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International Trade Openness and Gender Gaps

in Pakistani Labor Force Participation Rates Over 57 Years

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by

Asma Hyder and Jere R. Behrman[1]

Abstract

The extent of openness to international trade may alter incentives differentially by gender for labor force participation, particularly in economies in which gender differentials in human capital investments such as schooling are large and in which norms about gender behaviors are strong. This paper uses historical census data since 1951 and two recent Labor Force Surveys to investigate the impact of international trade openness on gender differences in labor force participation rates in broad occupational categories in Pakistan. The method used controls for average gender differences in these occupational categories and the unobserved factors that affect male and female labor force participation rates equally. The estimates indicate that increased international trade significantly reduces the gap between male and female labor force participation.

Key words: international trade openness, labor force participation, gender, occupations, census data

JEL Classification: F16, J62, J82

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Introduction

The extent of trade openness is thought to have many impacts on developing economies. Economies with higher international trade openness *ceteris paribus* are often claimed to be able to grow more quickly. Within standard Heckscher-Ohlin trade models, for example, better economic performance is induced by greater international trade openness because of better exploitation of comparative advantage in a static sense and greater pressures from international markets for greater efficiency in production over time in a dynamic sense.

Within most models of developing economies, relative factor prices also are likely to be affected by the extent of openness to international trade. Within a two-by-two standard Heckscher-Ohlin trade model for a relatively capital-poor developing country, for example, increasing international trade openness from an initial position of autarchy is likely to result in expansion of relatively labor-intensive products with concomitant outwards shifts in the labor demands. Moreover, in a country such as Pakistan, with fairly substantial differentials in labor force participation rates by gender, the labor market impacts of international trade openness may differ substantially for females versus males. For this reason there has been a small literature examining the impact of trade openness or trade liberalization on short-run labor force participation by gender in selected developing countries. Hanson (1998), for example, examined the effect of trade liberalization on employment in Mexico using the Mexican Industrial Census data for 1980, 1985, 1988 and 1990. His comparison of the two years prior to a trade reform with the two years after the trade reform show that relative female labor force participation has a positive relationship with trade liberalization. Krishna et al. (2001) used the Turkish Manufacturing Census for 1983-86 covering all the plants in greater Istanbul. Their estimates for all labor indicate no response to openness, but for females alone the labor demand elasticities are higher in magnitude and significant. Fofana et al. (2005) exploited the Nepal Labor Force Survey of the late 1990's and found that females are more responsive to such reforms than are males and that their leisure time declined due to their increased participation in market activities[2].

The contribution of this paper is to investigate empirically the extent to which international trade openness has influenced labor force participation differentially by gender across major occupational categories in Pakistan over a period of more than half a century (1951-2008). To our knowledge, this is the first study to investigate this question for Pakistan and the first study to empirically estimate relations based on over a half century of experience for any developing country. Our exploration focuses on longer-run adjustments by considering responses to five-year averages of trade openness. Our approach also controls for all unobservable factors that affect equally female and male labor force participation because it focuses on the differences between male and female labor force participation rates. Our results indicate significant increases in female

[2] In addition to these studies a few studies establish the correlation between trade liberalization and economic growth and find an increase in female labor force participation during the growth process (eg., : Goldin (1994), Standing (1989), Juhn and Simon (2006), Busse and Spielmann (2006), Drèze and Sen (1989), Pritchett and Summers (1996), and Klasen (2002)).

relative to male labor force participation in Pakistan with greater international trade openness.

Background and Data Description

International Trade Openness: We use the standard empirical representation of trade openness, the ratio of exports plus imports to total product. In order to represent somewhat longer-run trade openness, rather than short-term annual values, we use the average value over the past five years, as noted earlier. Figure 1 plots trade openness over the five plus decades of interest for this study.[3] After partition Pakistan adopted an import-substitution industrialization policy, as did many other developing countries in that era[4]. Exports plus imports were only 16.1% of product in 1951. During the 1960's and 1970's the country continued with import protection policies, but the government took some measures to encourage exports. During these decades the country had large balance of payment deficits not only due to inefficiencies encouraged by protectionist policies but also because of the oil price shock in the 1970's. Our indicator of trade openness increased slightly to 17.4% in 1961, then to 25.0% in 1972 and to 36.3% in 1981. The implementation of a Structural Adjustment and Stabilization Program was a step toward trade liberalization and deregulation of the economy during the 1980's and 1990's. The trade reforms were a key feature of structural reforms because of the past experience of import-substitution policies that had not only insulated the country from foreign competition but had also increased inefficiency (Khan1998). Governmental efforts to liberalize trade reduced the complexity and variations in trade procedures during this era. Trade openness was highest at 38.1% in 1998, with a decline[5] to 31.4% in 2003 and a recovery to 37.4% in 2008.

