Report No. 41

74171

South Asia Human Development Sector

Demographic Transition and the Labor Market in Sri Lanka

October 2012

Report No. 41

South Asia: Human Development Unit

Demographic Transition and the Labor Market in Sri Lanka

October 2012

Discussion Paper Series

Table of Contents

List of Table

List of Figures

Author

Nistha Sinha
Senior Economist
World Bank

Acknowledgements

Introduction

Sri Lanka's demographic transition has significantly shaped the age distribution of the labor force and created a large working age population (World Bank 2008). Changing cohort sizes of young and old workers not only affect their own labor market outcomes (job quality, earnings), but also potentially affect growth prospects in the economy (Bloom, Canning and Sevilla 2003). Recovering from a 30-year conflict in the North and the East, Sri Lanka aims to accelerate growth in the medium term by substantially increasing investments. What will be the role of the labor market in delivering this growth? The service sector is expanding and accounts for nearly 60 percent of the GDP and almost 40 percent of employment. However, only 56 percent of the working age population is employed – a result of low participation and high unemployment rates among women and youth. Any growth strategy will have to bring in more working age people, particularly women, into economic activity.[1]

The paper analyzes the labor market during 1992-2009, the wartime years, and uses the findings to help understand implications for the labor market as the economy grows and recovers from the conflict. The analysis is primarily based on annual Labor Force Survey (LFS) data collected by the Department of Census and Statistics (DCS) between 1992 and 2009.[2] The paper excludes the North and East from the analysis because the labor market in these provinces was functioning in atypical times, and was affected severely by the security situation. The 2006 Moving out of Poverty study conducted in conflict areas noted large outmigration of the better off households and the reliance on those left behind on remittances (Center for Poverty Analysis 2006). The study also found that private sector investment had largely dwindled in these provinces, and the main source of jobs was public employment.

On the supply side, demographic projections suggest that if the current demographic trends continue, the labor force will start to shrink after 2026. On the demand side, regulations such as Termination of Employment of Workman Act (TEWA) and wage setting institutions protect jobs and also shape firms' ability to create jobs. Key empirical patterns in labor market outcomes between 1992 and 2009 are as follows.

- Between 1992 and 2009, labor force participation rates among those aged 35 and older increased, and this trend is most notable for women. In 2009, nearly 50 percent of women aged 20 to 50-54 participated in the labor market; there is a slight dip in female labor force participation rates during peak years of childbearing (25 to 34). An overall unemployment rate of 9 percent in 2009 is notably lower than the 15 percent unemployment rate in 1992, but high unemployment persists among women and youth. National averages mask considerable district level variation in labor market outcomes.

---

[1] The analysis is based on Labor Force Survey data (LFS) that does not cover migrants who have left to work abroad. By all accounts, a large percentage of these overseas migrants are young women. Leaving them out therefore underestimates the labor force participation by women. See (De Silva forthcoming).
[2] It is important to note that the LFS does not cover migrants who have left to work abroad. By all accounts, a large percentage of these overseas migrants are young women. Leaving them out underestimates the labor force participation by women.

- In 2009, while more than half the workers were engaged in paid work, most of this work was temporary or casual. Most workers are employed in informal jobs; in 2009, 63 percent of women and 70 percent of men were employed in informal jobs.

- There is notable occupational segregation by gender within industry and occupations. Between 1992 and 2009, most female entrants to the labor market found employment in education/health/social work and manufacturing, community and social work, hotels and restaurants, wholesale and retail trade, financial intermediation, and agriculture/fishing/mining in occupations as clerks, professionals, technical and associate professionals, skilled agriculture and fisheries and crafts workers. While women made some inroads into occupations such as managers/senior officials/legislators, they remained a very small share of employment in these jobs.

- For all paid workers, real monthly earnings declined by about 5 percent between 2006 and 2009.

- Men earn between 30 to 36 percent more than women in the private sector and semi-government organizations; there is gender parity in earnings in the public sector. Earnings are higher for the public sector and semi-government sector than in the private sector. Public sector earnings are higher than semi-government earnings.

Looking ahead, over the next 15 years, demand for workers in industry is likely to increase as rebuilding and recovery in the North and East proceeds. In addition, demand for highly skilled workers to meet the needs of the expanding services sector, particularly higher-end services, will also increase. Analyzing the empirical trends using the LFS, it is clear that increasing female labor force participation, addressing high youth unemployment and its causes, and addressing the negative aspects of certain labor market regulations will be key to meeting the needs of a growing economy.

The paper is organized as follows. The two sections that follow present an overview of the supply and demand side of the labor market. The next section discusses the ways in which the demographic transition could shape the labor market, particularly in terms of unemployment and earnings. This discussion is followed by three sections examining labor force participation and unemployment, job type, and earnings respectively. The last section concludes with some policy recommendations.

A Large, Educated Supply of Workers

The majority of Sri Lankans are in the working age group between the ages of 15 and 64, but the share of youth (15-24) has declined over the last two decades. The share of working age (15-64) population is 67 percent, the highest in the South Asia region, and this share has largely remained unchanged over the last two decades (Table 1). The large share of working age people in the population is the potential source of the much talked about "demographic dividend" of greater economic growth and savings that the country could enjoy. The share of youth (15-24) among the working age group has dropped noticeably over the period, from 32 percent in 1992 to 23 percent in 2009, reflecting declining fertility rates and a consequent ageing of the population.

Table 1: Share of working age and youth in the population, 1992-2009

	Working age	Share of Youth among working age
1992	65%	32%
2006	68%	25%
2007	67%	24%
2008	67%	24%
2009	67%	23%

Source: Staff calculations using LFS data for various years.
Note: Excluding North and East.

Between 1992 and 2009, population growth added nearly 3 million people to the working age group, and of these, about 2 million joined the labor force (working or looking for jobs); the employment increase over the period was sufficient to absorb these additions to the labor force.
The number of people in the working age group grew by 31 percent between 1992 and 2009, while the size of the youth population fell by 5 percent (Table 2). As the working age population grew, so did the size of the population participating in the labor force (working or looking for work), which grew by 35 percent between 1992 and 2009. The number of jobs (employed) grew by 45 percent, exceeding the growth in the size of the economically active population (labor force participants), suggesting that the economy was able to absorb the entrants to the labor market. Among the economically active population, the number of unemployed declined by 18 percent.

Table 2: Growth rate and size of working age population 1992-2009

	1992	2009	Growth rate 1992-2009
Youth (15-24)	3,006,139	2,868,183	-5%
Working age (15-64)	9,420,106	12,300,000	31%
Labor force participants (15-64)	5,549,098	7,504,575	35%
Employed (15-64)	4,723,494	6,828,103	45%

Source: Staff calculations using LFS data for various years.
Note: Excluding North and East.

Schooling levels among the working age population is high; in 2009, more than 30 percent of the working age population completed Grade 10 or O-levels. About 20 percent completed collegiate or A-levels, while 15 percent have a university degree (Figure 1). Madrigal and Paci (2010) report that among the younger cohorts of the working age group, the average years of schooling in Sri Lanka is the highest in South Asia.

Figure 1: Distribution of Working Age Population by Completed Years of Schooling, 2009
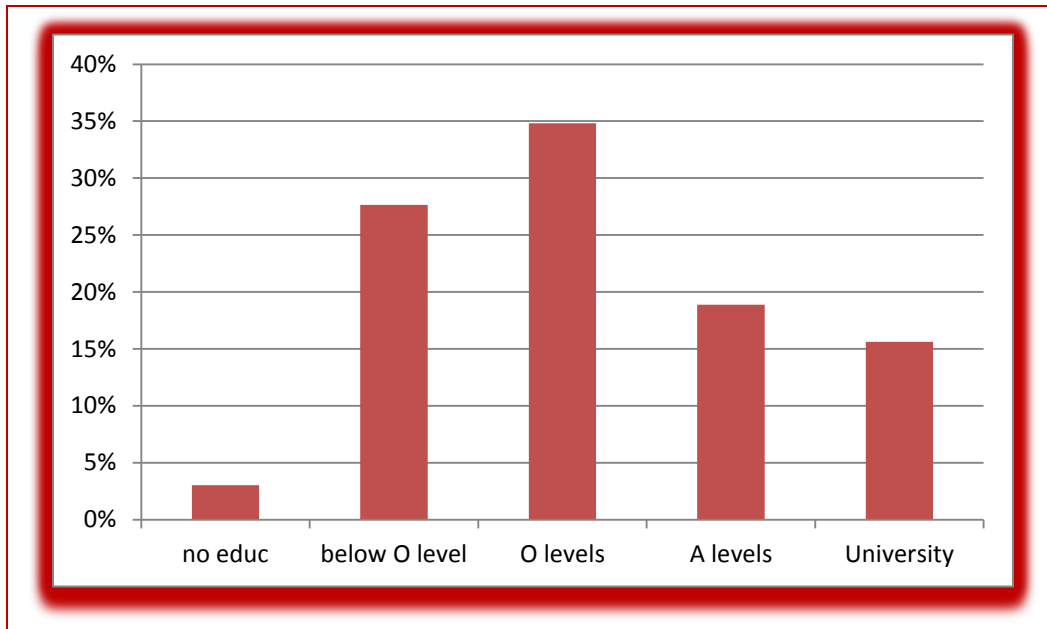
Source: LFS data for 15-64 year old (working age). Staff calculations.
Note: Excluding North and the East.

However, there is a growing recognition that more investment is needed in higher education because of the country's growing technology industry. The Investment Climate Assessment (Asian Development Bank and World Bank 2004) noted that Sri Lanka faces a shortage of highly skilled workers because of outmigration of scientists and engineers ("brain drain"). Another reason for the shortage of highly skilled workers is the inadequate quality of higher education institutions, which do not adequately prepare graduates for the changing labor market (World Bank (2009)).

The growth in the working age population will soon start to slow down. Over the next 15 years, between 2011 and 2026, projected population growth is expected to add 568,400 individuals to the age group of 15-59. If current patterns of labor force participation continue, then the size of the labor force will start to decline after 2026 (Table 3 and Vodopivec & Arunatilake (2008)). Assuming no further behavioral adjustments by families to the changing demographic patterns and the end of conflict in the North and East, Table 3 shows that one way of increasing the number of labor force participants in the economy would be to increase women's labor force participation. For example, increasing the women's labor force participation rate by about 15 percentage points over the 2009 levels will raise the overall labor force participation rate

increases from 61 percent to 70 percent and add more than a million workers to the labor market each year.

