0.53	7.96	-12.43	-2.73	0.00	8.38	7.26
	Production	SR	-0.30	-1.93	3.78	0.36	1.38	-1.37	-0.27	-0.25	0.54	-1.66	-0.64	5.68	3.58	3.19	12.85	-0.31	16.54	14.08	-0.20	-5.47	1.23	-17.10	-8.96	-24.39	-0.34	0.19
		LR	0.22	-2.23	2.63	0.52	1.17	-2.56	-0.69	0.27	1.59	-2.37	-0.12	4.26	2.47	7.79	24.03	0.47	34.96	21.05	1.01	-7.55	0.69	-21.82	-11.08	-32.31	-0.95	0.89
	Capital demand	SR	0.19	-0.35	1.80	0.50	0.98	-0.20	0.23	0.22	0.48	-0.25	0.06	3.03	1.59	1.55	4.78	0.12	6.97	6.05	0.14	-1.48	0.91	-4.75	-2.67	-5.04	0.24	0.35
		LR	2.22	-0.15	5.27	2.65	3.14	-0.95	0.80	2.27	3.47	-0.41	2.08	6.37	5.29	9.35	26.42	2.04	37.78	24.56	3.10	-5.67	2.60	-20.51	-9.33	-30.24	0.99	3.65
	Male skd Labour dd	SR	-0.42	-3.37	6.40	0.73	2.54	-3.18	-0.95	-0.17	1.14	-3.16	-0.82	10.78	5.65	7.06	21.66	-0.56	31.47	26.69	-0.37	-10.46	1.88	-35.91	-17.35	-42.02	-0.72	0.51
		LR	-2.15	-4.50	0.35	-1.77	-1.44	-5.45	-3.71	-1.94	-0.86	-4.78	-2.15	0.91	0.46	4.96	22.23	-2.26	35.34	20.27	-1.16	-9.98	-2.03	-24.28	-13.51	-34.68	-3.48	-0.52
	Male uskd Labour dd	SR	-0.95	-3.87	5.85	0.20	2.00	-3.69	-1.46	-0.88	0.59	-3.68	-1.47	10.23	5.15	6.54	21.01	-1.20	29.57	24.86	-0.84	-10.88	1.40	-36.20	-17.76	-42.31	-1.24	-0.09
		LR	-2.38	-4.73	0.11	-2.01	-1.68	-5.68	-3.95	-2.50	-1.15	-5.07	-2.61	0.68	0.25	4.73	21.89	-2.70	32.89	18.10	-1.36	-10.14	-2.20	-24.42	-13.72	-34.84	-3.76	-0.89
	Female skd labour dd	SR	-0.49	-3.44	6.33	0.66	2.47	-3.25	-1.02	-0.23	1.07	-3.22	-0.89	10.70	5.58	6.98	21.57	-0.62	31.38	26.61	-0.44	-10.52	1.81	-35.95	-17.41	-42.06	-0.78	0.44
		LR	-2.44	-4.79	0.05	-2.07	-1.74	-5.73	-4.00	-2.24	-1.16	-5.07	-2.45	0.60	0.15	4.65	21.86	-2.56	34.93	19.91	-1.46	-10.25	-2.32	-24.51	-13.78	-34.88	-3.77	-0.82
	Female uskd labour dd	SR	-1.99	-4.89	4.73	-0.86	0.92	-4.70	-2.50	-1.93	-0.47	-4.70	-2.51	9.07	4.04	5.41	19.73	-2.24	28.20	23.55	-1.89	-11.82	0.33	-36.88	-18.63	-42.92	-2.28	-1.15
		LR	-4.27	-6.57	-1.83	-3.91	-3.58	-7.50	-5.82	-4.39	-3.07	-6.91	-4.50	-1.27	-1.69	2.70	19.53	-4.58	30.32	15.81	-3.28	-11.88	-4.09	-25.88	-15.39	-36.10	-5.62	-2.81
Simulation 2	Imports	SR	0.00	-4.42	0.00	-4.42	0.00	-3.98	-4.69	-5.96	-5.19	-4.47	-6.39	-6.89	-7.64	-6.31	-9.27	-7.02	-2.08	-2.90	-5.27	-3.42	-4.52	-3.06	-4.71	-1.72	-4.50	-5.99