Labor Force Participation Rates: We use five rounds of Pakistan's Census data and two recent nationwide Labor Force Surveys (2002-03 and 2006-07) to examine the impact of international trade openness on gender differences in sectoral labor force participation rates. After partition of the Indian subcontinent in 1947, the first census of Pakistan was conducted in 1951 and the second in 1961. The third census was held in 1972 instead of 1971 due to the political environment in the country and war with India. The fourth

[3] See Khan (1998) and Din et al (2003) for more detailed information on trade policies over time in Pakistan.

[4] Advocates of import substitution policy, such as Prebisch (1959), argued that this policy was the best way to correct the negative effects on peripheral growth of disparities in foreign trade elasticities with relatively low income elasticities for primary commodities that were the major exports historically for developing countries and higher income elasticities for industrial goods. Import substitution policies later were strongly criticized by Krueger (1980), Ben-David and Loewy (1998), Greenaway et al. (1998) and others.

[5] In the early 2000s, despite the trade reforms, tariffs remained a restraint on domestic competition and thus an obstacle to the efficient allocation of resources, with adverse consequences for the economy's productivity and local firms' export competitiveness. In particular, restrictions on wheat and wheat product exports to assure domestic food security may have caused the decline in international trade openness between 1998 and 2003 (WTO Secretariat Report Jan, 2002).

census was held in 1981 and the fifth one, which was due in 1991, was held in 1998. The major reason for this last delay was disagreement among political parties over allocation of resources and seats in the national and provincial assemblies (Hassan 1998). The next census originally due in 2008 has not yet been held. Given the non-availability of census data after 1998, to capture the last decade in the analysis, we use data from the two latest Labor Force Surveys.

The present study employs information at the provincial level for major occupational categories. The Population Census Organization in Pakistan uses the International Labor Organization (ILO) standard definitions for. the aggregate occupational categories that are used in this study:[6]

1) Professionals, Technical and Related Trade Workers
2) Administrative and Managerial Workers
3) Clerical and Related Workers
4) Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters
5) Production and Related Workers, Transport Equipment Operators and Laborers
6) Sales and Service Workers
7) Workers not Classified in any Other Occupation, general Laborers/Elementary Occupations

We assume for our analysis that most individuals do not change provinces or broad occupational categories due to changes in international trade openness. This assumption holds for the vast majority of individuals because of the small number of provinces (i.e. only four) and the aggregate nature of the occupations with their differential skill requirements so that mobility at this level of aggregation is unusual.

Figures 2-4 give the male and female overall and occupational labor force participation rates[7] for individuals aged 10 to 65 years over the period of study. The rates are much higher for males than for females over the whole period. For males the peak rates were attained in 1981, with what appears to be a secular downward trend since, though with a slight upward blip in 2002-03. For females there was a peak in 1961, a nadir in 1980, and a slow steady increase thereafter. The disaggregation by the major occupational categories indicates the initial dominance of agriculture for males at about half or higher for 1951-1981, but a secular downward trend in the agricultural share thereafter – with production and administrators picking up most of the slack. For females as well agriculture was the dominant occupation for 1951-1981but with a fairly sharp peak in 1961 and with recovery after 1998 to levels in the 21st century that exceeded the previous peak. The share of production workers for women, like for men, seemed somewhat to move opposite to the share in agriculture, with a peak in 1998 when the agricultural share hit its nadir. As the occupational classification is based in part on individual skills due to formal schooling, the low participation of women in certain occupations may reflect the

[6] There are some slight changes in the occupation categories over time. Therefore for this study we combined a few categories to make our categories consistent over time.

[7] The labor force participation rate for men is defined in this study as: (Economically active men between 10-65 years of age in an occupational category)/(Total men between 10-65 year of age) and similarly for women.

relatively low schooling attainment and literacy rates of women despite secular increases over time (see Figure 5).