Table 3: Projected Trends in Working Age Population and Labor Force Participants

Year	Children (<15 yrs.) Number '000s	Working Ages (15-59 yrs.) Number '000s	Elderly (60+ yrs.) Number '000s	Projected Number in Labor Force Total LFP=61% (2009 Rate)	Total LFP=66%	Total LFP=70%
1981*	5,236.40	8,625.20	985.1			
2001*	4,922.40	12,080.50	1,731.40			
2006	4,807.40	12,836.70	2,075.70			
2011	4,692.40	13,294.80	2,570.40	8,109,828	8,774,568	9,306,360
2016	4,523.60	13,591.90	3,070.20	8,291,059	8,970,654	9,514,330
2021	4,196.10	13,778.80	3,605.10	8,405,068	9,094,008	9,645,160
2026	3,825.30	13,863.20	4,115.00	8,456,552	9,149,712	9,704,240
2031	3,520.30	13,826.20	4,536.10	8,433,982	9,125,292	9,678,340
2036	3,363.20	13,589.30	4,888.80	8,289,473	8,968,938	9,512,510
2041	3,299.00	13,026.70	5,386.70	7,946,287	8,597,622	9,118,690

Source: Based on (De Silva forthcoming)).
Note: These projections are based on population censuses and do not exclude the North and the East. Also note that the age groups are different from those used in the rest of the report.

The labor force is ageing. Over the last two decades, the percentage of working age population working or looking for work - the labor force participation rate - has remained more or less unchanged; about 80 percent of working age men and 40 percent of working age women participate in the labor force. However, the mean and median age of these labor force participants has noticeably increased for both women and men (Table 4). The average female labor force participant was almost 33 years old in 1992 and almost 38 years old in 2009. Similarly, the average male labor force participant was about 35 years old in 1992 and about 39 years old in 2009. The median age of labor force participants shows an even greater increase over time, 7 years for women and 5 years for men. The increasing mean and median age suggest a shift and change in the age profile of labor force participants (Figure 2). In 1992, the bulk of those working or looking for work were under 25 years of age. Over time this age profile of labor force participants has shifted and the share of those 40 or older has increased (Figure 2).

Table 4: Percentage of working age people in the labor force and their age

Women	Labor force participation rate	Mean age (Years)	Median age (Years)	Men	Labor force participation rate	Mean age (Years)	Median age (Years)
1992	39%	32.9	31	1992	79%	35.3	34
2006	46%	36.7	36	2006	83%	37.9	37
2007	43%	37.4	37	2007	82%	38.2	38
2008	44%	37.7	38	2008	82%	38.6	38
2009	43%	37.9	38	2009	81%	38.9	39

Source: LFS data for 15-64 year old (working age), various years. Staff calculations.
Note: Excluding North and the East.

Figure 2: Age Profile of Labor Force Participants
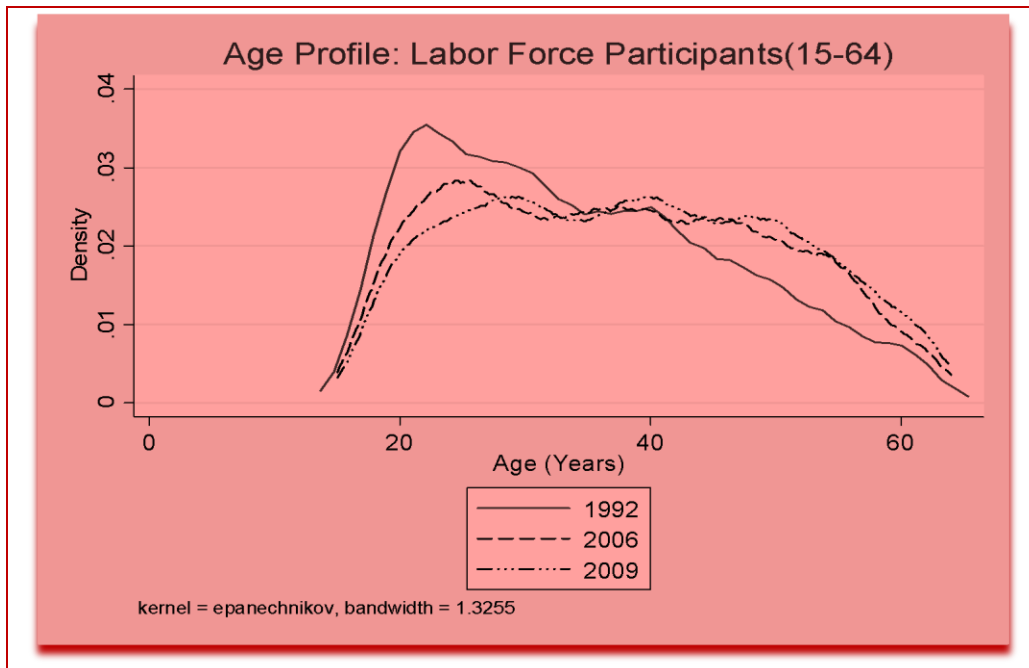
Labor market outcomes in Sri Lanka are similar to countries in the same stage of demographic transition and are more favorable than its regional neighbors. The only exception to this comparison is female labor force participation rate, which is similar to regional neighbors (Table 5). Table A1 (Annex 1) shows comparator countries that are in the same demographic phase as Sri Lanka. These countries include a number of countries in East Asia and Latin America. Table 5 also compares labor market outcome with the group of middle-income countries. Sri Lanka's female labor force participation rate of 39 percent is below that of middle-income countries and East Asia countries also experiencing demographic transition. Youth unemployment rates are also higher in Sri Lanka than to comparator countries for which data is available.

Table 5: Patterns in Comparator Countries, 2007

	Labor force participation rate, female (% of population ages 15-64)		Share of women employed in nonagricultural sector (% of total nonagricultural employment)	Unemployment, female (% of labor force)		Unemployment, youth (% of labor force ages 15-24)		Wage and salaried workers, (% of employed)		Pop ages 15-64 (% of tot)	Primary completion rate, (% of relevant age group)		Armed forces personnel (% of total labor force)
	female	male		female	male	female	male	female	male		female	male	
Sri Lanka	39	81	31	9	4	28	17	55	57	69	105	105	3
Middle income	53	83								66	93	95	1
South Asia	37	85								62			1
East Asian countries in similar stage of demographic transition (see Table A1)													
Indonesia	53	87	31	11	8	27	24	31	36	67	107	109	1
Korea, Dem. Rep.	61	81								68			11
Malaysia	47	82	39	3	3	12	11	77	73	65			1
Thailand	71	85	45	1	1	4	5	42	45	70			1
Vietnam	74	81								66			1

Source: (World Bank 2010). Note that labor market outcomes reported for Sri Lanka differ slightly from those reported elsewhere in the report. This discrepancy arises from difference in data sources.

Growing Demand for Workers

The service sector is the dominant source of demand for labor. To examine the demand for workers, it is informative to look at the structure of production. In 2009, the service sector made up nearly 60 percent of GDP, followed by industry (about 28 percent of GDP) and agriculture (about 12 percent of GDP)[3] The service sector has been expanding in terms of its share of GDP. For example, hotels and restaurants, telecoms, and government services had among the highest sectoral rate of GDP growth in the last quarter of 2009 (World Bank 2010).

As the service sector expands, demand for workers in this sector is also expected to grow. The service sector expansion relies relatively more on employment growth than does expansion in industry or agriculture sectors. Table 6a shows that in terms of employment share, the service sector share has expanded. Among men, employment in the service sector has grown since 1992 to become the dominant employment sector with 45 percent of all employed men. Agriculture and industry still account for roughly 25 to 30 percent of male employment. Among women,

---

[3] http://www.statistics.gov.lk/national_accounts/Annual2009/quick.pdf

agriculture used to be the dominant sector of employment in 1992, but by 2009, employment share of services has grown to nearly 40 percent. In 2009, agriculture also employed close to 40 percent of women.

Table 6a: Sectoral Share of Employment, 1992-2009

	Agriculture	Services	Manufacturing+ Electricity+ Construction
Women			
1992	45%	31%	23%
2006	38%	34%	28%
2007	37%	36%	27%
2008	38%	36%	26%
2009	37%	38%	25%
Men			
1992	39%	40%	19%
2006	29%	46%	25%
2007	29%	46%	25%
2008	30%	45%	25%
2009	30%	45%	25%

Source: LFS data for 15-64 year old (working age), various years. Staff calculations.

Within the services sector, women are employed mainly in education and health services, whereas men are mainly employed in the traditional, non-tradable sectors of wholesale and retail trade, public administration and defense, and transport (Table 6b). Following Eichengreen and Gupta (2011), we can further break down service sector employment into traditional services (wholesale and retail trade, transport, storage and posts, public administration and defense), intermediate services (education, health and social work, hotels and restaurants, and other community, social and personal services), and modern services (financial intermediation, computer services, business services, communications etc.). Men in service sector jobs are employed mostly in traditional services; whereas service sector women are mostly employed in intermediate services (mainly education, health and social work). Greater defense expenditures and increased hiring of armed forces during the war could be responsible for the greater share of men's employment in traditional service sectors. For men and women, employment in modern services accounts for about 10 percent of service sector employment. This modern group of the service sector is potentially an important source of growth for the economy.

Table 6b: Composition of Service Sector Employment, 2009

	Traditional	Intermediate	Modern
Women	42%	48%	10%
Men	68%	24%	8%

Source: LFS data for 15-64 year old (working age), various years. Staff calculations.

The public sector is an important player in the labor market. As Table 10 shows, the share of public sector employment, especially among women and youth, has increased between 2006 and 2009. This partly has been due to the conflict due to the government's increase in defense expenditures and expansion of the armed forces. As analysis in later sections shows, all else being equal, workers in public sector employment earn much more than their private sector counterparts do.

Labor regulations shape the demand side of the market. The World Bank (2006) examines three employment protection institutions in Sri Lanka – the Termination of Employment of Workman Act (TEWA), wage setting in certain sectors, and civil service hiring practices – and finds that each of these affects the demand for labor. The 2004 Investment Climate Assessment identified costly labor regulations as being an important component of easing labor market conditions and for improving Sri Lanka's international competitiveness (Asian Development Bank and World Bank 2004). Under TEWA, in firms with 15 or more workers, employees who have worked for more than 6 months become permanent staff. The firm must obtain government authorization to lay off these workers, and obtaining such authorization is seldom an easy process.

Labor regulations are considered to be a reason for firms' reliance on temporary workers, keeping the number of full-time employees below the TEWA threshold of 15 employees (Investment Climate Assessment, 2004; World Bank 2006). A tabulation of firm size reported in the 2009 Labor Force Survey shows that the bulk of the workers in both agriculture and non-agriculture sectors are employed in organizations with no regular employees. Figure 3 shows the distribution of employment by firm size for those employed in non-agriculture private sector. Most workers in the non-agriculture sector are employed in organizations with no paid regular workers, and the remaining workers are employed either in very small firms (less than 5 workers) or in large firms in the case of manufacturing/construction/electricity-gas-water supply. The "missing middle"– very few workers employed in firms with 5 to 99 workers–could be an outcome of labor regulations (World Bank 2006b).

