

DEVELOPING COUNTRY SUPERWOMEN: IMPACTS OF TRADE LIBERALISATION ON FEMALE MARKET AND DOMESTIC WORK

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ABSTRACT

This study analyses the effects of trade liberalisation on male and female work in Nepal. Our contribution is principally based upon the leisure activities modeling on one hand, and the effects of male participation in domestic work with trade policy analysis on the other hand. While previous studies explicitly incorporate leisure activities that required data about which little is known, we use a microeconomic model and alternative calibration procedures to avoid arbitrariness. The experiment conducted in this study shows that the complete elimination of tariffs on imported goods in Nepal benefits women more than men in terms of earnings as their wage increases relatively to men. Generally, female market work expands in rural households and contracts in urban households. It appears that the entrance into market production has not been met with an equivalent reduction in the time they spend in domestic work. Consequently the leisure time of women declines as they enter the labor market. Furthermore, the study indicates that leisure time consumed by men, which is already greater than that consumed by women, increases with trade reform. The extent of male participation in domestic work significantly conditions the impacts on male and female wage rates and household labor supply decisions. When male participation in domestic work activities is low, women generally devote less time to market labor. However their contribution to household income still increases following trade reform as their wage rates rise relative to male market wage rates. Women are more responsive to the market when there is greatest scope to substitute between female domestic and market work, as occurs when men are more involved in domestic work. However, even in these cases their domestic work does not necessarily decrease in the same proportion.

Keywords: Nepal, trade, gender, leisure, home production, and computable general equilibrium.

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INTRODUCTION

In this new era of globalization, developing countries must selectively and strategically seize the opportunities of the global economy and trade integration to enhance human development and combat poverty. Although the principal argument of globalization has been the benefit brought to all nations, its partisans recognize that it creates winners and losers in all countries. The problem of distribution of gains from trade in the developing countries, where national income is already unequally distributed, is at the core of the current trade debate.

Compared to males, several studies showed that females 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 labor¹ market.

Most studies recognize a significant increase of female participation in the labour market over the last decade, corresponding to the period of liberalization in the majority of the developing countries. Although, the expansion of female market work could have perverse consequences on their leisure time and their welfare, as well as on the welfare of children and other dependents, these aspects still remained under-explored in studies.

We develop a computable general equilibrium model (CGE) for Nepalese economy, to analyze the effects of trade on gender work and leisure. We may expect that male and female work will be affected differently by macroeconomic policies, depending on the nature of the work perform. CGE models are powerful tools to capture, in a general equilibrium framework, all direct and indirect effects of macroeconomic shocks on market work, domestic work and leisure. In this paper, market work, leisure, and home production by gender are modeled successively. This allows us to capture successively the major changes in male and female work and income reactions when we first incorporate a work-leisure choice, then home production, in a standard CGE model. Considering the actual characteristics of Nepalese economy, we provide

¹ The terms labor (supply) and work both cover to time spent in market (i.e., GDP) production and home production (social reproduction, domestic production ...), but not including leisure.

some answers concerning the impacts of trade liberalization on male-female differences in market work, income earnings and the amount of time devoted to home activities and leisure.

We present in sections I and II a brief review of literature and salient features of Nepalese economy; sections III and IV discuss quantitative aspects of gender issues in Nepal and model specification; in sections V and VI we present the macroeconomic closure and data, and finally we discuss the results in section VII.

I - REVIEW OF LITERATURE

Over the last decade, gender poverty and inequality has become an important issue in developing countries. Many studies have focused on several gender issues including the impact of trade liberalization on gender inequalities.

Most studies recognize a significant increase of female participation in the labor market over the last decade, corresponding to the period of liberalization in the majority of developing countries. The feminization of paid work has been pronounced in semi-industrialized economies where export industries employ more women. *Elson and Pearson (1981)* show the increase in the female participation in the manufacturing sectors and export industries, as a flexible and underpaid labor force. Several other studies, *Standing (1989)*; *Wood (1991)*; *Cagatay and Ozler (1995)*; *Joekes (1995 and 1999)*; *Ozler (2000 and 2001)*; confirm the relationship between the expansion of export-oriented industries² and female employment. These studies show that the feminization of work is stronger in industrial sectors and in semi-industrialized economies, than in agricultural sectors and economies. In semi-industrialized countries, where female work in the export-oriented sectors has increased, analysts conclude that liberalization is beneficial to women and reduces the gap between men and women in labor market participation and income distribution. However, in these countries some reservations have been expressed for several reasons, mostly, concerning the conditions under which female work grows.

² The typical female labor intensive exported-oriented industries are textiles, garments, electronics, leather and agricultural processing industries.

In the agricultural economies, studies reveal that the increase in traditional agricultural exports could benefit men more than women (*Gladwin 1991; Fontana et al 1998*). In the majority of African countries, female work constitutes the base of food agricultural production, which is crucial work to household food security. They are often owners of small plots of land and engaged in food crop production. In these economies, economic reforms tend to favor the large landowners to the detriment of small holders, as agricultural exports are more conducive to large landholdings. When market opportunities emerge, it appears that men benefit more than women because of the difficulties for women to access loans, assets, new technologies, education, etc. The impact of these changes is more severe for women who are household heads and/or poor (*Fontana et al. 1998*). Even in situations where household income increases with the increase in female work in the export-oriented manufactures, female welfare may not necessary be improved. The increase in household income may be accompanied by decreasing home food production, with a negative impact on the satisfaction of basic food needs in poor households. This case is particularly apparent when men control household income and use it for their own needs rather than for family needs. Although the study results are still ambiguous, several reasons suggest that trade liberalization in agricultural economies could also have perverse effects on the welfare of women.

However, even if pro-female in employment and income distribution, trade liberalization creates winners and losers among women. The distribution of gains from trade will be closely related to factor endowments, particularly labor skills, sectoral factor intensities and mobility. Although, the expansion of female market work is seen as enhancing their negotiation power within the household, it constitutes for them a burden if there is not a similar reduction of their domestic work. Its perverse effects on female leisure and domestic work leave some skeptical of its benefits for women and household dependents.

Time use surveys conducted by the *International Center for Research on Women* in many less developed countries show that women participate both in domestic and market production, and that the time they devote to the latter is greater the poorer is the household. Women tend to work longer hours and have less leisure time than men. When home production is added to market production, they found that women's and children's contribution to the household (in term of time

spent at work) is greater than men's. When women enter the labor market, it is their leisure time rather than their home production hours that is reduced. The demand for household income makes women's market work a necessity, and it is their leisure that adapts to the market.

Therefore, failure to account for gender domestic production and leisure time seriously biases the analysis of the impacts of macroeconomic policies on welfare of men and women in less developed countries.

While most computable general equilibrium (CGE) models do not incorporate a labor-leisure choice, a number of studies have included endogenous labor supply in their model³. The majority of these studies focus on issues other than gender. They show the importance of household's allocation of time between work and leisure for the welfare impact in tariff analysis. Mayer (1991) derives the effect of a change in tariffs on labor supply. *Roussland and Tokarick, (1995)* show that welfare gains on tariffs removal is higher in work-leisure models than traditional exogenous work models⁴. Few CGE models have incorporated home produced goods to analyze household labor supply decisions. Generally, these models assume that home produced goods are close substitutes to market goods. Recently *Fontana and Woods (2000)*, then *Fontana (2001 and 2002)* built CGE models for Bangladesh and Zambia to analyze the effects of macroeconomic policies on female work in the market and at home. They explicitly incorporate leisure and home produced goods as sectors that behave in the same way as market sectors. In general, they found that trade liberalization expands female work and income, and could have perverse consequences on female leisure and household dependents.

The difficulty in the preceding CGE framework studies on gender issues is that we have time spent on market work and household work but not how the remaining time is split between the minimum requirement time necessary for survival (sleeping, eating, hygiene) and the "extra-leisure" (sport, reading, community meeting...), required for model calibration. A second innovation of this study is the used of alternative calibration procedure to avoid these data requirements.

³ *Kemp and Jones (1962), Mayer (1991); De Melo and Tarr (1971); Ballard (1984); Whalley and Piggott (1996); Bovenberg, Graafland and Mooij (1998); Etc.*

⁴ *Roussland and Tokarick (1995)* incorporate leisure as a substitute for certain goods and services, and a complement for others.

II - NEPALESE ECONOMY

TABLE 1: MACROECONOMIC INDICATORS

Period\Year	Growth Rate of GDP				Saving/ GDP	Investment /GDP	Consumer Prices
	Agriculture	Industry	Services	All			
Average 1981-90	1.4	9.0	7.2	5.9	12	19.1	9.8
Average 1991-97	2.3	8.0	7.2	5.8	13.5	22.5	11.1
1993/94	7.6	9.0	7.7	8.1	16.5	22.4	8.9
1994/95	-0.3	3.9	6.0	3.2	15.2	25.1	7.6
1995/96	4.4	5.9	7.9	6.1	10.3	27.2	8.1
196/97	4.1	3.2	5.0	4.1	12.5	25.3	7.8
1997/98	2.0	4.6	5.0	3.9	13.1	24.8	7.5
1998/99	3.5	4.0	4.5	4.0	13.0	20.5	8.0

Source: ADB, Asian Development Outlook, various Issues and IMF.