Table 1 provides summary statistics over time for our dependent variable; the difference between male and female labor force participation rates (in percentage points), aggregate as well as in different occupations. The overall difference between the male and female labor force participation rates was 10.8 percentage points in 1951 and increased to a peak of 12.4 percentage points in 1981, but decreased substantially to 8.7 percentage points in 1998 and to 5 percentage points in 2008. With regard to occupational categories, the most substantial change is in agriculture, where the gaps were in the range of 45.2 to 53.2 percentage points during 1951-1981, but dropped secularly thereafter to 24 percentage points in 1998 and then to 9.4 percentage points in 2008. The second biggest gaps are for production workers, which increased from 12.0 percentage points in 1951 to 23.2 percentage points in 1998, but then declined to 10.7 percentage points in 2008.

Estimates and Discussion

Our model specification has the provincial-occupational gender gaps in labor force participation rates (male-female) as the dependent variable and the five-year average of international trade openness as the key right-side variable, with additive controls for average occupational categories given the very large differences in these differentials across categories and provinces. This specification also controls for any other factors that equally affect both male and female labor force participation rates because the dependent variable is the difference between the labor force participation rates by gender.

Table 2 provides the estimates with three different specifications. The first column includes all of the additive occupational and provincial dichotomous variables. Because the provincial variables do not have significant coefficient estimates, they are dropped in the next two columns. The second column includes all of the additive occupational dichotomous variables and the third column includes only the additive occupational variables that have significant coefficient estimates in the second column. The coefficient estimates for international trade openness do not change among these three specifications. These estimates indicate that trade openness significantly reduces the difference between male and female labor force participation rates. The point estimate together with the change in the trade openness indicator between a value of 16.1% in 1951 to 38.1% in 1998 imply a reduction in the extent to which the male labor force participation rate exceeded the female labor force participation rates of 3.2 percentage points due to increased international trade openness during this period. Thus, these estimates suggest that that the increased international trade openness over this period reduced the extent to which the average provincial-occupational labor force participation rate for males exceed that for females by about a quarter.

This reduction in the gender gap in labor force participation due to greater openness reflected substantially what transpired in agriculture. This sector initially had relatively high concentration of employment for both males and females and then a subsequent relatively large drop for males with a decline and then recovery for females (Figures 3

and 4). During this period there also was a secular shift in the composition of production from agriculture (from over half of GDP in 1951 to about a fifth of GDP in 2008) to services (from less than two-fifths of GDP in 1951 to over half of GDP in 2008) and to industry (from about a tenth of GDP in 1951 to over a fifth of GDP in 2008) (Figure 6). The estimates in Table 3 verify that the patterns in international trade openness were significantly negatively associated with the share of agricultural production in GDP and significantly positively associated with the shares of industry and services in GDP over the years of our study,. The increased trade openness, thus, apparently contributed to changed production composition across sectors as well as to changed labor demands within sections in a way that reduced gender gaps in labor force participation.

Conclusion

This paper examines male and female labor force participation trends for 57 years, using five census reports and the two latest Labor Force Surveys and examines the impact of international trade openness on the differences between male and female labor force participation rates. We conclude that international trade openness has significantly reduced the gender difference in labor force participation rates, apparently in part because of the induced shift in production from agriculture to the service and industrial sectors.

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Table 1: Summary Statistics: Gender Differences in Labor Force Participation Rates

Occupations	**Mean Gender Percentage Point Difference in LFPR***						
	1951	**1961**	**1972**	**1981**	**1998**	**2003**	**2008**
Source	***Census***	***Census***	***Census***	***Census***	***Census***	***Survey***	***Survey***
Over all	**10.8 (18.31)**	**10.4 (15.67)**	**11.0 (15.60)**	**12.4 (17.28)**	**8.7 (8.97)**	**8.0 (7.37)**	**5.0 (4.63)**
Professionals, Technical and Related Trade Workers	0.9 (0.14)	1.0 (0.44)	3.5 (0.75)	2.4 (0.37)	3.5 (1.85)	11.5 (2.62)	9.4 (0.87)
Administrative and Managerial Workers	0.3 (0.12)	1.3 (1.60)	0.5 (0.16)	1.1 (0.96)	0.3 (1.02)	0.7 (0.23)	0.6 (0.31)
Clerical and Related Workers	1.5 (0.27)	2.3 (0.64)	2.7 (1.16)	2.4 (0.58)	1.5 (0.35)	1.6 (0.26)	0.91 (0.15)
Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	53.3 (6.25)	45.3 (10.03)	45.3 (11.39)	50.4 (11.03)	24.1 (2.68)	17.8 (6.02)	9.4 (4.48)
Production and Related Workers, Transport Equipment Operators and Laborers	12.0 (2.3)	13.9 (3.60)	14.4 (1.83)	18.0 (5.07)	23.2 (4.80)	17.3 (2.03)	10.7 (2.38)
Sales and Service Workers	7.5 (0.39)	8.6 (1.20)	9.9 (2.35)	8.6 (2.61)	6.4 (.72)	3.8 (1.59)	2.5 (0.44)
Workers not Classified in any Occupation, general Laborers	0.004 (0.006)	0.21 (0.17)	0.44 (.75)	3.73 (1.05)	1.6 (.36)	3.22 (.47)	1.62 (0.20)

*Standard Deviations in Parentheses.