Figure 3: Distribution of Non-Agriculture Private Sector Employment by Firm Size (total number of regular employees), 2009
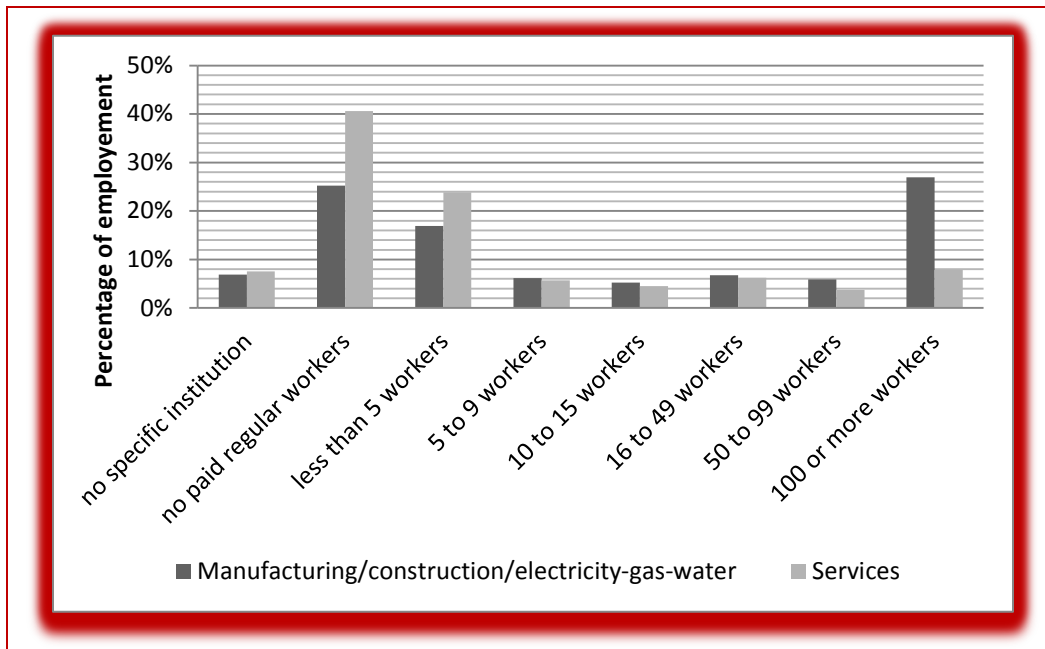
Source: Staff calculations using LFS data for 2009.

Several institutions are involved in setting wages in the formal sector, and these include the pay commissions for public sector jobs (semi-government is excluded), tripartite Wages Boards and collective bargaining institutions for formal private sector jobs. Wages Boards determine minimum wages for formal private jobs (World Bank 2006). Public sector pay commissions have had a positive effect on the gender gap in earnings (see section on earnings). However, these wage-setting practices are also considered to have raised labor costs, which in turn encourage unemployment and informal work.

Improving labor market flexibility through reform of labor regulations is one of the recommendations of the 2004 Investment Climate Assessment. Other recommendations to improve the conditions under which the private sector operates in Sri Lanka include improving access to energy and transport, reducing the access to and cost of finance, connecting rural firms to major markets, and promoting macroeconomic stability.

Labor Market Outcomes: Combining Supply and Demand

Labor market outcomes are a result of supply- and demand-side characteristics of the market. Fertility and mortality trends affect the size of the working age population (aged 15-64); declining fertility and mortality trends in Sri Lanka have added large numbers of young workers to the labor market. In a simple conceptual framework of demand for and supply of workers, an increase in the number of working age people will shift the supply of workers (from S1 to S2 in Figure 4) (Ehrenberg and Smith 1987). The conceptual framework would predict a fall in equilibrium (real) wages as the market adjusts to employ more workers. A decline in number of workers would shift the supply of workers from S1 to S0 and create an upward pressure on

wages. This demographically induced change in wages, however, could be offset by any changes on the labor demand side, such as increasing demand for workers due to greater aggregate demand in the economy. For example, a shift in labor demand from D1 to D2 would offset any changes in equilibrium wages and employment brought about by a shift in the supply of workers (Figure 4).

This demand-supply framework has been used extensively to study the U.S. labor market, which has not only witnessed demographically induced changes on the supply side (large influx of young workers in the 1970s, the so-called baby boomers), but also changes on the demand side (see for example, (Welch 1979), (Katz and Murphy 1992)). In general, the U.S. analysis suggests that large number of entrants to the labor force (large cohort sizes) adversely affect earnings for that group of workers. There is evidence, however, that the demand side matters too in mitigating or magnifying the effect of supply of workers. Korenmark and Neumark (1997) analyzed data from 15 OECD countries between 1970 and 1994 to assess whether large youth cohorts adversely affected labor market outcomes for youth and found that cohort size did matter; they also found evidence that demand side conditions were important in shaping how well or badly the youth fared.

Figure 4: Shifts in Supply of Workers Induced by Demographic Changes:
A Conceptual Framework
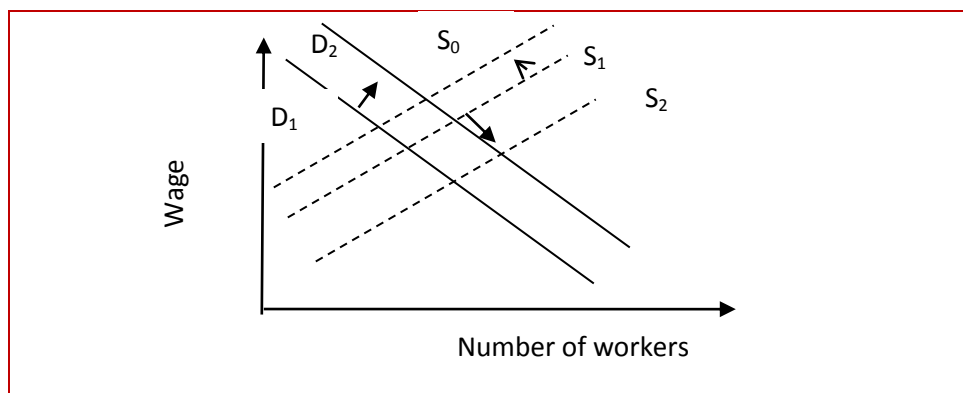
Sri Lanka did not experience a "baby boom" or a bust; fertility has declined steadily over time (De Silva forthcoming). This was reflected in the steady increase in the share of the working age population, and in particular, the share of youth entering the working age group. Consistent with this pattern, between 1992 and 2006, real earnings grew by only 4 percent (see below). By the late 1990s, the persistent fertility decline resulted in a decline in youth population shares (see Table 1). This reduction in youth population shares should improve youth labor market outcomes such as unemployment rates. Although unemployment rates for youth have dropped between 1992 and 2009, they remain high at about 27 percent (Table 7)). This suggests that factors other than demographically induced changes in the size of the work force are at play, such as the demand for labor and labor market regulations.

The next 3 sections analyze three labor market outcomes arising out of the interaction between supply and demand factors: labor force participation and unemployment, job type, and earnings.

These sections present empirical patterns for these outcomes between 1992 and 2009 and investigate their determinants.

Analyzing Labor Market outcomes: Labor Force Participation and Unemployment

Empirical Patterns

Sri Lanka employs just over half of its working age population (15-64); low labor force participation by women and high unemployment among youth are sources of this low overall employment to population ratio. In 2009, 56 percent of the working age population was employed, while 9 percent of economically active workers were unemployed (Table 7). These statistics mask notable variation by sex and age. Among women, the employment to population ratio is 37 percent as compared to 81 percent for men. Among youth aged 20-24, the employment to population ratio is 47 percent as compared to 64 percent among those aged 25 and older. Young people's participation in the labor market has also gone down in the recent years; among 20-24 year olds, the labor force participation rate has declined from 70 percent in 1992 to 64 percent in 2009.[4]

Over time, labor force participation rates among those aged 35 and older has increased, and this trend is most notable for women. Reflecting demographic trends, not only has the number of working age adults (those older than 25) increased, the share of these adults 40 and older who participate in the labor force has also increased (Figure 5). The increase in labor force participation rates among adults is greater for women than men. For women, the largest increase in labor force participation rates occurs among those aged 45-54, for whom participation rates increased by 10 percentage points or more between 1992 and 2009.

In 2009, nearly 50 percent of women aged 20 to 50-54 participated in the labor market; there is a slight dip in female labor force participation rates during peak years of childbearing (25 to 34). This high labor force participation rate of 20-54 year olds is close to the average for middle-income countries and countries in comparable stage of demographic transition such as Indonesia (see Table 5).

---

[4] Low labor force participation rates among 15-19 year olds is consistent with high secondary and tertiary level school enrollment.

Figure 5: Labor Force Participation Rates by Age
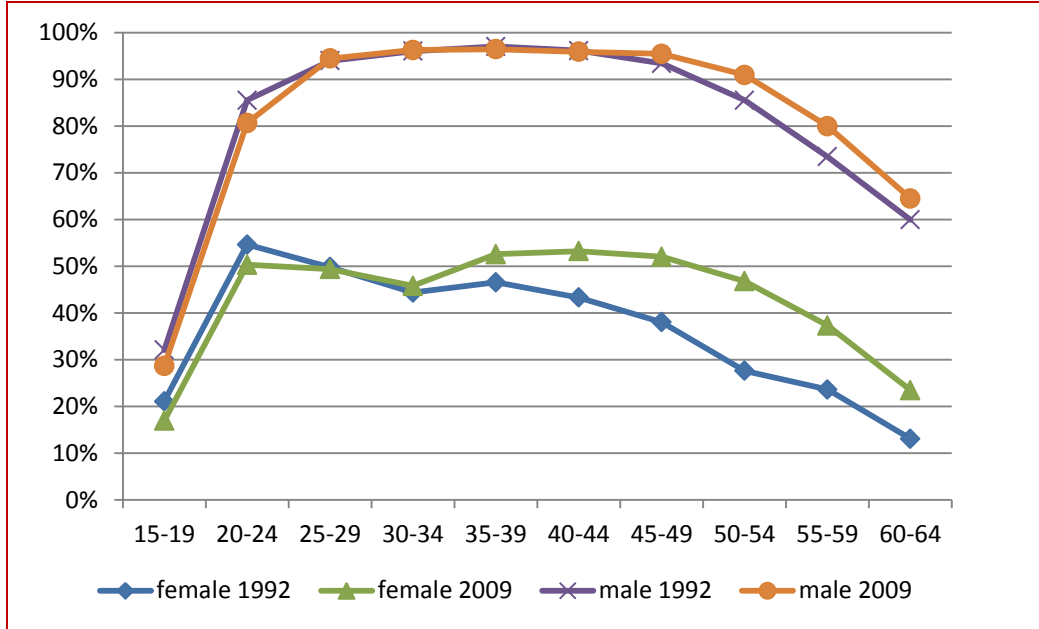
An overall unemployment rate of 9 percent in 2009 is notably lower than the 15 percent unemployment rate in 1992, but high unemployment persists among women and youth (Table 7). In 2009, the unemployment rate was 14 percent for women and 27 percent for 20-24 year olds. Among men and older adults, the unemployment rate was about 5 percent. Sri Lanka's youth unemployment rate is among the highest in the world. In addition to demographic pressures, and constraints on the supply side (households) and demand side (employers), a persistently high unemployment rate can discourage workers from staying in the labor market searching for jobs. Unemployment duration data collected in the 2009 round of the Labor Force Survey shows that 48 percent of unemployed women had been unemployed for 1 year or more, while 44 percent of men had been unemployed for less than 6 months.