The macroeconomic performance of the Nepalese economy shows moderate growth since the early 80s. The savings ratio was stagnant and there was a surge in investments in the early nineties. The overall consumer price inflation rate was around 8 percent during the 1990s excluding 1992 and 1993.⁵

II.1 Trade features

TABLE 2: EXPORT BY MAIN CATEGORIES

Categories	1980	1990	1995	2000
Total Value (million dollars)	93.7	179.9	286.3	971
All food items	21.4	13.2	1.1	10.4
Agricultural Raw materials	48.0	3.0	0.1	4.4
Manufactured Goods	30.5	83.5	98.9	85.2

Source: UNCTAD, Handbook of Trade and Development Statistics, 1995 and Table 1.5.

Nepal's exports have been increasing during the two last decades. There have also been major compositional changes. The share of agricultural exports has declined from 70 percent of export earnings in the early 1980s to nil by the mid 1990s. In contrast, manufactured goods increase, and by the mid 1990s, almost all of the export earnings of Nepal are manufactured goods⁶, particularly textile manufactures (Table 2).

⁵ The Nepalese currency was devaluated by 20 percent in 1992.

⁶ The major export goods are hand knotted woollen carpets, readymade garments and recently pashminas, and manufactured goods: light engineering products, handicrafts, silver jewellery, paper products. Carpets faced a severe blow during 1994 and 1995 because of the allegation of use of child labour in the industry. To take requisite measure and clarify allegation, it took two to three years. The industry witnessed large shocks and recovered by 1996. Despite the situation, exports in 1996/97 were at an all time high during the 1990s.

TABLE 3: IMPORT BY MAIN CATEGORIES

Categories	1980	1990	1995	1996	2000
Total Value (million dollars)	226.3	574.7	601.7	1350	1713
All food items	4.3	14.8	15.1	15.0	12.5
Agriculture Raw materials	0.6	7.0	5.0	5.0	7.0
Fuels	17.7	8.7	19.5	20.0	9.7
Ores and metals	1.2	2.0	4.9	5.0	4.4
Manufactured Goods	73.1	67.4	47.4	47.0	66.4
Of which:					
Chemical products	7.3	18.0	11.5	-	
Other manufacture	33.7	30.4	16.8	-	
Machinery & transport	32.2	19.1	19.1	-	
Unallocated	3.1	-	8.1	-	

Source: UNCTAD, Handbook of Trade and Development Statistics, 1995 and Table 1.5

Also, Nepalese imports have increase rapidly. Food and beverage, Textiles and, chemical and mechanical products are the main imports over the last decade. There has been a large increase in the share of manufactured goods (Table 3).

In 1991/92, the total import weighted tariff on imports from third country was 28.6 percent. The basic import weighted tariff on imports from India was 7.1 percent. By 1994/95, the average import weighted tariff rate was 13 percent for total imports; 17 percent for third country imports and 9 percent for imports from India. The share of India in total imports was 40 percent. However, the share of tariff revenue on imports from India is only 27 percent. By 1996/97, the share of India in Nepal's imports fell to 23.4 percent. The import weighted tariff rate for total imports was just 6 percent, and average rate of tariff for India and other countries were, respectively, 8.6 percent and 5.2 percent. The effective rate for India and the Third Country at the local market purchase were 9 and 9.9 percent respectively⁷.

Before trade reform, the highest level of protection was applied to metal and metal products, paper and paper products (Appendix I). The moderately protected industries were textiles, chemicals, and building materials. Wood and wood based industries were least protected. Similarly, food and beverage industries were also least protected. After the reforms, there has been a substantial decrease in the level of protection; average nominal rates of protection have declined from 88 percent in mid 1980s to around 40 percent at present. The nominal tariff rates for the majority of commodities were around 30 percent for local market purchase, and still there

⁷ For more details on Nepalese tariff and tax reform see Sapkota (2001)

is cascading structure of tariffs, the nominal rate of protection is around 40 percent and effective rate of protection is much higher due to the cascading structure of tariffs.

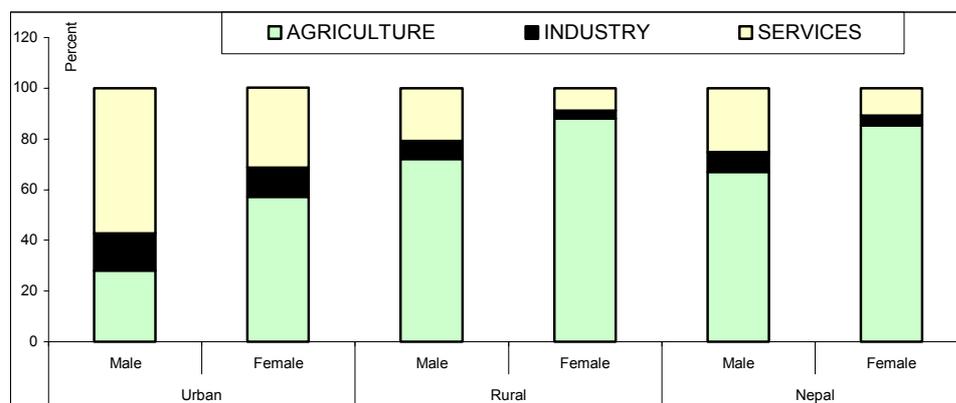
II.2 Government revenues and tax reform

In the last decade, the top income tax rate was reduced from 45 percent to 33 percent and tax brackets were also reduced from 8 to 4. Dozens of domestic industrial products were removed from the excise net in order to simplify the tax system. The sales tax brackets were also reduced from 5 to 2; its rates are 10 and 20 percent (ranging from 5 to 40 percent before). Later, the sales tax was further reduced to a single rate of 15 percent. Finally, a VAT of ten percent with an exemption limit of annual turnover of less than 2.0 million rupees was levied since mid-July 1997 (*Sapkota, 2001*). Nepal's government revenue largely depends on taxes on consumption and production (22 percent) and trade taxes (17 percent) in 1995/96. Total tax revenue contributes to about 62 percent of government finance. The rest is financed from foreign grants, foreign loan and domestic loans.

The share of direct tax in government revenue increased from 8.1 per cent in 1995/96 to 11.5 per cent in 1998/99. During that period, the share of non-tax source dropped, and there are no significant changes in the other sources (appendix II).

III- GENDER IN NEPALESE ECONOMY

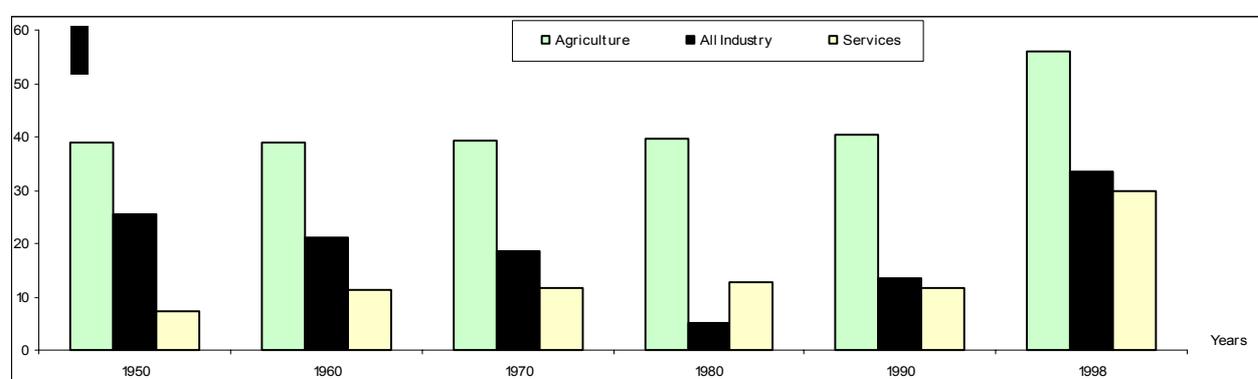
GRAPH 1: MARKET EMPLOYMENT BY SEX, LOCALITY, AND AGGREGATE SECTOR IN 1997/98



Source: NLFS 1998/99

Agriculture is the main sector of employment in Nepal with 76 percent of workers (85 percent of women and 67 percent of men) in 1998/99. In urban areas, men are mostly active in the services sectors (particularly in wholesale, retail and trade activity), while women are more active in agricultural activity. In rural areas, agriculture is the primary market work activity of both men and women. The manufacturing sector employs 3.9 percent of women and 7.7 percent of men, and more urban than rural workers. Women represent one third of all workers in this sector. Agriculture and private household activities are female labor-intensive activities. Female participation rates at the sub-sectoral level are provided in appendix III.