Table: 2 Estimated Regression Results. Dependent Variable: Male-Female Difference of Labor Force Participation Rates in Percentage Points

	Model 1	Model 2	Model 3
Variables	**Co-efficient (t-values)**	**Co-efficient (t-values)**	**Co-efficient (t-values)**
Trade Openness	-13.5 (-2.12)	-13.5 (-2.12)	-13.5 (-2.11)
Professionals, Technical and Related Trade Workers	-3.5 (-1.58)	-3.5 (-1.58)	Omitted Category
Administrative and Managerial Workers	-3.2 (-1.47)	-3.2 (1.47)	Omitted Category
Clerical and Related Workers	-4.9 (-2.24)	-4.9 (2.25)	-2.36 (-1.35)
Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	27.4 (12.39)	27.4 (12.44)	29.9 (17.19)
Production and Related Workers, Transport Equipment Operators and Laborers	7.03 (3.18)	7.03 (3.20)	9.62 (5.52)
Sales and Related Trade Occupations	Omitted Category	Omitted Category	Omitted Category
Workers not Classified in any Occupation, general Laborers	-3.6 (-1.64)	-3.6 (1.64)	
Punjab	-0.93 (-0.56)		
Sindh	Omitted Category)		
Khyber Pakhtoonkhah	-.46 (-.28)		
Balochistan	1.00 (0.60)		
Constant	10.6 (4.11)	8.07 (4.05)	8.4 (4.05)
N=196	**R^2 =0.643 Adj. R^2.= 0.629**	**R^2=0.645 Adj. R^2.= 0.626**	**R^2=0.635 Adj. R^2.= 0.627**

Table 3: Estimated Coefficient of Trade Openness for Percentage Shares in GDP of Three Major Production Sectors of the Economy (1951-2008)

	Dependent Variable		
Independent Variable (T-values)	**Sectoral Share of Agriculture in GDP**	**Sectoral Share of Industrial Sector in GDP**	**Sectoral Share of Service Sector in GDP**
Trade Openness	-99.6 (-9.7)	74.9 (4.8)	115.25 (4.6)
Constant	63.0 (18.61)	7.3 (1.4)	-8.3 (-1.01)
	R^2=0.81 Adj. **R^2**= 0.67 N=57	**R^2**=0.57 Adj. **R^2**= 0.32 N=57	**R^2**=.56 Adj. **R^2**= .31 N=57