Table 7: Labor Force Participation and Unemployment rates by age and sex, 1992-2009

		Labor force participation	Employment to Population Ratio	Unemployment
All	1992	59%	50%	15%
	2009	61%	56%	9%
Women	1992	39%	30%	23%
	2009	43%	37%	14%
Men	1992	79%	70%	11%
	2009	81%	76%	6%
15-19	1992	27%	16%	41%
	2009	23%	15%	34%
20-24	1992	70%	46%	34%
	2009	64%	47%	27%
25+	1992	64%	60%	7%
	2009	67%	64%	5%

Source: Staff calculations using LFS data. Weighted. Working age population refers to those aged 15-64.

A detailed island-wide survey of school-to-work transition among 15-25 year olds, who had completed schooling between 1999 and 2006 (World Bank, 2007) showed that unemployment spells were common for new entrants into the labor market (Table 8). Nearly 55 percent of youth who had completed schooling reported ever being unemployed. Among these youth who had ever experienced unemployment between 1999 and 2006, most experienced their first unemployment spell in the year they completed schooling and entered the labor market. For example, 66 percent of those who had completed schooling in 2000 were also unemployed in that year; only 2 percent began their first unemployment spell 2 years after completing school.

Table 8: Transition from school to unemployment

Year school completed or stopped	Year first unemployment spell started								
	1999	2000	2001	2002	2003	2004	2005	2006	Total
1999	50%	35%						15%	100%
2000		66%	20%	2%	2%	4%	5%	1%	100%
2001			73%	16%	4%	2%	4%	1%	100%
2002				61%	28%	8%	2%	1%	100%
2003					73%	19%	5%	3%	100%
2004						74%	24%	2%	100%
2005							86%	14%	100%
2006								100%	100%

Source: Staff calculations using School to Work Transition data collected in 2007. Retrospective data collected from 1,026 youth (15-25 years) who had completed schooling in the 5 years preceding the survey. Above tabulations are based on 570 respondents who reported ever being unemployed. Sample weights applied.

National averages mask considerable district level variation in labor market outcomes; female labor force participation rates are high in districts with employment opportunities for women (such as estates). Since the LFS is representative at the district level, Table 9 below reports key labor market outcomes for 17 districts (excluding North and East provinces). For women, labor force participation rates and employment to population ratios are the highest in Nuwara Eliya and Badulla districts, which have plantation estates. These are also the districts with the lowest unemployment rates for women; Kandy, Galle and Hambantota have the highest rates of female unemployment with close to 1 in 5 working woman unemployed. Among men, there is less of a regional variation; Kandy, Galle, Matara and, Kegalle have among the lowest male employment to population ratios at about 70 percent. Kandy and Matara also have the highest male unemployment rates of close to 10 percent.

Table 9: District level labor force participation, unemployment, and employment to population ratio, 2009

District	Women			Men		
	Labor force participation	Unemployed	Employment to population ratio	Labor force participation	Unemployed	Employment to population ratio
Western – Colombo	37%	8%	34%	80%	6%	75%
Western – Gampaha	35%	11%	31%	80%	6%	75%
Western – Kalutara	37%	10%	34%	77%	4%	74%
Central-Kandy	38%	23%	30%	77%	10%	69%
Central-Matale	47%	17%	39%	86%	5%	82%
Central-Nuwara Eliya	55%	4%	53%	80%	2%	78%
Southern – Galle	44%	22%	34%	78%	7%	72%
Southern – Matara	44%	18%	36%	83%	12%	73%
Southern - Hambantota	47%	23%	36%	86%	9%	79%
N.W. – Kurunegala	45%	15%	38%	83%	6%	78%
N. W. – Puttalam	39%	19%	31%	83%	4%	80%
North Central-Anuradhapura	56%	12%	50%	85%	4%	81%
North Central- Polonnaruwa	44%	18%	36%	85%	7%	80%
Uva – Badulla	57%	8%	52%	84%	5%	80%
Uva – Moneragala	54%	17%	45%	86%	3%	84%
Sab. – Ratnapura	51%	13%	44%	84%	7%	79%
Sab. – Kegalle	42%	10%	38%	79%	7%	73%

Source: Staff calculations using LFS data. Weighted. Working age population refers to those aged 15-64. Unemployment rate is calculated only for those in the labor force.

What are the determinants of labor force participation and probability of being unemployed?

The empirical patterns present two puzzles. First, low female labor force participation rates persist in Sri Lanka despite low fertility rates and high female schooling. Second, the unemployment rate remains high for women and youth. Both these puzzles are analyzed below using regression estimates reported in Table A2.1 (see Annex 2 for a discussion of the empirical models).

For the first puzzle, with more education and fewer children, economic theory predicts that women will allocate more of their time to the labor market than to home activities. The reduced time needed for childrearing and having more education increases the opportunity cost of not working. However, empirical analysis from a number of studies suggests that this relationship between education, fertility and female labor force participation is complex. In fact, married women's labor force participation tends to follow a U-shape with respect to economic development. The U-shape is probably driven by the changing nature of work opportunities for women and men that come with economic development. In poor countries, female labor force

participation is high and women work mainly in farm or non-farm family enterprises. With development, and a rise in men's market opportunities, women move out of the labor force, but as development progresses and women's education levels increase, they move back into the labor force employed mainly in white collar jobs (Goldin (1994); Mamen and Paxson (2000)).

Women's labor force participation appears to be responsive to education only beyond certain levels of education. Mammen and Paxson's (2000) analysis of household survey data from India and Thailand shows that female labor force participation is not very responsive to female education; the largest impact on female labor force participation arises at post-secondary levels of education. Similarly, Lam and Duryea (1999) show that in Brazil during the 1970s and 1980s, while female schooling significantly reduced fertility, female schooling was not strongly associated with female labor force participation rates. Showing that female schooling significantly improved child survival, Lam and Duryea (1999) conclude that in Brazil during this period better educated mothers allocated time to looking after children rather than labor market work.

Empirically, it is difficult to distinguish women who stay out of the labor force involuntarily because of child care responsibilities from those who choose not to work because they prefer to allocate their time to home work. This choice driven selection by married women into (or out of) work makes it difficult to identify the causal impact of fertility on women's labor force participation. Cross country correlations show a negative correlation between female labor force participation and fertility rates. However, a number of studies have also found that the correlation between female labor force participation and fertility across OECD countries became positive in the 1980s, suggesting that low fertility coexists with low female labor force participation because of reasons such as availability of child care (Engelhardt and Prskawetz 2002). Using various econometric techniques to estimate the causal impact of fertility on female labor force participation, studies have found both the expected negative impact (for example, (Angrist and Evans 1998), (Rosenzweig and Wolpin 1980), (Chun and Oh 2002)), and no impact (for example, (Agüero and Marks 2008)).

Another factor discouraging women's participation in the labor force is wage gaps and discrimination in labor market which could persuade some women to stay at home. Several studies of the Sri Lankan labor market find that even after adjusting for differences in characteristics such as schooling and experience, gender wage gaps remain significant. The portion of the wage gap that is unexplained by observable characteristics of workers can be interpreted as an indicator of labor market discrimination against women. A study of data from 1999-2000 found that more than 95 percent of the gender wage gap could not be explained by characteristics of the workers.[5] Sections to follow discuss gender wage differential in more detail.

---

[5] Ajwad and Kurukulasuriya (2002) cited in (World Bank 2006b).

17

Table A2.1 reports determinants of labor force participation using LFS data from 2006-2009. Controlling for relevant individual and household characteristics, the results show that men are 47 percent more likely than women to participate in the labor force (column 1). Female labor force participation has a U-shape with respect to education – completing O levels and A levels (secondary) significantly reduces the probability of participation while university education increases probability of participation by 20 percent (column 2). This U-shape is similar to the one usually found in cross-country comparisons and suggests that women with low education (less than O levels) and tertiary education (university) are engaged in different types of jobs. For men, however, labor force participation steadily increases with education (column 3).

Household responsibilities appear to play an important role in reducing female labor force participation but not male labor force participation. Marriage is associated with 16 percent reduction in the probability of female labor force participation. More interestingly, presence of children is associated with significant reduction in female labor force participation, but has no impact on male labor force participation. An increase in the share of young children (under age 5) in the household reduces the probability of female labor force participation by 36 percent. The share of elderly household members (aged 65+) in the household is associated with a small reduction in labor force participation for both women and men but the estimate is statistically significant only for men. Overall, the regression results show that childrearing responsibilities are associated with significantly reduced female labor force participation; this negative association is large enough to swamp (or reinforce) the (negative) impact of education on women's market work. This suggests that any policy measure aimed at increasing female labor force participation would have to address women's family care responsibilities.

The second empirical puzzle of a persistently high unemployment rate in Sri Lanka has received a lot of research attention.[6] During the 1980s and 1990s, large youth cohorts were seen as a reason for the high unemployment rates, so the government introduced a number of policies and programs to address this issue. However, as previous sections have shown, the share of youth in the working age population has declined over time, and this should have reduced unemployment rates. In fact, high unemployment among women and youth is common across developing countries ((ILO 2010), also see discussion in (World Bank 2006a)). Analyzing household survey data from 60 developing countries, Fares, Montenegro and Orazem (2006) find that it takes school leavers 1.4 years on average to find stable and permanent employment; the intervening months are spent in temporary work and unemployment.

Rama (2003) analyzes three commonly proposed reasons for this high unemployment in Sri Lanka – unrealistic expectations or mismatch between jobs available what workers are qualified to do, preference for public sector jobs (queuing), and labor market regulations (mainly TEWA) that create a wedge between "good" and "bad" private sector jobs. Rama's analysis of expected earnings reported by the unemployed in the 1995 LFS finds no support for the unrealistic expectations explanation – schooling is not strongly correlated with expected earnings. He analyzes the impact of segregation of jobs into "good jobs – bad jobs" by estimating wage premiums associated with public sector employment and TEWA protected private sector jobs (proxied by reported length of worker's tenure). Results show a large premium associated with

---

[6] See for example, Arunatilake and Jayawardena (2010a).

public sector employment but not with employment in TEWA regulated jobs.[7] Arunatilake and Jayawardena (2010a) examine data from Jobsnet, set up under the National Employment Policy of Sri Lanka with the aim of matching job vacancies with registered job seekers. Among those who register with Jobsnet, Arunatilake and Jayawardena (2010a) find evidence of a skills mismatch; most of the registered job seekers were educated and searching for white-collar jobs, while most of the available job openings were for elementary occupations.