GRAPH 2: FEMALE SHARE IN TOTAL MARKET WORK BY AGGREGATE SECTOR, 1950-1998



Source: Labor Statistics Database, 98-02, ILO Geneva, and Nepal Labor Force Survey 97-98

The female share in employment increased rapidly in all sectors in the course of the 90s, particularly in industry, due to the growth of textile and garment production. Before the nineties, more than 90 percent of men and women were employed in agriculture. These shares have subsequently fallen to 67 percent and 85 percent by 1998, as employment grows in industry and, particularly services.

The average total monthly earnings of paid employees in 1998/99 were slightly more than 2100 rupees. Males in paid employment had much higher monthly earnings (at around 2400 rupees) than females (around 1400 rupees). Within particular occupation groups the contrast between male and female earnings is sometimes quite marked. While average monthly earnings for males and females appear roughly comparable for jobs such as technicians and clerks, women appear to be at a disadvantage relative to men in agriculture, crafts and related trades, and in elementary occupations (table 4).

TABLE 4: AVERAGE MONTHLY EARNINGS⁸ BY ALL PAID EMPLOYEES (RUPEES)

	All	Male	Female	Female/Male Rate
All	2143	2389	1368	0.6
Legislators, senior officials	8037	8068	7525	0.9
Professionals	5079	5141	4631	0.9
Technicians	2971	3057	2678	0.9
Clerks	2832	2836	2805	1.0
Services workers	2507	2506	2525	1.0
Agriculture workers	2109	2756	957	0.3
Craft & related trades	2773	2973	1393	0.5
Plant & machine operators	2981	2995	2037	0.7
Elementary occupations	1491	1692	1054	0.6
Armed forces	3306	3258	4250	1.3

Source: NLFS 1998/99

IV- THE MODELS

The core of our computable general equilibrium (CGE) model is adapted from *Cockburn (2001)*. The model has eleven sectors of production: five agricultural sectors, five non-agricultural sectors, and one public sector. Six sectors export part of their product. All sectors produce import-competing goods. There are four types of factors: male and female labor, which are perfectly mobile in the whole economy, agricultural capital (including land) and non-agricultural capital, which are mobile within the agricultural sectors and the non-agricultural sectors, respectively. Households are classified in seven representative categories: six in rural areas (mountain landless⁹, mountain small landholders, mountain large landholders, Terai¹⁰ landless, Terai small landholders, Terai large landholders) and one in urban areas.

Most standard CGE models are limited to the market sphere of the economy, do not disaggregate labour by gender, and assume that labour supply is exogenous. As a result, male and female labour are implicitly treated as perfect substitutes, the coverage of household time is incomplete (leisure and domestic production are not covered), and interactions between time allocated to leisure, domestic production and market production are not allowed for. In this model, we relax these assumptions by disaggregating time use by gender and broadening time use to include not only market production but also domestic production and leisure. One

⁸ Cash and in kind

⁹ We follow the households classification of *Sapkota (2001)* according to the land holding size; landless households = less than 0.5 ha, small landholders = between 0.5 ha and 2 ha, and large landholders = more than 2 ha.

¹⁰ Terai has the more fertilized agriculture lands in Nepal.

consequence is that both male and female labour supply (to home and market production) is endogenous. Both male and female leisure enter the household utility function. Male and female time allocation changes in response to changes in relative marginal returns in different uses, making it possible to study trade-offs between male and female market work, domestic work, and leisure. We examine each of these adaptations in turn.

1- DISAGGREGATING SECTORAL LABOR BY SEX

We begin by disaggregating market labour into male and female components, which we consider to be imperfect substitutes in production. Elasticities of substitution are activity-specific.¹¹ Activity value added is modeled by a two-level constant elasticity of substitution (CES) function. At the first level, male labour (LMmal) and female labour (LMfem) are aggregated into composite labour (LM).

$$LM_i = A_i \left[\alpha_i LMfem_i^{-\rho_i} + (1 - \alpha_i) LMmal_i^{-\rho_i} \right]^{-1/\rho_i} \quad [1.1]$$

where ρ is a substitution parameter.

Relative demand for male and female labor depends on a share parameter (α), the relative wage rate and the sectoral elasticity of substitution (σ).

$$\frac{LMfem_i}{LMmal_i} = \left[\left(\frac{w_{mal}}{w_{fem}} \right) \left(\frac{\alpha_i}{1 - \alpha_i} \right) \right]^{\sigma_i} \quad [1.2]$$

As in the core model, aggregate labor and capital constitute the activity's value added (equations 0.2 and 0.3), and production is a fixed combination of value added and intermediate consumption (equations 0.1, 0.6, and 0.7).

¹¹ Previous studies (Fontana et Wood, 1999; Fontana, 2001) use the same elasticity of substitution for all sectors. However, substitution between male and female work may be greater in some sectors than others. Unfortunately, the lack of available data on these parameters explains the use of uniform elasticities in this and others studies

Unlike the core model, activity average wage rate differ according to their respective mixes of male and female labor.

$$w_i = \frac{wfem \cdot LMfem_i + wmal \cdot LMmal_i}{LMfem_i + LMmal_i} \quad [1.3]$$

Each market is cleared when total labor supply (TLM) is equal to the sum of sectoral labor demands.

$$TLMmal = \sum_i LMmal_i \quad [1.4]$$

$$TLMfem = \sum_i LMfem_i \quad [1.5]$$

The labour market is segmented into male and female component to highlight the wage inequality observed in the Nepalese economy. Each market satisfies the neoclassical hypothesis of perfect competition: perfect homogeneity of labour force¹², perfect sectoral and geographical mobility...

2- LEISURE, ENDOGENOUS LABOR SUPPLY AND DOMESTIC WORK

To introduce leisure and domestic work, and thereby endogenising market labour supply, we use a simple version of the Graham and Green (1984)¹³ model. However, in contrast with the Graham and Green model, we consider that home produced goods as imperfect substitutes for market goods¹⁴. The household maximizes a utility function defined over market goods (C_i), home goods (CZ_k), and the leisure time of its members ($LEmal_h$ and $LEfem_h$)¹⁵:

$$U_h = U(C_{i,h}, CZ_{k,h}, LEmal_h, LEfem_h) \quad [1.6]$$

¹² This assumption is made to simplify the model; different skill levels can be introduced in a more complex model (Also see Fontana 2001).

¹³ See also Gronau (1977) and, Solberg and Wong (1992)

¹⁴ In other versions of Gronau's model these goods are modeled as imperfect substitutes.

¹⁵ Subscript k represents various home goods

To simplify the model, we suppose that:

- Market and home goods are imperfect substitutes in the household utility function;
- Home goods are produced using only labor (male and female) and do not require intermediate inputs or capital¹⁶.
- Time spent in various activities (leisure, home production, and market activities) is perfectly separable, i.e. the same hour cannot be used, simultaneously, in two different activities¹⁷;
- 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)¹⁸.

Under these assumptions, on the consumption side, households maximize the direct utility function [1.6], under the following constraints:

- Technology used in home good production,

$$Z_h = f(LZmal_h, LZfem_h) \quad [1.7]$$

where $LZmal$ and $LZfem$ represent male and female labor used in home production

- Home production price $P_h^z Z_h = w_{mal} LZmal_h + w_{fem} LZfem_h$ (1.8)

- Budget constraint,

$$\sum_i P_{i,h} C_{i,h} = R_h + w_{mal} LMmal_h + w_{fem} LMfem_h = Y_h \quad [1.9]$$

where Y is total income

¹⁶ See *Gronau (1977)* and *Solberg and Wong (1992)*. Other studies, *Gronau (1973)* and *Graham and Green (1984)*, incorporate market intermediate inputs in home production activities. Practically, it is difficult to follow this approach, because national surveys do not distinguish intermediate and final consumption of market goods. This hypothesis should not substantively influence our results, as substitution and complementarity between factors and intermediate consumption are captured in the household direct utility function.

¹⁷ None separability is often observed, particularly in developing countries where individuals (specially women) combine home production activities (e.g. child care) with leisure activities (e.g. community meetings) or market (e.g. traditional agriculture and milling). For more details on the model, see *Graham and Green (1984)*. *Wales and Woodland (1977)* examine the degree of separability between domestic work and leisure.

¹⁸ For differential productivities see *Graham et Green (1984)*

- Time constraint,

$$Tmal_h = LMmal_h + LZmal_h + LEmal_h \quad [1.10]$$

$$Tfem_h = LMfem_h + LZfem_h + LEfem_h \quad [1.11]$$

In the following section, we assume that the household produces a single composite home good.