		LR	0.00	-5.35	0.00	-5.33	0.00	-4.99	-5.36	-6.49	-6.00	-5.19	-6.91	-7.77	-8.31	-7.56	-10.73	-7.53	-2.52	-2.77	-6.08	-4.24	-5.48	-3.85	-5.40	-2.36	-5.30	-6.70
	Exports	SR	0.00	0.00	6.32	2.93	4.48	3.96	2.24	0.00	0.00	4.20	0.00	11.30	-0.03	0.00	0.00	0.00	-4.86	-4.68	0.00	5.73	5.34	7.73	5.64	0.00	4.84	2.72
		LR	0.00	0.00	7.35	4.26	4.85	5.81	3.12	0.00	0.00	5.30	0.00	12.47	0.63	0.00	0.00	0.00	-6.82	-5.33	0.00	7.44	6.88	9.64	7.10	0.00	6.46	3.43
	Production	SR	-0.12	1.05	1.37	0.97	0.44	1.23	0.64	-0.17	-0.07	0.94	-0.17	4.83	-0.18	-0.29	-2.73	-0.36	-4.79	-3.90	0.08	2.20	1.29	2.20	1.42	3.55	1.01	0.23
		LR	-0.24	1.17	1.52	1.10	0.35	1.54	0.71	-0.28	-0.18	1.06	-0.28	4.98	-0.09	-0.72	-3.85	-0.51	-6.75	-4.53	-0.05	2.59	1.50	2.66	1.75	4.82	1.33	0.16
	Capital demand	SR	-0.39	0.20	0.78	0.13	0.28	0.49	0.26	-0.46	-0.39	0.22	-0.46	4.31	-0.38	-0.79	-2.71	-0.54	-4.24	-3.60	-0.34	0.93	0.49	1.04	0.59	1.47	0.23	-0.29
		LR	-0.89	0.46	0.72	0.39	-0.27	1.00	0.23	-0.95	-0.79	0.40	-1.01	4.40	-0.95	-1.21	-4.56	-1.03	-7.64	-5.59	-0.77	1.89	0.85	2.10	1.10	4.01	0.69	-0.80
	Male skd Labour dd	SR	0.26	2.16	1.99	2.06	0.70	2.77	1.54	0.04	0.40	1.97	0.04	5.77	0.04	0.79	-2.76	-0.11	-6.47	-5.29	0.57	3.99	2.56	4.54	2.72	6.26	2.20	0.50
		LR	0.72	2.13	2.39	2.05	1.36	2.70	1.85	0.54	0.76	2.02	0.50	6.03	0.69	0.35	-3.16	0.51	-6.78	-4.39	0.78	3.59	2.51	3.79	2.77	5.87	2.33	0.74
	Male uskd Labour dd	SR	0.20	2.09	1.92	1.99	0.64	2.70	1.49	0.15	0.38	1.94	0.10	5.70	-0.04	0.72	-2.80	-0.07	-5.86	-4.67	0.48	3.89	2.46	4.44	2.66	6.19	2.16	0.51
		LR	0.62	2.03	2.29	1.95	1.25	2.59	1.78	0.63	0.71	1.97	0.54	5.94	0.59	0.26	-3.22	0.53	-6.13	-3.72	0.68	3.46	2.39	3.68	2.69	5.79	2.27	0.72
	Female skd labour dd	SR	0.49	2.38	2.22	2.28	0.93	3.00	1.77	0.26	0.63	2.19	0.26	6.00	0.26	1.02	-2.54	0.11	-6.27	-5.08	0.79	4.23	2.79	4.77	2.95	6.49	2.43	0.73
		LR	1.00	2.41	2.68	2.34	1.64	2.99	2.14	0.83	1.05	2.31	0.79	6.33	0.97	0.63	-2.89	0.80	-6.52	-4.12	1.07	3.88	2.80	4.08	3.06	6.17	2.62	1.02
	Female uskd labour dd	SR	1.04	2.95	2.78	2.85	1.49	3.57	2.35	1.00	1.23	2.80	0.95	6.59	0.81	1.57	-1.97	0.78	-5.06	-3.86	1.34	4.77	3.33	5.33	3.53	7.09	3.03	1.36
		LR	1.63	3.05	3.32	2.98	2.27	3.63	2.80	1.65	1.73	3.00	1.55	7.00	1.60	1.26	-2.25	1.54	-5.19	-2.75	1.70	4.50	3.42	4.72	3.72	6.85	3.30	1.73