Figure 1. Trade Openness: Historical Trend

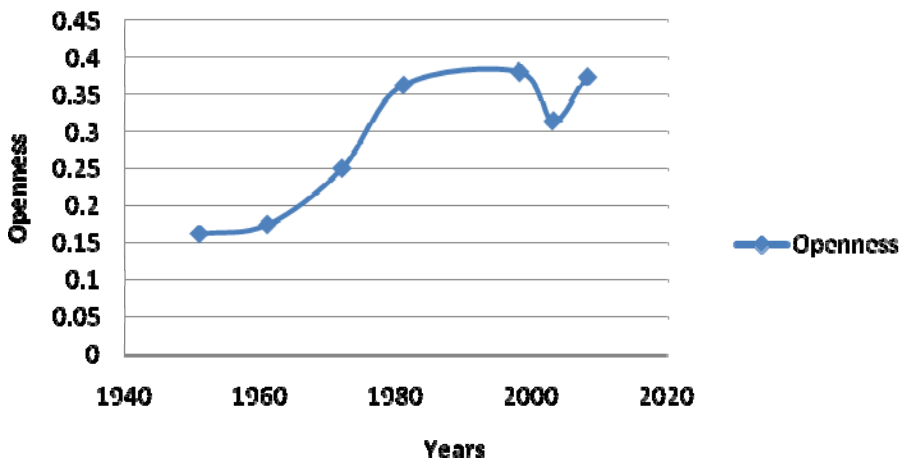
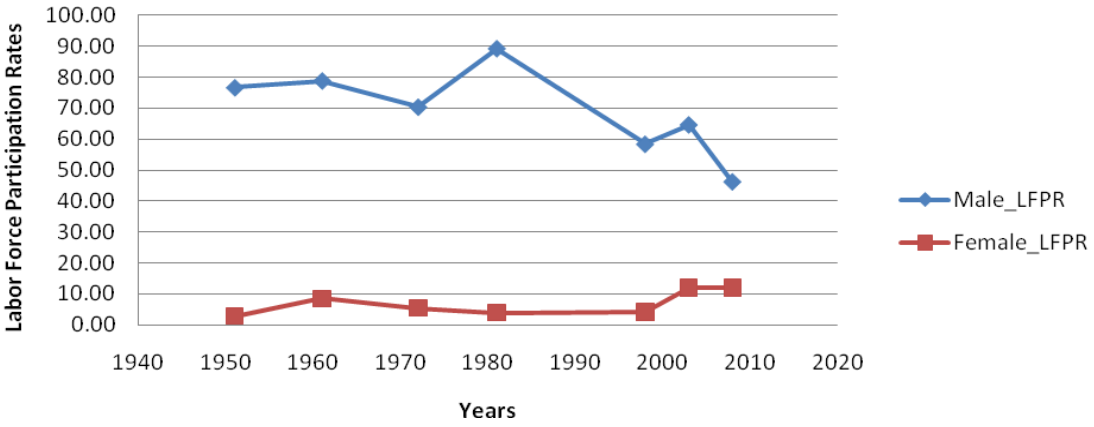


Figure 2: Male and Female Labor Force Participation Rate in Pakistan



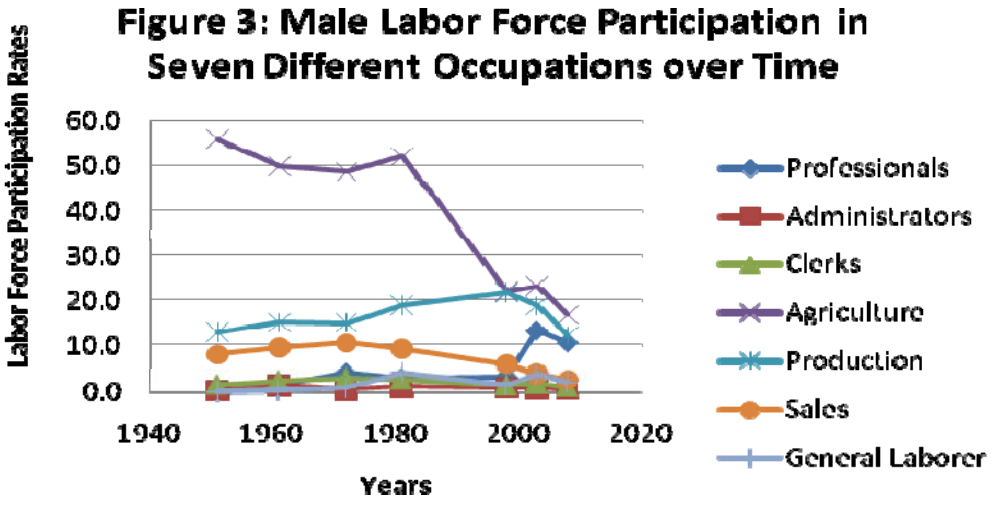


Figure 3: Male Labor Force Participation in Seven Different Occupations over Time
Labor Force Participation Rates
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1940
1960
1980
2000
2020
Years
Professionals
Administrators
Clerks
Agriculture
Production
Sales
General Laborer