The household's budget constraint is expressed in terms of full income (FY) by rearranging equations [1.9], [1.10] and [1.11] :

$$\sum_i P_{i,h} C_{i,h} + P_h^z CZ_h + w_{mal} LEmal_h + w_{fem} LEfem_h = FY_h \quad [1.12]$$

$$Y_h + w_{mal} LEmal_h + w_{fem} LEfem_h + P_h^z Z_h = FY_h \quad [1.13]$$

$$\text{where } FY_h = R_h + w_{mal} Tmal_h + w_{fem} Tfem_h \quad [1.14]$$

Explicitly, the household maximizes an extended Stone-Geary utility function,

$$U_h = \left(LEmal_h - \overline{LE}_h \right)^{\beta_h^{mal}} \left(LEfem_h - \overline{LE}fem_h \right)^{\beta_h^{fem}} \left(CZ_h - \overline{CZ}_h \right)^{\beta_h^z} \prod_i \left(C_h^i - \overline{C}_h^i \right)^{\beta_h^i} \quad [1.15]$$

under the constraint [1.12], with, $\beta_h^{mal} + \beta_h^{fem} + \beta_h^z + \sum_i \beta_h^i = 1$.

The resulting demand functions are:

$$C_{i,h} = \overline{C}_{i,h} + \frac{\beta_h^i \left[FY_h - \sum_i P_i \overline{C}_{i,h} - P_h^z \overline{CZ}_h - w_{mal} \overline{LE}mal_h - w_{fem} \overline{LE}fem_h \right]}{P_i} \quad [1.16]$$

$$CZ_h = \overline{CZ}_h + \frac{\beta_h^z \left[FY_h - \sum_i P_i \overline{C}_{i,h} - P_h^z \overline{CZ}_h - w_{mal} \overline{LE}mal_h - w_{fem} \overline{LE}fem_h \right]}{P_h^z} \quad [1.17]$$

$$LEmal_h = \overline{LEmal}_h + \frac{\beta_h^{mal} \left[FY_h - \sum_i P_i \overline{C}_{i,h} - P_h^z \overline{CZ}_h - w_{mal} \overline{LEmal}_h - w_{fem} \overline{LEfem}_h \right]}{W_{mal}} \quad [1.18]$$

$$LEfem_h = \overline{LEfem}_h + \frac{\beta_h^{fem} \left[FY_h - \sum_i P_i \overline{C}_{i,h} - P_h^z \overline{CZ}_h - w_{mal} \overline{LEmal}_h - w_{fem} \overline{LEfem}_h \right]}{W_{fem}} \quad [1.19]$$

We obtain our final demand and supply function by combining equations [1.13], into [1.16], [1.17], [1.18] and [1.19], and rearranging terms:

$$C_{i,h} = \overline{C}_{i,h} + \frac{\beta_h^i \left[Y_h - \sum_i P_i \overline{C}_{i,h} \right]}{P_i (1 - \beta_h^{mal} - \beta_h^{fem} - \beta_h^z)} \quad [1.20]$$

$$CZ_h = \overline{CZ}_h + \frac{\beta_h^z \left[Y_h - \sum_i P_i \overline{C}_{i,h} \right]}{P_h^z (1 - \beta_h^{mal} - \beta_h^{fem} - \beta_h^z)} \quad [1.21]$$

$$LMmal_h = MAXHOURS_{mal,h} - LZmal_h - \frac{\beta_h^{mal} \left(Y_h - \sum_i P_i \overline{C}_{i,h} \right)}{W_{mal} (1 - \beta_h^{mal} - \beta_h^{fem} - \beta_h^z)} \quad [1.22]$$

$$LMfem_h = MAXHOURS_{fem,h} - LZfem_h - \frac{\beta_h^{fem} \left(Y_h - \sum_i P_i \overline{C}_{i,h} \right)}{W_{fem} (1 - \beta_h^{mal} - \beta_h^{fem} - \beta_h^z)} \quad [1.23]$$

where $MAXHOURS_{g,h} = T_{g,h} - \overline{LE}_{g,h}$; with $g = mal, fem$

On the supply side, instead of the unique wage income observed in the standard model, we distinguish two sources of household wage income representing the remuneration of labor that the household's male and female members have supplied in the market. The sum of all households' supply constitutes total supply of labor in each labor market.

$$TLM_{mal} = \sum_H LM_{mal_H} \quad [1.24]$$

$$TLM_{fem} = \sum_H LM_{fem_H} \quad [1.25]$$

The home good production function is a single level CES involving male and female labor. By assumption, it requires neither intermediate goods nor capital.

$$Z_h = A_h \left[\alpha_h LZ_{mal_h}^{-\rho_h} + (1 - \alpha_h) LZ_{fem_h}^{-\rho_h} \right]^{-1/\rho_h}$$

The relative demand for male and female labor in home production depends on the share parameter in home production function (α), relative wage rates, and their elasticity of substitution (σ).

$$\frac{LZ_{fem_h}}{LZ_{mal_h}} = \left[\left(\frac{1 - \alpha_h}{\alpha_h} \right) \left(\frac{w_{mal}}{w_{fem}} \right) \right]^{\sigma_h} \quad [1.26]$$

The value of home produced goods is equal to the value of the labor devoted to its production where non-market labor is valued at its opportunity cost as measured by the market wage rates.

$$P_h^z Z_h = w_{mal} LZ_{mal_h} + w_{fem} LZ_{fem_h}$$

The household entirely consumes the goods it produces at home, as there is no market for these goods.

$$Z_h = CZ_h \quad [1.27]$$

Welfare changes are measured in equivalent variations

$$EV_h = \left(\frac{1}{1 - \beta_{mal,h} - \beta_{fem,h} - \beta_{z,h}} \right) \left[\left(Y_h^0 - \sum_i P_i^0 \bar{C}_{i,h} \right) \left(\frac{w_m^0}{w_h^0} \right)^\beta \left(\frac{w_f^0}{w_h^0} \right)^\beta \left(\frac{P_z^0}{P_h^0} \right)^{\beta_z} \prod_i \left(\frac{P_i^0}{P_h^0} \right)^\beta - \left(Y_h^0 - \sum_i P_i^0 \bar{C}_{i,h} \right) \right] \quad [1.28]$$

V. MACROECONOMIC CLOSURE

The current account balance is assumed fixed thus avoiding ‘free-lunch’ situations in which capital inflows finance domestic policies. Hence, higher imports of some good will require higher exports and/or lower imports of other goods in order to keep the current account balanced. The other closure rules were introduced in order to be consistent with the choice of welfare measure used. In fact, traditional welfare measures, i.e. equivalent variation (EV) and compensated variation (CV), evaluate welfare based solely on household consumption. However, in a situation where EV is positive but where government expenditures fall, saying that the policy implemented was welfare improving is somewhat misleading. Thus, government expenditures on goods and services are assumed constant in real terms. In the same vein, it would be hard to interpret the meaning of a positive EV associated with decreasing investment. In order to prevent this situation, real investment is kept fixed at its benchmark value. Since nominal investment should equal total savings, and in order to make sure that our welfare measures capture the total effect, we let the average propensity to save of household adjust. As foreign savings is fixed in foreign currency and public savings are fixed in real term, consequently, *ceteris paribus*, a decrease of other agents’ savings must be compensated with an increase in households’ savings in order to maintain real investment fixed. This would translate in a decline of households’ consumption and thus have a negative impact on welfare. All price, income and wage changes that are reported in the simulation section depend on the arbitrary choice of the foreign exchange rate as numéraire.

VI. SCENARIOS

We present three scenarios of gender participation in domestic activities or home production:

- SAM scenario, named “**actual participation scenario**”, is the scenario observed in Nepal database. The same elasticity of substitution between male and female time is used in domestic work and in market production (0.5).
- Scenario with low participation of male in home production, named “**low participation scenario**”. This scenario corresponds to the situation where a rigid traditional social structure -

relegating woman principally to home activities coexists with new opportunities of global economy. Therefore, male domestic work is ten times lower than (10 percent of) the value observed in the base scenario. We use a low elasticity of substitution in male and female domestic work (0.2), assuming that, if the home activity is highly intensive in female work, men will only substitute for women to a very limited extent in response to changes in market incentives.

- Scenario with high participation of male in home activities, named “**high participation scenario**”. This scenario represents a situation where the social structure of the country is relatively more flexible than the previous. There is a trade-off between men and women in their participation in home production. Male home labour is relatively high, and there is a high elasticity of substitution between male and female home labour. Male participation is ten times higher than (1000 percent of) the value observed in the base scenario. Then we fix a higher elasticity of substitution in gender labor (0.8), assuming that male work can easily be substituted to female work in home activities.

VII. DATA ANALYSIS

We present in this section the procedure followed in collecting and estimating additional data required for parameter calibration.

1) – Male and female market work shares

This parameter is collected from Nepal Labor Force Survey (NLFS, 1998/99). We assume that no major changes have been observed in the sectoral distribution of male and female labor between 1995/96 (year of the Nepal Standard Living Survey - NLSS) and 1998/99. Sectoral wage bills are approximated by the value of each gender's labor time evaluated at their average wage rates for the whole economy. Then, male and female market work shares are computed and used in disaggregating the uniform wage bill into male and female components in the Nepalese 1995/96 social accounting matrix (SAM).

2) – Male and female wage income in the household

We collect the income contribution of men and women in the various representative households from the NLSS 1995/96. We use the average wage rates by region (Mountain, Terai and Urban), by sex (men and women) and by age category (adult and teenager) to estimate the value of unpaid work in self-employment activities and to distribute the income from these activities between the factors of production (male and female labor and capital).