Source: Calculated from simulation results

PDDY = Paddy, GRNS = Grains, JUTE = Jute, COMC = Commercial Crop, TEAG = Tea, OCRP = Other Crops, LIFR = Livestock-Poultry-Fish-Forestry, RICE = Rice Milling, ATAF = Ata and Flour Mill, OTFD = Other Food, TEAP = Tea Product, LEAT = Leather Products, JUTX = Jute Textile, YARN = Yarn, MCLT = Mill Cloth, CLTH = Clothing, WRMG = Woven RMG, KRMG = Knit RMG, PRNT = Printing and Publishing, CHEM = Chemical, FERT = Fertiliser, PETR = Petroleum Products, CLAY = Clay Products, CEMT = Cement, MISC = Miscellaneous Industry, SERV = Services

SR and LR refer to years 2006 and 2020 respectively.

Table 19: Effects on Income and Welfare (percentage deviation from the BAU path)

	Variable		*Rural Households*					*Urban Households*			
		Year	Landless	Marginal farmer	Small farmer	Large farmer	Non Agricultural	Illiterate	Low education	Med education	High education
Simulation 1	Income	SR	-6.00	-6.04	-6.14	-6.56	-6.17	-6.05	-6.22	-6.37	-6.46
		LR	-2.31	-2.38	-2.57	-3.26	-2.52	-2.33	-2.55	-2.63	-2.88
	CPI	SR	-5.95	-5.91	-5.91	-5.91	-6.05	-6.16	-6.22	-6.31	-6.42
		LR	-3.04	-3.00	-3.00	-3.00	-3.12	-3.18	-3.22	-3.26	-3.32
	EV	SR	-0.07	-0.13	-0.12	-0.32	-0.08	-0.01	-0.05	-0.08	-0.03
		LR	0.20	0.19	0.08	-0.22	0.17	0.30	0.20	0.17	0.03
Simulation 2	Income	SR	-4.09	-4.08	-4.02	-3.88	-4.07	-4.17	-4.09	-4.11	-4.05
		LR	-4.70	-4.70	-4.62	-4.47	-4.68	-4.78	-4.70	-4.73	-4.66
	CPI	SR	-3.60	-3.61	-3.62	-3.64	-3.63	-3.65	-3.68	-3.72	-3.75
		LR	-4.07	-4.08	-4.09	-4.11	-4.10	-4.12	-4.16	-4.21	-4.24
	EV	SR	-0.17	-0.20	-0.12	-0.06	-0.15	-0.22	-0.17	-0.15	-0.04
		LR	-0.22	-0.26	-0.16	-0.10	-0.20	-0.28	-0.22	-0.20	-0.06

Table 20: Impact on households' market labour supply, domestic work and leisure (percentage deviation from the BAU path)