Table A2.1 (columns 4, 5 and 6) reports determinants of probability of being unemployed using LFS data from 2006-2009. Controlling for individual and household characteristics, men are significantly less likely than women to be unemployed and probability of unemployment also decreases significantly with age. Notably, the probability of being unemployed increases steadily with education, and these effects are large for women with university degrees, who are associated with an 11 percent increase in the probability of being unemployed. A university degree raises men's probability of being unemployed by only 3 percent. Family support also increases the probability of being unemployed, since children of household heads are significantly more likely to be unemployed.

Another striking result is the impact of the presence of young children in the household. The share of young children significantly increases the probability of female unemployment, but reduces the probability of male unemployment. For women, the result is consistent with queuing for public sector jobs or formal sector jobs because of non-wage benefits such as family benefits – the larger the share of young children in the household the more attractive such "good" jobs would be to women. This finding is also consistent with the deterrent impact of share of young children on female labor force participation. For men, in contrast, the presence of young children could have the opposite impact, increasing the pressure to get a job to support the family.

Like previous studies, evidence from 2006-2009 also suggests queuing for public sector jobs as a likely reason for persistently high unemployment rates. Earnings regression reported in Table A2.4 show that men and women in the public sector enjoy a large wage premium. For women, the premium is close to 52 percent; while for men, the premium is about 32 percent (section on earnings analyzes this wage premium in more detail). Consistent with these large premiums, when LFS 2009 asked the unemployed their expectations for a job, 41 percent of women and only 24 percent of men reported that they expected to get a job in the public sector. The remaining 50 percent of unemployed men and 44 percent of unemployed women reported expecting a job in any sector (public, semi-government or private).

Analysis of expected earnings reported by the unemployed support the public sector queuing and the associated higher earnings explanation for high unemployment. An analysis of the expected earnings reported by the unemployed is shown in Table A2.6. The regression results show that expected earnings increases significantly with education levels, particularly for women. An extra year of education is associated with an 8 percent increase in expected earnings for women and about a 5 percent increase for men.

---

[7] Rama (2003) uses length of tenure as proxy for TEWA jobs so any conclusions regarding wage premiums associated with TEWA jobs should be made with caution because the effect of this proxy could simply reflect returns to tenure.

These findings regarding public sector employment are found elsewhere as well. The World Development Report (WDR) 2007 (World Bank 2006a) cites evidence from a number of countries in Latin America and the Caribbean (LAC) and Middle East and North Africa (MNA) where public wage premiums are high, and consequently, the youth tend to queue for government jobs, and stay unemployed for some time after graduating. In background analysis done for the WDR, earnings regressions for 39 developing countries were carried out, and in 25 countries, there was a significant public sector wage premium, averaging about 26 percent. In Latin American countries, this estimated public sector wage premium was much higher for women than men.

Analyzing Labor Market Outcomes: Job Status

Empirical Patterns

In 2009, while more than half the workers were engaged in paid work, most of this work was temporary or casual. Among women, 56 percent of workers are employed in paid work, 21 percent in own account work, and 22 percent in unpaid work. The composition of jobs that men are engaged in is similar to that of women, except for the fact that a very small percentage of men are in unpaid work, and a much higher percentage (close to 30 percent) are employed in own account work (Table 10). A higher percentage of young workers than older workers are paid employees, but most of these jobs held by youth are temporary and casual in nature; for example, 77 percent of young men in paid work are engaged in temporary/casual work. Unpaid and own account work is more common among older workers.

The public sector continues to be the largest source of formal jobs in Sri Lanka, while nearly 80 percent of all private sector work is informal in nature. A higher percentage of women than men are in public sector jobs. Between 2006 and 2009, the percentage of public sector employees increased by 5 percentage points for all women and young men.

Table 10: Type of employment and job quality

	Women		Men	
	2006	**2009**	**2006**	**2009**
15-64				
Paid employee	56%	56%	57%	60%
Among employees, those in temporary or casual employment	43%	44%	59%	59%
Among employees, those in public sector employment	32%	37%	28%	29%
Own account workers	22%	21%	34%	32%
Unpaid workers	21%	22%	4%	4%
Informal worker (category includes those in informal paid work + informal own account work + informal own enterprise + unpaid work)	62%	63%	69%	70%
15-24				
Paid employee	76%	77%	66%	69%
Among employees, those in temporary or casual employment	52%	55%	77%	77%
Among employees, those in public sector employment	9%	14%	7%	12%
Own account workers	8%	5%	16%	12%
Unpaid workers	16%	17%	16%	18%
Informal worker (category includes those in informal paid work + informal own account work + informal own enterprise + unpaid work)	51%	53%	76%	77%
25-64				
Paid employee	52%	53%	56%	59%
Among employees, those in temporary or casual employment	40%	41%	55%	57%
Among employees, those in public sector employment	38%	43%	33%	32%
Own account workers	25%	23%	37%	34%
Unpaid workers	22%	23%	2%	3%
Informal worker (category includes those in informal paid work + informal own account work + informal own enterprise + unpaid work)	63%	65%	67%	68%

Source: Staff calculations using LFS data. Weighted. The survey collects data on job status (employee, employer, own account work, unpaid work) from those who report being employed during the reference period; the category not reported above is employer which is tends to account for a very small percentage. The survey also collects data on benefits provided to workers as well as whether enterprise is registered and size number of workers employed in enterprise. This information is used to construct percentage of workers engaged in informal work (see text).

Tables 6a and 6b show that in terms of industrial share of employment, agriculture and service sectors have the largest shares. This industrial share of jobs is also reflected in occupations (Table 11). *In 2009, workers are employed in skilled agricultural and fisheries work (22 percent), elementary occupations such as street vendors, laborers and subsistence work (23 percent), and craft and related trades (16 percent).* Remaining occupations such as managers, professionals, service workers, clerks and plant and machinery operators each account for a small share of total employment.

Table 11: Share of employment by occupations within Industry, 2009

	All	Women	Men
Armed Forces	1%	0%	1%
Managers, Legislators, Senior Officials	8%	6%	10%
Professionals	6%	11%	3%
Technical and Associate Professionals	5%	5%	5%
Clerks	4%	6%	3%
Service Workers and Shop And Market Sales Workers	8%	8%	8%
Skilled Agricultural and Fishery Workers	22%	24%	20%
Craft and Related Workers	16%	16%	16%
Plant and Machine Operators and Assemble	7%	2%	10%
Elementary Occupations	23%	22%	23%

Source: Staff calculations using LFS surveys.

There is notable occupational segregation by gender within industry and occupations (Figure 6). In 2009, the share of men among employees was greater than 50 percent in all industrial categories except education/health/social work and manufacturing. Similarly, the share of men among employees was greater than 50 percent in all occupations except professionals and clerks (Figure 6). Between 1992 and 2009, the share of men in employment fell for most industrial categories and occupations.

While in 1992, men dominated employment in almost all industrial categories, there was a dramatic reduction in share of men employed in education/health/social work. Manufacturing, which includes export processing, had a high share of women among employees in 1992, and this share improved by 2009. Between 1992 and 2009, there is also a notable reduction in share of men among the employees in other community and social work, hotels and restaurants, wholesale and retail trade, financial intermediation, and agriculture/fishing/mining. Electricity/gas/water/construction and transport storage and communications remained male dominated industries with men forming more than 75 percent of employees. In 1992, occupations such as clerks (office clerks such as secretaries and customer service clerks such as cashiers and tellers) and professionals (such as teachers and health professionals) had a relatively

smaller share of male employees compared to other occupations, and this share fell further in 2009. There were also notable reductions in share of men among employees in occupations such as service workers and shop and market sales workers (housekeeping, personal care and restaurant services), technical and associate professionals (such as nurses, teaching associates, computer associate professionals), skilled agriculture and fisheries and craft and related workers. The share of men among employees remained greater than 75 percent among managers, senior officials and legislators, and plant and machine operators and assemblers.

The patterns in male share of employment among workers by industry suggest that between 1992 and 2009, most female entrants to the labor market found employment in education/health/social work and manufacturing, community and social work, hotels and restaurants, wholesale and retail trade, financial intermediation, and agriculture/fishing/mining in occupations as clerks, professionals, technical and associate professionals, skilled agriculture and fisheries and crafts workers. While women made some inroads into occupations such as managers/senior officials/legislators, they remained a very small share of employment in these jobs.