3) – Time devote by men and women to home production

These data are available in the NLFS, but not in the NLSS. Consequently, we estimate simple regression models for time devoted by men and women to home production based on individual characteristics in both surveys (age, sex, area, region, hours of market work, education, household size, etc.). We then use these models to predict corresponding values for the NLSS households. Male contribution is around 30 percent in home activities (ranging between 23 percent and 34 percent).

In the « low participation » scenario, we suppose that men contributions in home activities are ten times lower than the estimated levels. Therefore, men do not contribute more than 5 percent in domestic activities and there is a very low substitution between male and female domestic work reflected by a low elasticity of substitution (0.2) between male and female domestic work.

In our second scenario, we assume that men are more involved in home activities. When market opportunities emerge for women, they easily substitute to women in domestic activities (the elasticity of substitution between male and female domestic work is set at 1.2). Male domestic work is ten times higher than the estimated levels.

4) - Maximum time available for men and women (MAXHOURS)

As argued by *De Melo and Tarr (1992)*, the total time available either for work and leisure is a share of the total endowed time of the household worker once minimum leisure is subtracted

($MAXHOURS = T - \bar{L}E = \mu T$). *Ballard and al. (1985)* have chosen this approach by arbitrarily setting $\mu = 0.8$. *Fontana and Woods (2000)* have used the demographic composition of the household to assess T , and assumed an arbitrary value of ten hours for the minimum leisure \bar{L} . Time used for discretionary leisure is residual after taking off the time devoted to all kind of work (market and home). Leisure and work at home are both valued at their opportunity cost, which is the wage forgone in market work. *Ballard and al. (1985)* note that the problem is that their results depend heavily on the assumed value of the scalar multiple, a parameter about which little is known.

The approach of *De Melo and Tarr (1992)* eliminates this element of arbitrariness by calibrating the *MAXHOURS* using estimates of the elasticity of labor supply with respect to income or real wage. Their method can be seen as the inverse of the Ballard and al. method. They calibrate the marginal share parameters of leisure in a first step, then the maximum time available for work and leisure in a second step. The others estimate the maximum time and calibrate these marginal share parameters. The difficulty of *De Melo and Tarr* approach is these parameters are not available in many of developing countries, particularly disaggregated for men and women¹⁹.

Following the latter approach; we experiment with different values for the elasticity of labor supply with respect to income for men and women in each household. Since these elasticities are not available for Nepal, we collect them according the empirical studies made in developed countries and surveyed by *Blundell and Macurdy (1999)*²⁰. However, values used for Nepal are lower than these observed in most developed countries²¹.

The value is negative, but close to zero, for men and slightly more negative for women; also, they are lower in poor households than rich households.

¹⁹ Tarr (1989) has discussed the elasticity of labor supply respect to income and real wage for the US.

²⁰ Recently, *Blundell and Macurdy (1999)* make an exhaustive review of elasticity of labor supply in many developed countries.

²¹ The calibration procedure is available on request.

5) - The minimal consumption of home goods:

Generally, data are not available for the minimum consumption of home goods. We arbitrary fix this value at 30% of total home goods consumed in the household²².

6) - Elasticity of substitution between male and female labor in market production

To stress the rigidity of gender substitution, we fix this elasticity at 0.3 for sectors in which it may not easy to substitute female to male work (e.g. construction), and 0.9 for sectors in which this substitution is easier (e.g. others services such as hotel and restaurant, retails and wholesale).

7) - Elasticity of substitution between male and female labor in home production

We use uniform elasticities of substitution between male and female domestic work for all households. As discussed earlier, we experiment with three values for this parameter in our policy scenarios: 0.5, 0.2 and 1.2.

After collecting and estimating data, we adjust household income and expenditures, and reconcile these new data with the Nepalese 1995-96 SAM. The procedure consisted in increasing households' declared incomes, that we consider underestimated compared to their expenditures. First, we proceed with household incomes and expenditures vectors analysis, while adopting the structure of the MCS (top-down approach), then increase the households' capital and domestic transfers incomes to solve the problem of negative incomes from factors and negative saving. Incomes from households are adjusted by the inflation rate, and the net incomes generated from self-employment activities are imputed to the various factors used in these activities. The inter-household transfers expenditures being underestimated compared to the income, we finance the difference by household savings to reconcile them. In order to insure the consistency of the survey data (incomes, consumptions and savings) compared to the SAM values, we proceed to their adjustment through the inflation rate, considering the lag in the NLSS and the SAM periods, and the implicit prices of self-employed ressources, as they might be overestimated.

²² In experiments we found that the model is not sensitive to variations of this parameter.

Once we collected household incomes and expenditures from the survey and linked these data to the information in a SAM, the SAM will most likely be unbalanced as data generally come from quite diverse sources. We use a cross-entropy process to rebalance the SAM (see Fofana and al, 2002).

VIII. TRADE POLICY EXPERIMENT AND RESULTS

We conduct a single experiment under three alternative scenarios: actual, low and high male participation in domestic work. We analyze the impacts of trade liberalization under these three scenarios with a focus on aggregate variables, as well as male and female time allocation, income, and welfare. The experiment consists in the complete elimination of import tariffs and an introduction of a uniform sales tax as a compensatory mechanism to rebalance the government's budget after the decrease in its customs receipts. Our discussion is limited to some key aspects of the results.

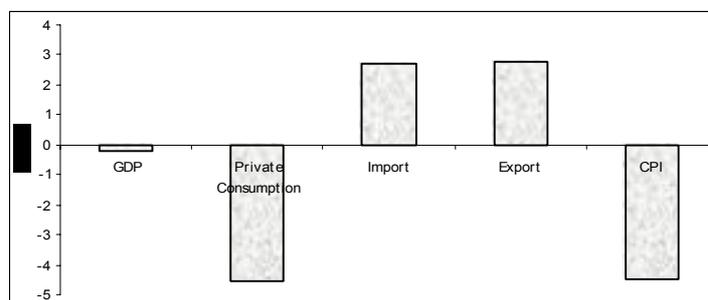
1. ACTUAL PARTICIPATION SCENARIO

Removal of import tariffs induces demanders to substitute cheaper imported goods for domestically produced goods, so that the demand for domestic goods falls, particularly in previously protected and import-intensive sectors (non-agriculture sectors). As the trade deficit (foreign savings) is held constant, the increase in imports leads to a real exchange rate depreciation that favors export-oriented and import-substituting sectors (Manufacturing, Mining-Quarrying, Agriculture Cash Crops, and other services). Graph 3 shows the change in aggregate results.

Effects on resources allocation and remuneration

In Nepal, the agricultural sector was less protected and less import-intensive than industry in our base year: 1995. Consequently, the elimination of tariffs has less impact on the agricultural sector, as evidenced by the smaller reduction in its nominal producer prices in this simulation.

Graph 3: Change in Aggregate Variables



Source: Experiment Results. Private consumption is computed in nominal term.

Consequently, while the nominal returns to all factors of production decrease, the returns to agriculture-intensive factors (female labor and land) fall marginally less (-5.09 and -5.10 percent)²³ than the returns to male labor and non-agriculture capital (-5.11 and -5.26 percent). The fall wage rates of female workers fall less than agricultural output prices, as labor is mobile throughout the whole economy. Indeed, labor is reallocated from contracting sectors (Government, Construction, and Gas-Electricity-Water) to expanding export-sectors (Manufacturing, Mining-Quarrying, Agriculture Cash Crops, and other services).

Table 5: CHANGE NOMINAL IN FACTOR RETURN

	RETURN
Male wage rate	-5.10
Female wage rate	-5.09
Capital	-5.26
Land	-5.11

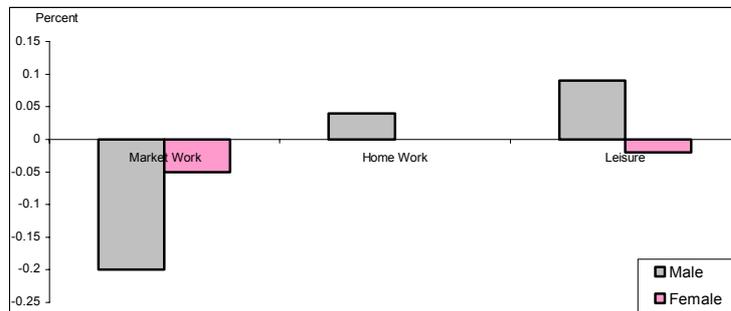
Values are in percent of initial level

Effects on male and female market and domestic work

Because male leisure, female leisure, home produced goods, and composite market goods are net substitutes, we observe a decrease in male and female labor supply as their real wage rates decrease in the whole economy. The percentage reduction in market work is four times as large for males: -0.2 percent vs -0.05 percent. In the case of males, the reduction in market work translates primarily into increased leisure, because of their limited role in home production.

²³ Change values are in percent variation of the base year.