	Changes in		*Rural Households*					*Urban Households*			
		Year	Landless	Marginal farmer	Small farmer	Large farmer	Non Agricultural	Illiterate	Low education	Med education	High education
Simulation 1	Share of skilled male **market** labour supply in MAXHOURS of skilled male	SR	-0.38	0.13	0.70	1.98	0.03	-1.26	-0.38	-0.05	-0.01
		LR	-2.08	-1.55	-0.83	2.43	-1.53	-2.84	-1.82	-0.53	-0.01
	Share of unskilled male **market** labour supply in MAXHOURS of unskilled male	SR	-0.15	0.25	0.72	1.31	0.19	-0.68	-0.16	0.10	0.12
		LR	-1.69	-1.11	-0.51	1.47	-1.13	-1.66	-1.11	-0.20	0.08
	Share of skilled female **market** labour supply in MAXHOURS of skilled female	SR	2.76	0.32	0.59	0.89	0.59	0.03	0.52	0.77	0.91
		LR	-3.52	-0.01	0.25	0.84	-0.10	-0.48	-0.35	0.24	0.67
	Share of unskilled female **market** labour supply in MAXHOURS of unskilled female	SR	4.12	4.13	3.88	3.22	3.59	4.43	5.19	8.79	12.01
		LR	3.62	4.50	4.39	3.94	3.43	2.72	5.89	11.24	20.82
	Share of skilled male **domestic** labour supply in MAXHOURS of skilled male	SR	1.40	0.35	-0.58	-2.18	0.52	3.41	1.54	0.51	0.28
		LR	4.09	2.79	1.39	-2.84	2.89	6.03	3.41	1.14	0.22
	Share of unskilled male **domestic** labour supply in MAXHOURS of unskilled male	SR	0.95	-0.10	-1.02	-2.61	0.07	2.95	1.09	0.07	-0.16
		LR	3.80	2.49	1.10	-3.12	2.60	5.73	3.11	0.85	-0.06
	Share of skilled female **domestic** labour supply in MAXHOURS of skilled female	SR	-2.98	-3.99	-4.69	-5.14	-3.66	-1.08	-2.76	-3.08	-3.25
		LR	0.04	-1.24	-2.23	-4.62	-0.81	1.84	-0.47	-1.50	-2.31
	Share of unskilled female **domestic** labour supply in MAXHOURS of unskilled female	SR	-5.40	-6.39	-7.08	-7.52	-6.07	-3.55	-5.19	-5.51	-5.67
		LR	-3.44	-4.67	-5.62	-7.93	-4.26	-1.69	-3.92	-4.92	-5.70
	Share of skilled male **leisure** in MAXHOURS of skilled male	SR	0.55	-0.36	-1.30	-3.29	-0.18	2.18	0.60	0.01	-0.02
		LR	3.77	2.69	1.29	-3.77	2.78	5.16	2.88	0.90	-0.02
	Share of unskilled male **leisure** in MAXHOURS of unskilled male	SR	0.18	-0.73	-1.67	-3.65	-0.55	1.81	0.23	-0.36	-0.39
		LR	3.53	2.44	1.05	-3.99	2.54	4.91	2.63	0.66	-0.26
	Share of skilled female **leisure** in MAXHOURS of skilled female	SR	-1.03	-1.92	-2.86	-4.81	-1.75	0.58	-0.98	-1.57	-1.60
		LR	3.35	2.27	0.88	-4.16	2.36	4.73	2.45	0.48	-0.43
	Share of unskilled female **leisure** in MAXHOURS of unskilled female	SR	-5.12	-5.98	-6.87	-8.75	-5.81	-3.58	-5.07	-5.63	-5.67
		LR	-2.57	-3.59	-4.90	-9.65	-3.50	-1.27	-3.41	-5.27	-6.13

Table 20 (Cont.): Impact on households' market labour supply, domestic work and leisure (percentage deviation from the BAU path)