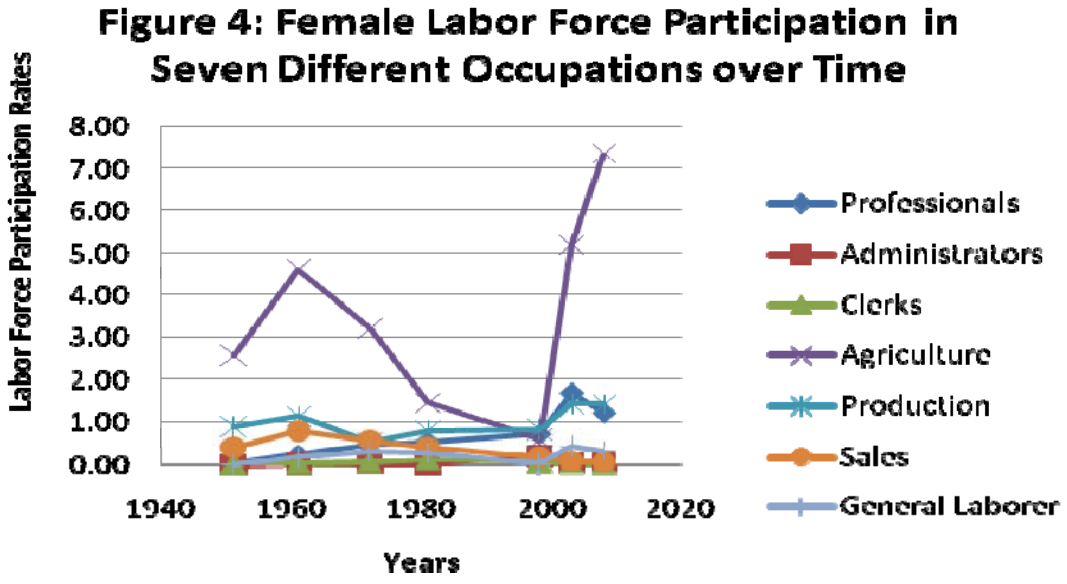


Figure 4: Female Labor Force Participation in Seven Different Occupations over Time
Labor Force Participation Rates
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1940
1960
1980
2000
2020
Years
Professionals
Administrators
Clerks
Agriculture
Production
Sales
General Laborer

Figure 5: Literacy Rates over Time

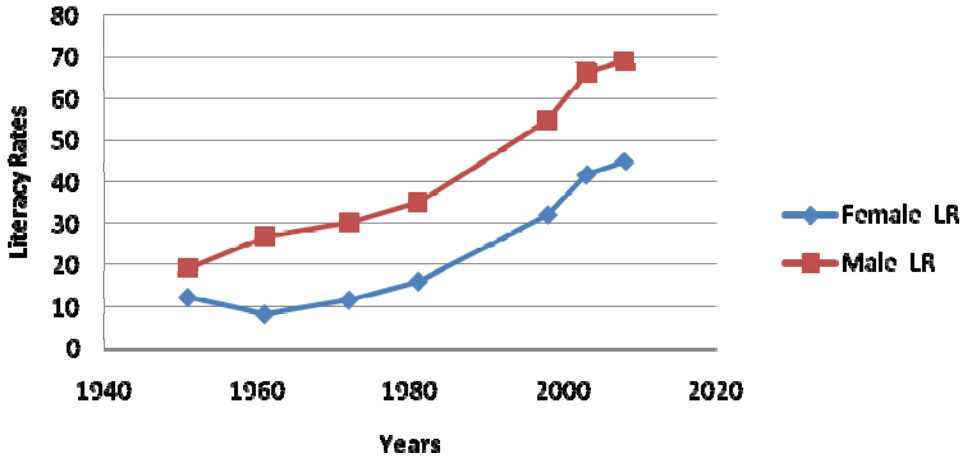
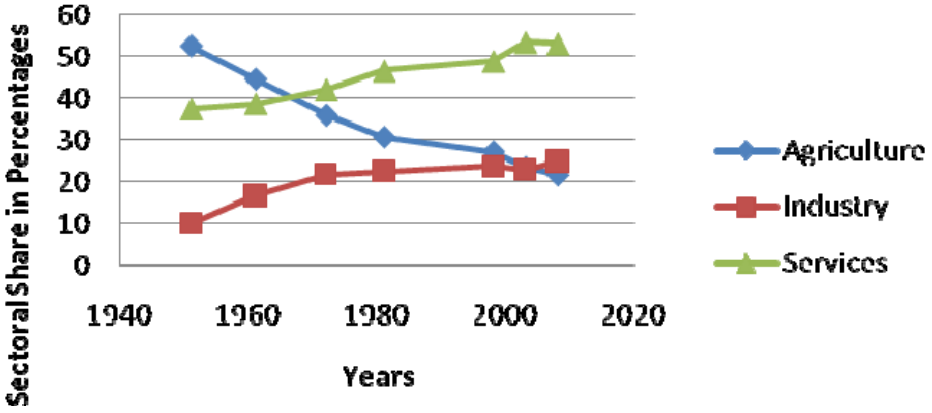



Figure 6: Sectoral Share in Gross Domestic Product