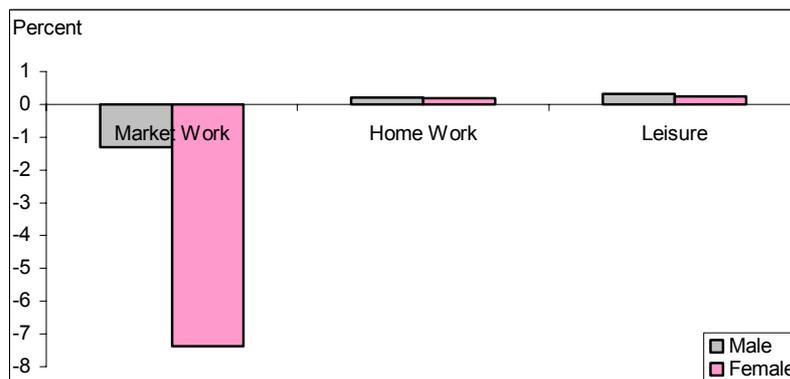
Graph 4: Change in Household Work and Leisure Time in All Nepal



Source: Experiment Results

The reduction of gender labor supply is principally concentrated among urban households that benefit more from price reduction (but less from factors remuneration) after removal of tariffs on imported goods. As investments price goes down with cheaper import goods, all households benefit from less saving, particularly urban households (one third of household saving). Indeed, their disposal income is less affected with a positive effect on their leisure. Consequently, urban men and women take more leisure and supply less labor in the market. The former labor supply decreases more than the latter in absolute term. Both urban men and women increase their domestic work.

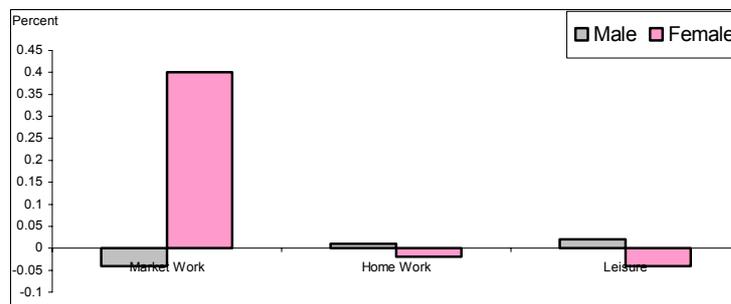
Graph 5: Change in Work and Leisure Time in Urban Areas



Source: Experiment Results

Rural households do not benefit much from the decreasing prices; consequently, female market work increases in these households as their nominal wage rate increases relative to men. Rural men reduce their market work and devote more time to leisure.

Graph 6: Change in Household Work and Leisure Time in Rural Areas



Source: Experiment Result

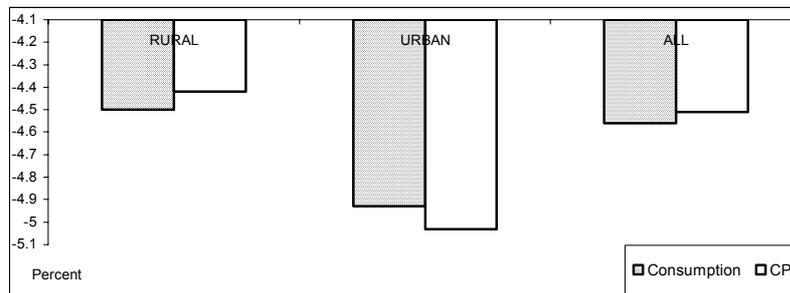
Therefore removal of tariffs on imported goods expands female market work and income contribution in rural household. In contrast, women contribute less in household income in urban area. The expansion of female labor supply does not meet to a reduction of their participation in domestic work. Female domestic work remains unchanged, while men devote mainly more time to leisure activities.

Effects on household's income and welfare

Nominal incomes fall for all household categories as a result of the trade liberalization induced fall in prices. However, this fall in income is most important for households that receive a large share of their income from non-agricultural capital, and/or receive a small share of income revenue, particularly the urban and large landholder's households (Appendix IV). While nominal incomes fall, households also benefit from lower consumer prices, such that real wage rates often increase. As agricultural prices fall least, households that consume relatively more agricultural goods –rural households – benefit least, whereas households that consume non-agricultural goods (particularly "other services") –urban households – benefit most (Appendix V).

The net effect of the change in nominal income, consumption and consumer price changes is a very small increase in aggregate welfare (0.04 percent of total income), which reflects the relatively non-distorted nature of Nepal's tariff structure. Urban households - which benefit most from the fall in consumer prices - benefit most.

Graph 7: Change in Private Consumption and Consumer Price Index



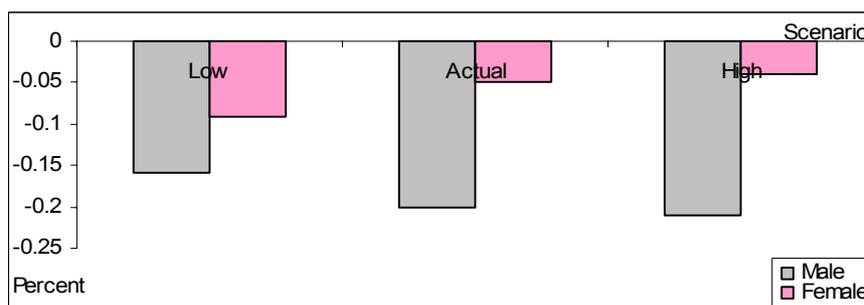
Source: Experiment Results

2. COMPARISON BETWEEN SCENARIOS

When men participation in home production change, as well as the elasticity of substitution, aggregate results change little across scenarios (appendix X). In contrast, there are significant changes in male and female nominal wage rates and labor supply.

In all scenarios -and despite the rigidity of gender roles within the household activities in low participation scenario- female market work still increases relative to male. A comparison between scenarios shows that women participation in market labor force increases relatively to men when the latter perform more tasks at home.

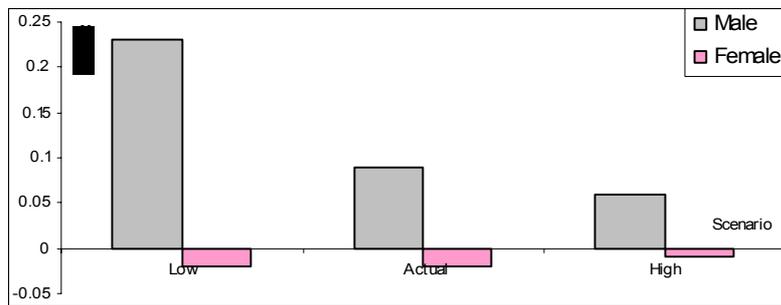
Graph 8: Comparing Change in All Household Labor Supply in the Market



Source: Experiment Results

Women reduce less their leisure time, which increases relatively to men from low to high participation of men in domestic home scenario.

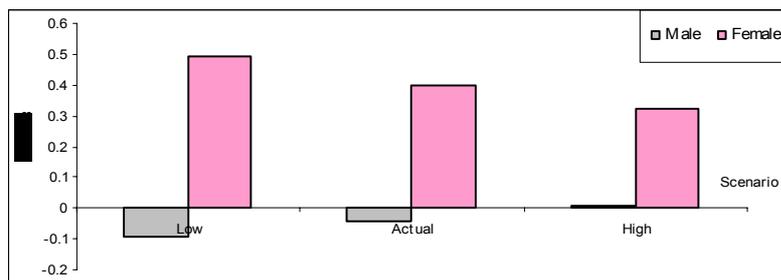
Graph 9: Comparing Change in All Household Leisure Time



Source: Experiment Results

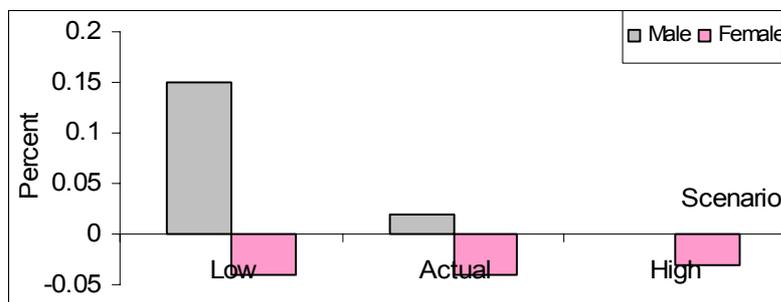
However, the result is ambiguous within our household categories. In rural areas, the increase of men participation in domestic work is in favor of women leisure time to the detriment of the time spends into the market. In contrast, women in urban areas work more in the market and have less leisure time relatively to men.