Figure 6: Gender composition of Employment by Industry and Occupations: Share of Men in total Employment
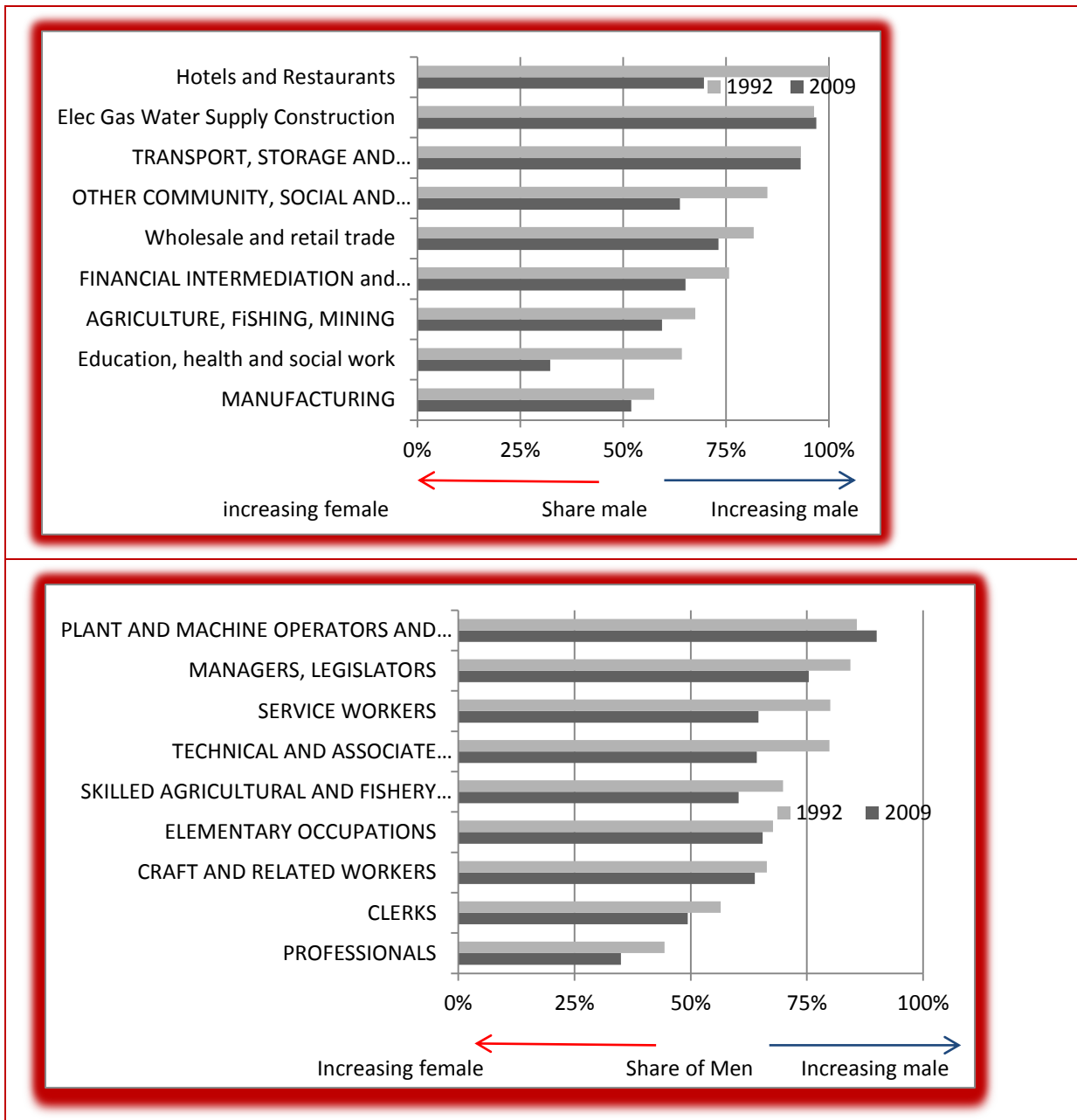
Source: Staff calculations using LFS surveys. Note that no data is available for the following industrial categories in 1992: private households with employees and public administration and defense. In 2009, share of men among those employed in public administration and defense that was 0.71; for private households with employees, the share of men among employees was 0.67.

Since 2006, the Labor Force Survey has asked the employed whether their institution of work is registered under Employees' Provident Fund or Inland Revenue Department, whether the institution maintains a system of formal written accounts, and the total number of regular employees. It also asks paid workers whether their employer contributes to a pension scheme or Provident Fund on their behalf, and whether they are entitled for paid leave. The responses to these questions can be used to distinguish formal workers from informal ones. The informal employers and own account workers are those who are not registered, do not maintain formal accounts and have less than 5 employees. Informal paid workers are those whose jobs do not provide paid leave or some form or retirement benefits. All unpaid family workers are considered informal workers.

Most workers are employed in informal jobs; in 2009, 63 percent of women and 70 percent of men were employed in informal jobs (Table 10). Figure 3 shows that most non-agricultural workers are employed in firms with no regular employees and the remaining are employed in smaller firms. To unpack the high level of informality, Figure 7 shows the distribution of employed workers according to the type of enterprise and, in case of paid workers, the availability of benefits. Just over 50 percent of paid workers are formal workers and the remaining are informal workers in formal (19 percent) or informal (31 percent) enterprises. The presence of more informal workers in formal than informal enterprises is consistent with the findings of the Investment Climate Assessment study (Asian Development Bank and World Bank 2004) that labor regulations like TEWA encourage firms to hire temporary workers. As expected, nearly all own account work is informal in nature (and mostly takes place in agriculture). Among the employers surveyed by the LFS, the group is evenly split between formal and informal enterprises. More than half of all formal employers are small firms employing less than 5 workers.

Figure 7: Distribution of the Employed in Formal and Informal Jobs, 2009
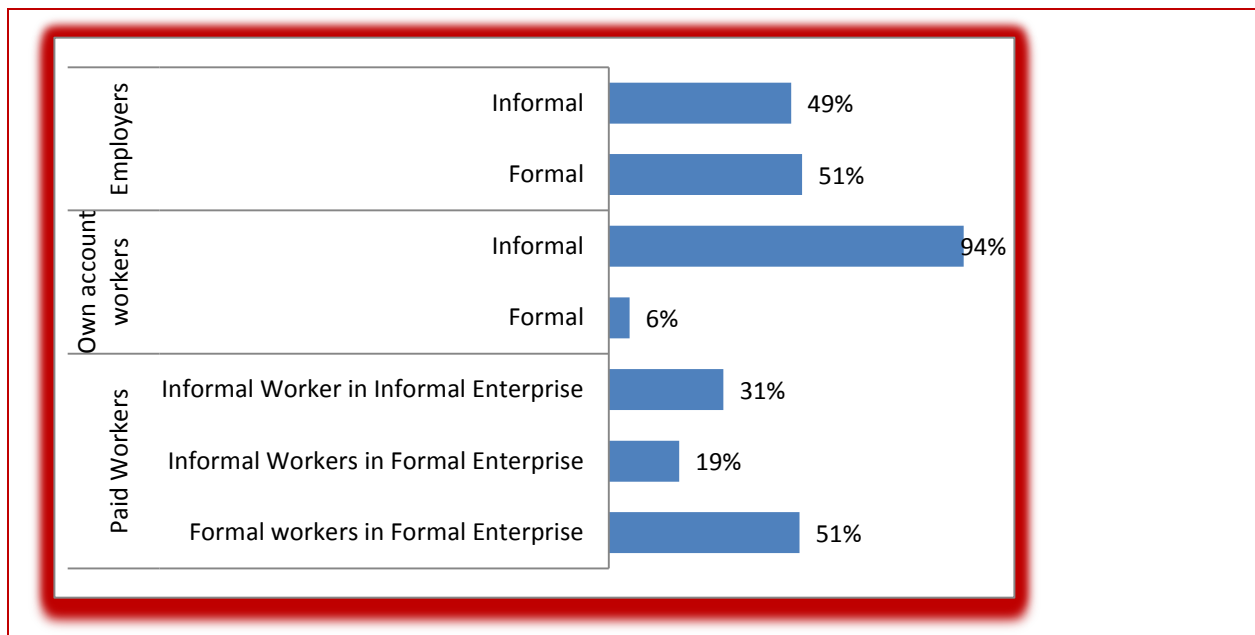
Source: Staff calculations using LFS survey, 2009. Percentages add to a hundred within job status categories. Unpaid category is not shown because all unpaid workers are informal workers. A formal enterprise/employer/own account worker is one which is registered under

25

employees' provident fund or Inland Revenue Department, maintains a system of formal written accounts, and has 5 or more employees. Informal paid workers are those who do not receive any benefits (pension or paid leave).

Paid informal sector workers earn less than formal sector workers on average (Table 12). For women, the average informal sector earnings are about 40 percent of formal sector earnings; for men the average informal sector earnings are about 55 percent of formal sector earnings. This wage gap could arise from differences in workers' education levels and occupations. Women earn less than men in both formal and informal work. The paper explores earnings gaps and determinants in sections that follow.

Table 12: Real Mean Monthly Earnings, Formal and Informal Sector Workers, 2009

	Women (LKR)	Men (LKR)
Formal	6,705.17	8,502.87
Informal	2,611.71	4,691.59

Source: Staff calculations using LFS survey, 2009. Nominal monthly wages were deflated using the New Colombo Consumers' Price Index CCPI(N)) with 2002 as base year.

What are the characteristics of those who work in informal and formal jobs?

An empirical pattern in job type that merits further analysis is the coexistence of formal public sector jobs with informal private sector jobs. In the case of public sector employment, greater benefits (wage and non-wage) associated with these jobs, as well as periodic recruitment drives by the government, have contributed to the creation of a sizeable share of employment in the public sector (World Bank 2006).

What explains the prevalence of informal jobs in Sri Lanka? Structural change, as the economy sheds jobs in the declining sector (agriculture) and the expanding sector (services) absorbs workers with a lag, could be one reason for informal work (Bivens and Gammage 2005). A breakdown of informality by industry shows that there is a large share of informal employment, both unpaid work and own account work, in the declining sector (agriculture, fishing and mining) (Table 13). In the expanding sectors, informal work, mainly own account work and informal work in informal enterprises, is high in certain types of services such as (wholesale/retail trade and paid workers in private households)[8] and in construction.

Another reason for informality could be the employment protection laws such as TEWA and wage setting, which are effective in protecting jobs and preventing job loss but raise the cost of hiring formal workers (World Bank 2006). A reflection of the greater cost of hiring formal workers could be the hiring of informal workers in formal enterprises. Table 13 shows that informal paid work in formal enterprise is prevalent in manufacturing and electricity/gas/water supply/construction and certain services sectors such as hotels and restaurants, transport and storage, financial intermediation and real estate and other community, social and personal services.

---

[8] This industrial category includes goods-producing activities of private households for own use. These are mostly daily wage earners.

Table 13: Percent of Formal and Informal Workers Across Industry Groups, 2009

	formal paid work	Informal paid work in formal enterprise	informal paid work in informal enterprise	own account work, formal	own account work, informal	employer, formal enterprise	employer, informal enterprise	Unpaid family work	Total
Agriculture, Fishing, and Mining	13%	5%	14%	1%	43%	0%	1%	23%	100%
Manufacturing	40%	18%	11%	1%	20%	2%	2%	6%	100%
Electricity/ Gas/ Water Supply and Construction	9%	14%	66%	0%	6%	2%	2%	1%	100%
Wholesale and retail trade	13%	9%		6%	38%	4%	3%	12%	100%
Hotels and Restaurants	26%	9%		2%	18%	3%	3 %	12%	100%
Transport, Storage, and Communications	17%	22%		2%	32%	1%	1%	1%	100%
Financial Intermediation and Real estate	17%	4%		3%	9%	2%	1%	2%	100%
Public Administration and Defense	7%	0%		0%	0%	0%	0%	0%	100%
Education, health and social work	9%	4%		1%	6%	1%	0%	1%	100%
Other community social and personal services	17%	16%		2%	38%	2%	1%	4%	100%
Private households with employed persons	4%	91%		0%	1%	0%	0%	1%	100%
Total	30%	11%	18%	2%	26%	1%	1%	11%	100%

Source: Staff calculations using LFS surveys.