	Changes in		*Rural Households*					*Urban Households*			
		Year	Landless	Marginal farmer	Small farmer	Large farmer	Non Agricultural	Illiterate	Low education	Med education	High education
Simulation 2	Share of skilled male **market** labour supply in MAXHOURS of skilled male	SR	1.18	1.08	0.90	-0.15	0.98	1.40	1.03	0.38	0.13
		LR	1.44	1.38	1.20	-0.09	1.25	1.65	1.33	0.51	0.21
	Share of unskilled male **market** labour supply in MAXHOURS of unskilled male	SR	1.08	0.90	0.73	-0.07	0.85	0.90	0.73	0.22	0.10
		LR	1.28	1.10	0.92	-0.04	1.03	1.02	0.88	0.29	0.15
	Share of skilled female **market** labour supply in MAXHOURS of skilled female	SR	2.51	0.16	0.14	-0.04	0.29	0.29	0.42	0.16	0.01
		LR	5.30	0.25	0.25	0.01	0.48	0.41	0.66	0.31	0.13
	Share of unskilled female **market** labour supply in MAXHOURS of unskilled female	SR	0.07	-0.14	-0.36	-0.77	-0.17	0.63	-0.35	-1.91	-3.45
		LR	0.29	-0.11	-0.46	-0.92	-0.11	1.37	-0.36	-2.65	-5.93
	Share of skilled male **domestic** labour supply in MAXHOURS of skilled male	SR	-2.01	-1.71	-1.25	0.15	-1.63	-2.54	-1.66	-0.66	-0.26
		LR	-2.54	-2.18	-1.64	0.10	-2.09	-3.16	-2.10	-0.86	-0.39
	Share of unskilled male **domestic** labour supply in MAXHOURS of unskilled male	SR	-2.06	-1.76	-1.30	0.10	-1.67	-2.59	-1.71	-0.71	-0.31
		LR	-2.59	-2.23	-1.69	0.04	-2.14	-3.21	-2.16	-0.91	-0.45
	Share of skilled female **domestic** labour supply in MAXHOURS of skilled female	SR	-1.04	-0.73	-0.37	0.47	-0.73	-1.56	-0.73	-0.06	0.31
		LR	-1.52	-1.15	-0.76	0.19	-1.20	-2.13	-1.15	-0.41	0.02
	Share of unskilled female **domestic** labour supply in MAXHOURS of unskilled female	SR	0.22	0.54	0.91	1.75	0.54	-0.30	0.55	1.22	1.59
		LR	0.01	0.39	0.78	1.75	0.33	-0.60	0.39	1.14	1.58
	Share of skilled male **leisure** in MAXHOURS of skilled male	SR	-2.32	-2.11	-1.59	0.25	-1.96	-2.61	-1.79	-0.70	-0.24
		LR	-2.67	-2.45	-1.92	0.15	-2.31	-3.04	-2.12	-0.91	-0.40
	Share of unskilled male **leisure** in MAXHOURS of unskilled male	SR	-2.36	-2.15	-1.63	0.21	-2.00	-2.65	-1.84	-0.74	-0.29
		LR	-2.72	-2.49	-1.96	0.10	-2.36	-3.08	-2.16	-0.95	-0.45
	Share of skilled female **leisure** in MAXHOURS of skilled female	SR	-2.54	-2.34	-1.81	0.02	-2.18	-2.84	-2.02	-0.93	-0.47
		LR	-3.07	-2.84	-2.31	-0.25	-2.71	-3.43	-2.51	-1.31	-0.80
	Share of unskilled female **leisure** in MAXHOURS of unskilled female	SR	-0.45	-0.24	0.29	2.17	-0.08	-0.75	0.08	1.20	1.66
		LR	-0.54	-0.31	0.24	2.35	-0.17	-0.91	0.03	1.27	1.79

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Annex 1

Results of the Logit Regression Model for Market Participation

```
logit dumemp cdis yuedu yfedu ymedu male lpce llandh lage sqlage lhhsize


Logit estimates                                   Number of obs   =       3191
                                                  LR chi2(10)     =    1722.90
                                                  Prob > chi2     =     0.0000
Log likelihood = -1343.3993                       Pseudo R2       =     0.3907

------------------------------------------------------------------------------
      dumemp |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        cdis |  -.0763635   .1108531    -0.69   0.491    -.2936316    .1409047
       yuedu |  -.0046041   .0144115    -0.32   0.749    -.0328502     .023642
       yfedu |   .0041127   .0164869     0.25   0.803    -.0282011    .0364264
       ymedu |  -.0853521   .0235215    -3.63   0.000    -.1314533   -.0392508
        male |   3.389165   .1174728    28.85   0.000     3.158923    3.619408
        lpce |  -.1813399   .1079514    -1.68   0.093    -.3929207     .030241
      llandh |  -.1571406   .0276863    -5.68   0.000    -.2114048   -.1028763
        lage |   28.18004   2.036766    13.84   0.000     24.18805    32.17203
      sqlage |  -3.793209   .2883178   -13.16   0.000    -4.358302   -3.228117
     lhhsize |  -.8505336   .1667017    -5.10   0.000    -1.177263   -.5238041
       _cons |  -50.05931    3.64842   -13.72   0.000    -57.21008   -42.90854
------------------------------------------------------------------------------
```