Graph 10: Comparing Change in Rural Household Labor Supply in the Market



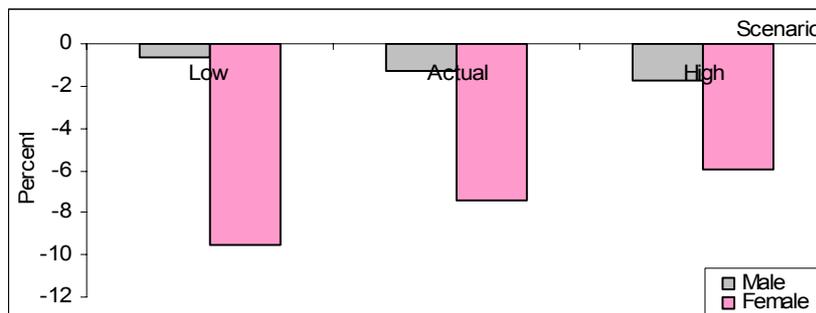
Source: Experiment Results

Graph 11: Comparing Change in Rural Household Leisure Time



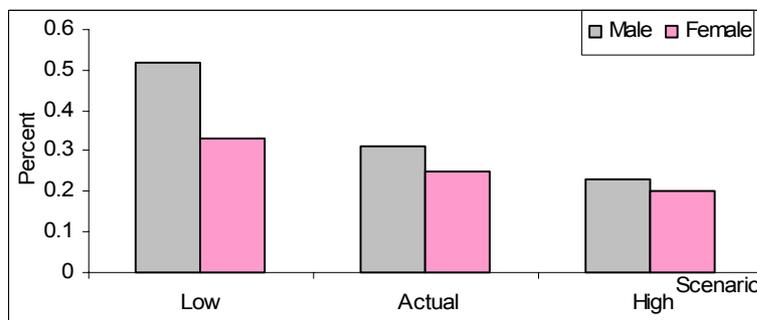
Source: Experiment Results

Graph 12: Comparing Change in Urban Household Labor Supply in the Market



Source: Experiment Results

Graph 13: Comparing Change in Urban Household Leisure Time



Source: Experiment Results

Men participation to domestic work has significant effects on household labor supply decision. When men participation in domestic activities is low, women generally devote less time in market but contribute more in household income as their wage rates decline less, relatively to men. Women are more active in the market when there is "trade-offs" between female domestic and market work, as men are more involve in domestic work, but their domestic work does not necessary decrease.

Men and women wage rates difference decreases with higher participation of women in market work and men in domestic work

Table 6: CHANGE IN FACTOR RETURN

	Low Scenario	Actual Scenario	High Scenario
Male Wage	-5.19	-5.10	-5.10
Female Wage	-4.99	-5.09	-5.09
Capital	-5.26	-5.26	-5.26
Land	-5.07	-5.11	-5.10

The relative increase of female market labor supply (decrease of male market labor supply) when men devote more time in domestic tasks, induces a small expansion of female labor-intensive sectors, particularly agriculture sectors. Although non-agriculture sector benefits to women activities, agriculture prices are slightly lower when men perform more home duty, while non-agriculture prices increase. In this context, removal of import tariffs is beneficial to rural households than urban households in term of welfare impact of trade liberalization. However urban households are still better off with a decrease of non-agriculture goods prices, in the detriment of rural households (Appendix XI).

CONCLUSION

The experiment conducted in our models shows that the complete elimination of tariffs on imported goods in Nepal benefits women more than men in term of income distribution. Generally, female market work expands in rural households and contracts in urban households. Rural women contribute more to household income, as their nominal wage rate increases relatively to men. It appears that this increase in female market work is not met with a decrease in the time spent in home production activities. Instead, their leisure time declines as they enter the labor market. Furthermore, the study indicates that leisure time consumed by men, generally greater than that consumed by women, increases with trade reform.

Men participation to domestic work has significant effects on male and female wage rates difference and household labor supply decision. When men participation in domestic activities is low, women generally devote less time in market but contribute more in household income as their wage rates decline less, relatively to men. Women are more active in the market when there is "trade-offs" between female domestic and market work, as men are more involve in domestic work, but their domestic work does not necessary decrease. Results are ambiguous within our household categories. We also found that rural households are better off when men participate more in domestic work.

Indeed time spend in education (schooling) – a part of so call leisure time – could be proportionally affected by trade policy. Therefore, pro-female work policies could widen the

observed inequity in boys and girls education. Women (girls) spend less time in leisure (education) as their paid work expands, while men (boys) work less in the market for more leisure (education). Although our model highlight the impacts of tariff removal on time spend by men and women in various activities, it fails to distinguish gender by age categories to better capture that issue when adults and teenagers imperfectly substitute their time spend in these activities.

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APPENDIXES

APPENDIX I: IMPORT TARIFFS BY MAIN CATEGORY OF GOODS, 1999/2000

Main Category of Goods 1/	Import Tariffs 2/(in percent)
Live animals	5.0
Grains, vegetables, sugars	15.6
Beverage, tobacco, mineral fuels, pharmaceuticals	11.7
Fertilizers, cosmetics, soaps, chemicals, plastics	15.3
Raw hides, skins, wood, paper, silk	10.9
Wool, cotton, man-made fibers, carpets	13.2
Clothing, Footwear, ceramics, glassware, stoneware	21.1
Iron, steel copper, nickel, aluminum, lead, zinc, tin	12.9
Tools, machinery, vehicles, aircrafts	11.9
Clocks, musical instruments, arms, furniture, art	20.6
Average customs duty	13.14

Notes: Total number of items: 5,237; Sum of duties: 64,149. Source: IMF.

1/ Harmonized System Classification;

2/ Average of customs duties for all items in each chapter.

APPENDIX II: NEPAL'S COMPOSITION OF GOVERNMENT REVENUES (IN PERCENT)

Type of Revenue	80/81	85/86	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99
Customs	19.3	12.7	12.8	14.0	14.4	15.9	18.3	16.5	17.0	16.1	16.9
Taxes on Consumption and production	20.5	18.2	15.9	20.5	20.7	22.0	23.0	21.8	22.0	21.3	20.8
Domestic excise	5.7	0.6	5.1	5.9	5.3	4.8	4.3	4.4	4.7	5.5	5.2
Sales taxes*	12.7	10.1	8.5	16.0	12.5	14.2	15.7	14.5	14.6	13.5	14.2
Land Revenue & Registration	4.2	2.5	2.3	2.6	2.7	2.5	2.4	2.4	2.1	1.9	1.8
Taxes on Property, Profit and Income	4.1	4.3	3.5	4.0	4.7	6.1	7.6	8.1	8.8	9.8	11.5
Total Tax revenue	48.1	37.6	34.5	41.1	42.4	46.6	51.3	48.8	50.0	49.1	50.9
Other Revenue	9.1	10.1	10.8	15.1	12.7	12.8	12.9	14.5	13.2	13.2	12.1
Total Revenue	57.2	47.8	45.3	56.2	55.1	59.4	64.2	63.3	63.1	62.4	63.0
Foreign Grants	20.5	12.1	9.1	6.8	13.8	7.3	7.5	10.9	12.2	10.2	7.7
Foreign Loans	16.4	25.7	26.4	28.3	25.2	27.8	23.6	21.3	18.5	20.9	21.0
Domestic Loans	5.9	14.4	19.2	8.6	5.9	5.5	4.6	4.5	6.1	6.4	8.3
Total	100.0										

Total Government Finance (NRs. Mln.) 4231 9722 23704 24052 27483 32958 38311 44397 48893 52788 56464

*Domestic and import. Source: HMGN, Economic Survey, Various Issues

APPENDIX III: MARKET EMPLOYMENT BY SEX, LOCALITY, AND AGGREGATE SECTOR IN 1997/98

	Urban			Rural			Nepal			
	All	Male	Female	All	Male	Female	All	Male	Female	Fem/Mal
Agriculture, hunting & forestry	40.3	28.0	57.1	80.1	72.0	87.9	76.0	66.8	85.2	1.273
Fishing	0.1	0.2	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.091
ALL AGRICULTURE	40.4	28.2	57.1	80.2	72.2	87.9	76.1	67.0	85.2	1.269
Mining & quarrying	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.167
Manufacturing	13.1	14.5	11.2	5.0	6.8	3.2	5.8	7.7	3.9	0.508
ALL INDUSTRY	13.3	14.6	11.5	5.1	6.9	3.2	5.9	7.9	4.0	0.503
Electricity, gas & water supply	1.0	1.6	0.2	0.2	0.4	0.0	0.3	0.5	0.0	0.080
Construction	4.4	6.6	1.5	3.5	6.1	1.1	3.6	6.2	1.1	0.178
Wholesale, retail & trade	15.1	18.4	10.5	3.1	4.3	1.9	4.3	6.0	2.6	0.442
Hotels & Restaurants	4.5	4.5	4.6	0.8	0.9	0.7	1.2	1.3	1.1	0.810
Transport, storage & communication	4.4	7.1	0.7	1.1	2.2	0.1	1.4	2.7	0.1	0.046
Financial intermediation	1.1	1.6	0.5	0.1	0.2	0.0	0.2	0.4	0.0	0.118
Real estate, renting & business	1.8	2.7	0.5	0.2	0.3	0.1	0.3	0.5	0.1	0.231
Public administration & defense	3.2	4.8	1.0	0.5	0.9	0.0	0.7	1.4	0.1	0.094
Education	4.0	4.3	3.7	1.5	2.4	0.5	1.7	2.7	0.8	0.294
Health & social work	1.1	1.4	0.7	0.3	0.4	0.1	0.3	0.5	0.1	0.269
Other community, social activities	1.6	2.3	0.7	0.5	0.9	0.1	0.6	1.1	0.1	0.118
Private household workers	3.7	1.4	6.8	3.0	1.7	4.2	3.1	1.7	4.4	2.613
Extra territorial organizations	0.2	0.4	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.167
ALL SERVICES	46.3	57.1	31.5	14.7	20.8	8.8	18.0	25.1	10.8	0.429
TOTAL (in percent)	100	0.998								