The characteristics of those employed in informal paid work or public sector paid work are examined using regressions reported in Table A2.2. Regression analysis shows that controlling for employees' human capital, household composition, relationship to household head, marital status, language spoken, and area of residence, men are significantly more likely than women to be employed in informal paid work and the public sector (columns 1 and 2). The probability of being employed in informal work decreases significantly with age, suggesting that young people are more likely to be employed in informal work. In contrast, the probability of being employed in public sector work increases significantly with age, reaching a peak around age 49, close to

the retirement age. International evidence shows that informal sector employment can act as an important first job for youth as they transition from school to formal work (World Bank 2006a). Each additional year of schooling reduces the probability of informal work and raises the probability of public sector employment. Currently, married workers and workers who have high proportion of young children are less likely to be employed in informal work and more likely to be employed in public sector work; this effect of marital status and children likely reflects selection of job seekers into jobs with family friendly benefits.

Analyzing Labor Market Outcomes: Earnings

Empirical Patterns

For all paid workers, real monthly earnings declined by about 5 percent between 2006 and 2009 (Table 14). Overall monthly earnings increased between 2006 and 2007, declined in 2008 and then increased modestly in 2009 with the result that there is a net decline between 2006 and 2009. Other sources of wage data show a similar trend (World Bank 2010). The decline in earnings over this period is estimated to be the largest for those employed in semi-government jobs and smallest for those employed in private sector jobs. High inflation between 2006 and 2009 is one source of reduction in real earnings. Another potential source for the lack of growth in real earnings could be the large working age cohort that created a downward pressure on wages.

Men earn between 30 to 36 percent more than women in private sector and semi-government organizations; there is gender parity in earnings in the public sector (Table 14). Looking at earnings overall, female earnings appear to be quite close to male earnings. However, a closer look within sectors shows that on average, women earn much less than men in semi-government and private sector but earn the same as men in the public sector.[9] Women's lower earnings in the private sector and semi-government sector could be due to their lower education, lower labor market experience, and other worker characteristics or due to discrimination by employers. Past studies in Sri Lanka have found that differences in education or experience explain only a small portion of the gender gap in earnings; most of the differences remain "unexplained" and indicate discrimination by employers (see studies reviewed in World Bank 2006). Compared to the large gender gap in wages in private and semi-government jobs, gender parity in earnings in the public sector can act as a strong incentive for women to seek public sector employment.

The public sector and semi-government sector show an earnings premium relative to the private sector; public sector earnings are higher than semi-government earnings. The public sector earnings premium is larger for women than men because women earn the same as men in the public sector but earn substantially less in the private or semi-government sector. For example, from Table 14 in 2009, women's monthly earnings in the public sector were more than 2 times that of private sector earnings and about 1.7 times semi-government earnings. Similarly for men in 2009, public sector earnings were about 1.5 times the private sector earnings and about 1.2

---

[9] Semi-government organizations include tea and rubber estates.

times semi-government earnings. There is also a smaller semi-government sector premium relative to the private sector. As with the gender gap in earnings, the public sector and semi-government earnings premium over private sector earnings could be due to a range of differences in education and labor market experience. The section on earnings explores this earnings premium further.

Table 14: Trends in Real Mean Monthly Earnings, 2006-2009

	Mean Earnings LKR		growth rate 2006-2009		Unadjusted Gender Earnings Gap (% difference between Male and Female Earnings)
Overall	Women	Men			
2006	8,607.61	9,293.39			7%
2007	9,233.18	9,548.86			3%
2008	7,982.69	8,431.19			5%
2009	8,048.43	8,794.49	-6%	-5%	8%
Public sector					
2006	9,672.66	9,785.55			1%
2007	10,163.18	10,149.85			0%
2008	9,440.47	9,166.88			-3%
2009	9,197.26	9,335.19	-5%	-5%	1%
Semi-government					
2006	5,925.77	8,310.78			29%
2007	6,837.22	8,252.93			17%
2008	4,998.25	7,095.74			30%
2009	5,384.34	7,746.04	-9%	-7%	30%
Private sector					
2006	4,018.62	6,269.09			36%
2007	3,941.97	6,057.38			35%
2008	3,860.45	5,761.75			33%
2009	3,944.31	6,115.63	-2%	-2%	36%

Source: Staff estimations using LFS survey, 2006-2009. Nominal monthly wages were deflated using the New Colombo Consumers' Price Index (CCPI(N)) with 2002 as base year.

What are the returns to schooling and experience, and how large is the public sector wage premium?

The earnings differentials between men and women and across public and non-public sectors can be better understood by examining the impact of worker characteristics, particularly education and experience, on earnings. Results from a Mincerian earnings regression are reported in Table A2.3-A2.5. Table A2.3 present Heckman selectivity corrected maximum likelihood (ML) estimates, which first estimate selection into paid work sample, and then the earnings regression, adjusting for this selection; Ordinary Least Squares (OLS) estimates are also reported for

comparison. The last three rows of Table A2.3 show that there is statistically significant correlation between the error terms of the selection and earnings regression. This correlation makes the Heckman selection corrected estimates of the earnings regression the preferred estimates; the OLS estimates of earnings regression that are not correct for sample selection will be biased (see Annex 2 for more details on the empirical model).

After controlling for education and a host of employee characteristics, men earn about 35 percent more than women (column 2, Table A2.3). This adjusted gender gap in earnings is much larger than the unadjusted, or raw, gender earnings gap of about 8 percent reported in Table 14. The selection corrected earnings regressions show that men have greater returns to schooling and experience in the labor market. The returns to education are 3 percent for women and 8 percent for men (columns 7 and 12).[10] The returns to potential labor market experience are concave, reaching a maximum at 36 years of experience for women and 28 years of experience for men.

Table A2.3 shows that there is a large public sector premium in earnings which remains even after adjusting for selection into paid work and employees' characteristics. Controlling for employee characteristics and allowing for selection into paid work, employment in the public sector leads to 52 percent higher earnings for women and 33 percent higher earnings for men. Table A2.5 reports results from Mincerian earnings regressions that further investigate the public sector wage premium. In Table A2.5, the earnings regression is estimated separately for two samples of paid workers – those who are employed in private or public sector (columns 1-4) and those who are employed in private or semi-government sector (columns 5-8). The public sector earnings premium exists only for public sector employees relative to those in the private sector but not for semi-government employees. For women and men, being employed in the public sector increases earnings by about 20 percent (Table A2.5, columns 1 and 4). Each additional year of education further adds to the public sector premium relative to the private sector; for women, each additional year of experience is a further addition to the public sector earnings premium. With returns to education being already high for men, the results in columns 1 and 4 suggest that the public sector premium is quite large for men.

In the sub-sample of employees working in private or semi-government, controlling for selection into paid work and a range of employee characteristics reduces the earnings premium associated with semi-government into an earnings disadvantage – semi-government workers earn significantly less than private sector workers (Table A2.5, columns 5 and 6). However, each additional year of education improves the returns to semi-government work (about 5 percent for women and 4 percent for men).

Way Forward: Policy implications

This paper analyzed the labor market in Sri Lanka from 1992 to2009, during which the country was experiencing a demographic transition, a long-running conflict in the North and the East, inflationary pressures, and towards the end of the period, a global financial crisis. The picture that emerges is of a labor market where female participation is low, unemployment among youth

---

[10] The selection-corrected returns to education estimates for women are almost a third of the OLS estimates suggesting that the impact of education is to increase women's probability of selecting paid work.

and women high, and the private sector dominated by informal work. The public sector appears to be a preferred employer of choice - a perception perhaps reinforced by the prevalence of informal jobs that offer little job security or benefits, which in turn is an outcome of certain labor market regulations((USAID 2006); World Bank (2006)). Looking ahead, demographic projections suggest that if the current demographic trends continue, then the labor force will start to shrink after 2026.

Recovering from the conflict in the North and the East, Sri Lanka aims to accelerate growth in the medium term by substantially increasing investments. The economy is also shifting away from agriculture to jobs in the service sector. What will be the role of the labor market in delivering this growth and responding to the sectoral shifts? Based on the empirical analysis, two areas for immediate policy attention emerge clearly: increasing female labor force participation and addressing the high youth and female unemployment and its causes. In addition to addressing labor force participation and unemployment, it is important to address labor market regulations that stifle job creation and promote informality. The World Bank (2006b) recommends replacing "job" protection with "workers" social protection along with protection of basic worker rights.

Interventions that could be effective in addressing female labor force participation and youth unemployment include employment services (such as counseling and job search assistance) and training; child care services; and demand side interventions such as firm certification and wage subsidies. Sri Lanka already has several such interventions available such as provision of vocational training and job search services such as JobsNet. To make these interventions effective, it is important to learn from international experience.

- Training with curriculum content designed to meet the needs of the local labor market has been effective, particularly for women. One example is a program in Peru, ProJoven, which provided vocational training to 16-24 year olds between 1996 and 2003 (see Katz (2008)). Women with young children received a double monthly stipend. This program was effective in increasing women's employment more than men's; the program also had a significant impact on total monthly earnings. In addition, the program reduced occupational segregation

- Publicly funded child care has been effective in increasing labor force participation in certain settings (literature from LAC, U.S. and Canada). Provision of child care, particularly in urban settings, could be effective given that regression analysis suggests that the presence of young children deter female work.

- On the demand side, firm certification is an intervention aimed at improving women's participation in the private sector that has been tested in Mexico (and currently is being tested in 4 other countries including the Dominican Republic and Egypt). Firm certification is a process whereby firms are offered steps and tools to create equal development opportunities for women and men. Once a firm adopts these steps, it receives a Gender Equality Model certification valid for 2 years. Preliminary results from the impact evaluation of firm certification in Mexico suggest that such a certification

process reduced the gender wage gap in firms and removed discriminatory hiring practices (Pungiluppi, Castro and Munoz-Boudet 2010).

References

Agüero, Jorge M., and Mindy S. Marks. "Motherhood and Female Labor Force Participation: Evidence from Infertility Shocks." American Economic Review 98, no. 2 (2008): 500-504.

Angrist, Joshua D., and William N. Evans. "Children and their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size," ." American Economic Review 88, no. 3 (1998): 450-477.

Arunatilake, Nisha, and Priyanka Jayawardena. "Explaining Labor Market Imbalance in Sri Lanka: Evidence from Jobsnet Data." Chap. 3 in The Challenge of Youth Employment in Sri Lanka, by Ramani Gunatilaka, Markus Mayer and Milan Vodopivec, 51-71. Washington, DC: The World Bank, 2010a.

Arunatilake, Nisha, and Priyanka Jayawardena. "Labor Market Trends and Outcomes in Sri Lanka." Chap. 1 in The Challenge of Youth Employment in Sri Lanka, by Ramani Gunatilaka, Markus Mayer and Milan Vodopivec, 1-17. Washington DC: The World Bank, 2010b.

Asian Development Bank and World Bank. Sri Lanka: Improving the rural and urban investment climate. Washington DC: The World Bank, 2004.

Bivens, L. Josh, and Sarah Gammage. "Will Better Workers Lead to Better Jobs in the Developing World?" In Good Jobs, Bad Jobs, No Jobs, by Tony Avirgan, L. Josh Bivens and Sarah Gammage, 1-31. Washington DC: Economic Policy Institute, 2005.