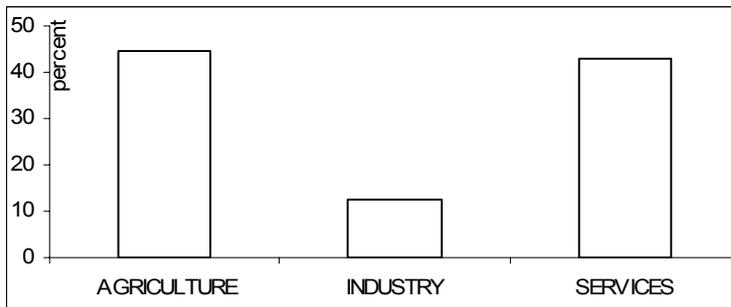
Source: NLFS 1998/99

APPENDIX IV: MALE AND FEMALE MARKET WORK BY AGGREGATE SECTOR, 1950-1998 (Percent)

	1950	1960	1970	1980	1990	1998
BOTH SEXES						
Agriculture	95.1	94.9	94.3	93.7	93.5	76.1
All Industry	2.6	2.1	1.3	0.5	0.3	5.8
Manufacture				0.45	0.18	5.91
Services	2.3	3.0	4.4	5.8	6.2	18.0
Total	100	100	100	100	100	100
MEN						
Agriculture	93.5	93.1	92.1	91.1	90.7	67.0
All Industry	3.1	2.6	1.7	0.8	0.4	7.9
Manufacture				0.7	0.3	7.7
Services	3.4	4.3	6.2	8.1	9.0	25.1
Total	100	100	100	100	100	100
WOMEN						
Agriculture	97.8	97.9	98.0	98.0	98.0	85.3
All Industry	1.7	1.2	0.6	0.1	0.1	4.0
Manufacture				0.08	0.08	3.94
Services	0.4	0.9	1.4	1.9	1.9	10.8
Total	100	100	100	100	100	100

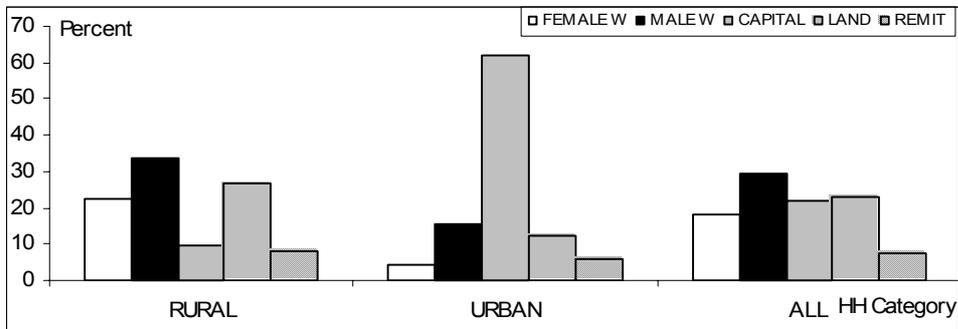
Source: Labor Statistics Database, 1998-2002, ILO Geneva, and Nepal Labor Force Survey 1997-98

APPENDIX V: Aggregate sector share in GDP (1996)



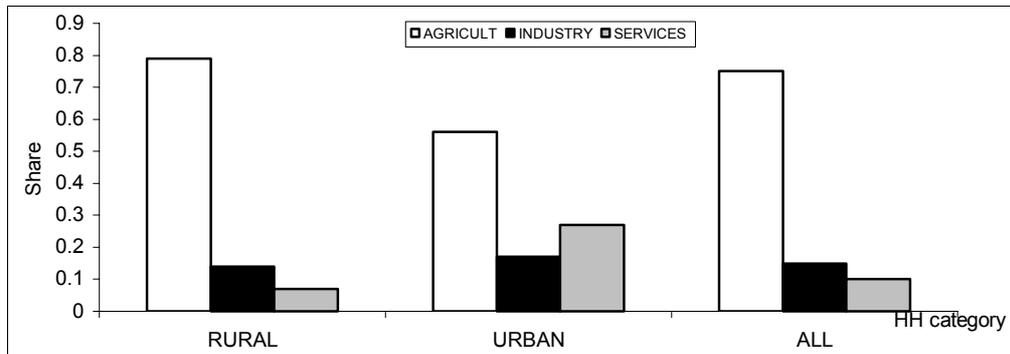
Source: Nepalese SAM 1995/96

APPENDIX VI: Household income share in 1996



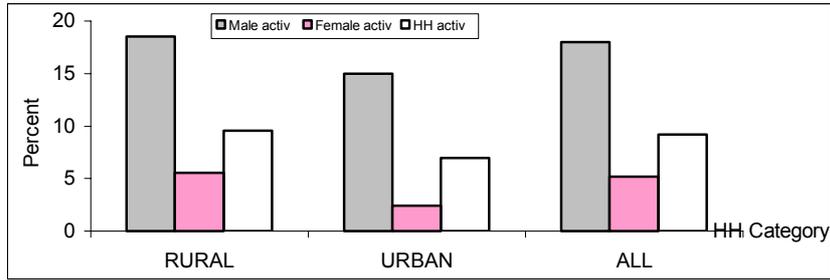
Source: Nepalese SAM 1995/96

APPENDIX VII: Household Consumption Share in 1996



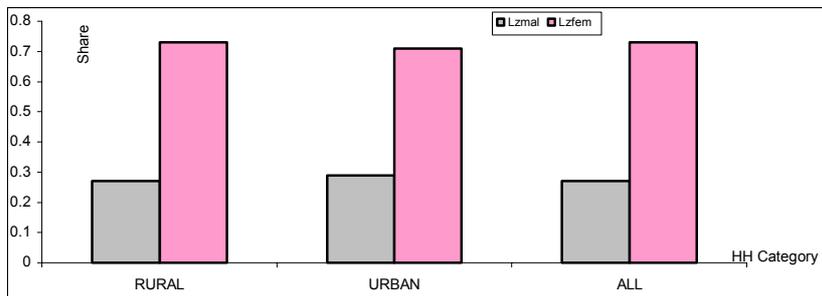
Source: Nepalese SAM 1995/96

APPENDIX VIII: Gender Market Activity in hours (work/available) in 1996



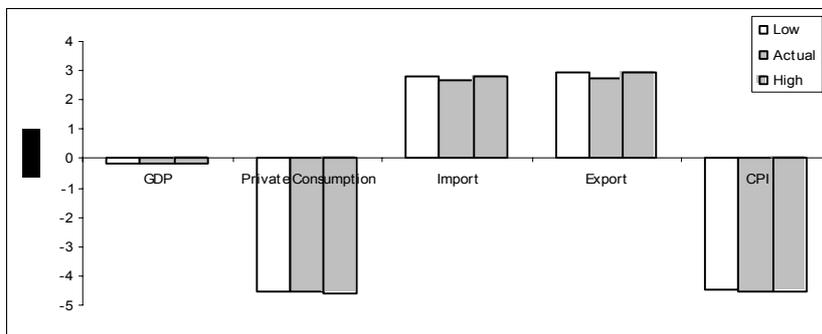
Source: Nepalese SAM 1995/96

APPENDIX IX: Gender Domestic Work in 1996



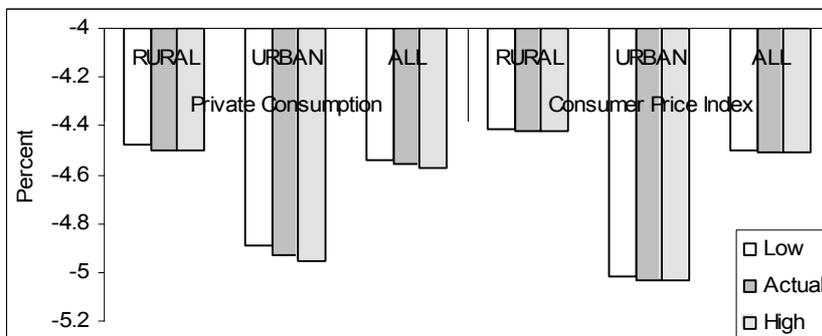
Source: Nepalese SAM 1995/96

APPENDIX X: Comparing Change in Aggregate Variables



Source: Experiment Results

APPENDIX XI: Comparing Change in Private Consumption and Consumer Price Index



Source: Experiment Results