Bloom, D., D. Canning, and J. Sevilla. "The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change." (RAND Corporation) 2003.

Buvinic, Mayra, Trine Lunde, and Nistha Sinha. "Investing in Gender Equality: Looking Ahead." Economic Premise, January 2010.

Center for Poverty Analysis. "Moving Out of Poverty in Conflict - Affected Areas in Sri Lanka." Colombo, 2006.

Chun, H, and J Oh. "An instrumental variable estimate of the effect of fertility on the labour force participation of married women." Applied Economics Letters 9 (2002): 631-634.

De Silva, Indralal. forthcoming.

Dougherty, Christopher. "The Marriage Earnings Premium as a Distributed Fixed Effect." Journal of Human Resources 41 (2006): 433-443.

Ehrenberg, Ronald G., and Robert S. Smith. Modern Labor Economics: Theory and Public Policy. Scott, Foresman and Company, 1987.

Eichengreen, Barry, and Poonam Gupta. The Service Sector as India's Road to Economic Growth. NBER Working Paper Series, Cambridge, MA 02138: National Bureau of Economic Research, 2011.

Engelhardt, Henriette, and Alexia Prskawetz. "On the changing correlation between fertility and female employment over space and time." MPIDR Working Paper, 2002.

Fares, Jean, Claudio E. Montenegro, and Peter F. Orazem. "How are Youth Faring in the Labor Market? Evidence from Around the World." Background Paper for World Development Report 2007, 2006.

Goldin, Claudia. "The U-Shaped Female Labor Force Function in Economic Development and Economic History." In Investment in Women's Human Capital and Economic Development, edited by T. Paul Schultz, 61-90. Universit of Chicago Press, 1994.

ILO. Women in the Labour Markets: Measuring progress and identifying challenges. Geneva: International Labour Organization, 2010.

Katz, Elizabeth. Programs Promoting Young Women's Employment: What Works? The Adolescent Girls Intiative; The World Bank, 2008.

Katz, Lawrence F., and Kevin Murphy. "Changes in Relative Wages, 1963-1987: Supply and Demand Factors." Quarterly Journal of Economics 107 (1992): 35-78.

Korenman, Sanders, and David Neumark. Cohort Crowding and Youth Labor Markets: A Cross-National Analysis. Working Paper Series, Cambridge, MA: National Bureau of Economic Research, 1997.

Korenman, Sanders, and David Neumark. "Marriage, Motherhood, and Wages." Journal of Human Resources 27, no. 2 (1992): 233-255.

Korenmark, Sanders, and David Neumark. "Does Marriage Really Make Men More Productive?" Journal of Human Resources 26, no. 2 (1991): 282-307.

Lam, David, and Suzanne Duryea. "Effects of Schooling on Fertility, Labor Supply, and Investments in Children, with Evidence from Brazil." Journal of Human Resources 34, no. 1 (1999): 160-192.

Madrigal, Lucia, and Pierella Paci. 2010.

Mammen, Kristin, and Christina Paxson. "Women's Work and Economic Development." Journal of Economic Perspectives 14, no. 4 (2000): 141-164.

Orazem, Peter F., and Elizabeth M. King. Schooling in Developing Countries: The Roles of Supply, Demand and Government Policy. Vol. 4, chap. 55 in Handbook of Development Economics, by T. Paul Schultz and John A. Strauss, 3475-3559. Elsevier B.V., 2008.

Pungiluppi, Juliana, Maria Elena Castro, and Ana Maria Munoz-Boudet. A Model for Promoting Gender Equity in Private Companies and in Government Agencies: The GEM Certification Process in Latin America and the Caribbean. En Breve, World Bank, Latin America Region, 2010.

Rama, Martin. "The Sri Lankan Unemployment Problem Revisited." Review of Development Economics 7, no. 3 (2003): 510-525.

Rosenzweig, Mark, and Kenneth Wolpin. "Life-cycle labor supply and fertility: causal inferences from household models." Journal of Political Economy. 88, no. 2 (1980): 328-348.

Szulga, Radek. A dynamic model of female labor force participation rate and human capital investment. Mimeo, UC Davis, 2005.

USAID. "Jobs for the 20th Century: Sri Lanka Assessment." 2006.

Vodopivec, M., and N. Arunatilake. "The Impact of Population Aging on the Labor Market: The Case of Sri Lanka." IZA Working Paper (IZA), 2008.

Welch, Finis. "Effects of Cohort Size on Earnings: The Baby Boom Babies' Financial Bust." Journal of Political Economy 87, no. 5 (1979): S65-S98.

World Bank. "Sri Lanka Economic Update." April 2010.

World Bank. Sri Lanka Poverty Assessment: Engendering Growth with Equity. Poverty Assessment, Washington DC: The World Bank, 2007.

World Bank. Sri Lanka: Addressing the Needs of an Aging Population. South Asia Human Development , 2008.

World Bank. "Sri Lanka: Strengthening Social Protection, Part I." 2006b.

World Bank. "Sri Lanka: Strengthening Social Protection, Part I." 2006.

World Bank. The Towers of Learning: Performance, Peril, and Promise of Higher Education in Sri Lanka. Washington, DC: The International Bank for Reconstruction and Development, 2009.

—. World Development Indicators. The World Bank, 2010.

World Bank. World Development Report 2007: Development and the Next Generation. Washington DC: World Bank, 2006a.

World Bank. World Development Report 2007: Development and the Next Generation. Washington DC: World Bank, 2006.

Annex1: Classification of Countries by Demographic Setting

Table A1: All countries by demographic setting in 2010 and 2015

	Explosion 2010, Explosion 2011		Explosion 2010, Early Trans. 2015	Early Trans. 2010, Early Trans. 2015	Early Trans. 2010 , Transition 2015	Transition 2010, Transition 2015		Transition 2010, Implosion 2015	Implosion 2010, Implosion 2015
SAR	Afghanistan *			Nepal * Pakistan	Bangladesh Bhutan India	Maldives Sri Lanka			
AFR	Angola * Benin Burkina Faso Cameroon** Central Afr. Rep.** Chad Côte d'Ivoire DR of Congo * Ethiopia Equatorial Guinea Gambia Guinea Guinea-Bissau Kenya Lesotho**	Liberia * Madagascar Malawi** Mali Mozambique*** Niger Nigeria Rwanda * Senegal Sierra Leone * Somalia Tanzania** Uganda** Zambia**	Congo Eritrea Sao Tome and Principe Sudan Swaziland* Togo Zimbabwe**	Botswana* Burundi * Cape Verde Comoros Djibouti Gabon* Namibia* Ghana Mauritania	South Africa*	Mauritius			
EAP	Timor-Leste Tonga		Samoa	Cambodia Lao PDR Micronesia Papua New Guinea Philippines Solomon Islands Vanuatu	Fiji	China Indonesia Korea, Rep. Malaysia	Mongolia Myanmar Thailand Vietnam		
ECA				Tajikistan	Uzbekistan	Albania Armenia Azerbaijan Belarus Kazakhstan Kyrgyzstan	Macedonia Moldova Montenegro Turkey Turkmenistan	Bosnia and Herzegovina Georgia Poland Russia Serbia	Bulgaria Croatia Romania Ukraine

LCR	Guatemala **			Belize Bolivia Haiti Honduras Nicaragua Paraguay	Dominican Republic Ecuador El Salvador	Argentina Brazil Chile Colombia Costa Rica Grenada Guyana Jamaica Mexico	Panama Peru Saint Lucia Saint Vincent & the Grenadines Suriname Trinidad &Tobago Uruguay Venezuela		
MNA	Yemen, Rep.		Iraq**	Egypt Jordan Syria		Algeria Iran Lebanon	Libya Morocco Tunisia		

*Countries affected by high HIV-AIDS, **Countries-affected by violent conflict, ***Countries affected by both high HIV-AIDS and violent conflict. Notes: Explosion: over 40 percent of population below age 20; Early transition: over 40 percent below age 20, but with 45 percent or more age 20-59; Transition: over 50 percent between 20-59 yrs; Implosion: over 20 percent above 60 yrs. Source :adapted from Buvinic, Lunde and Sinha (2010).

Annex 2: Empirical Models

Regression analysis of determinants of labor market outcomes (labor force participation, probability of being unemployed, probability of engaging in temporary/casual work, and probability of being employed in public sector job) are based on the following empirical equation,

$$\Pr(labor\ market\ outcome)_{it} = \alpha + \beta X_{it} + \gamma H_{it} + \delta t + e_{it} \tag{1}$$

Using pooled cross-sectional data from LFS 2006, 2007, 2008, and 2009, equation (1) is estimated as a Probit regression, where the probability of a certain labor market outcome for a working age adult i is regressed on a set of individual characteristics X (age, square of age, gender, years of education, currently married, widowed or divorced), household characteristics H (ethnic group, sector of residence) and, a time dummy. Marginal effects from this Probit model regression are reported in tables A2.1 and A2.2.

For a subset of those employed in paid work, earnings regression provide estimates of returns to education and potential experience (age – schooling - 5). OLS and Maximum Likelihood (MLE) estimates of equation 2 are reported in tables A2.3-A2.5. These regression estimates correct for the selection into paid work (using marital status and household composition as exclusion restrictions).[11]

$$Ln\ (monthly\ earnings) \quad = \alpha + \beta X_{it} + \gamma H_{it} + \delta t + e_{it} \tag{2}$$

The variables include individual characteristics X (potential experience, square of potential experience, gender, years of education, whether in public sector, currently married, widowed or divorced), household characteristics H (ethnic group, sector of residence) and, a time dummy.

---

[11] There is a large literature discussing ways to deal with selection issues in cross-sectional data. In the current case marital status and household composition are used to predict selection into labor force participation but are excluded from the earnings regression because there is no a priori reason to believe that these variables directly affect earnings.

Table A2.1: Determinants of labor force participation and probability of being unemployed: Probit Marginal Effects

VARIABLES	(All) lfp	(Women) lfp	(Men) lfp	(All) unemployed	(Women) unemployed	(Men) unemployed
Male	0.472***			-0.0575***		
	(0.00775)			(0.00645)		
Age	0.0857***	0.0685***	0.0571***	-0.0123***	-0.0143***	-0.00923***
	(0.000788)	(0.000987)	(0.000666)	(0.000457)	(0.00106)	(0.000376)
Agesq	-0.00106***	-0.000860***	-0.000728***	0.000117***	9.48e-05***	0.000102***
	(9.46e-06)	(1.21e-05)	(8.03e-06)	(5.77e-06)	(1.38e-05)	(4.64e-06)
Less than O levels	0.0841***	0.0235**	0.108***	0.0111*	0.0260*	-0.00708
	(0.00806)	(0.00988)	(0.00526)	(0.00630)	(0.0139)	(0.00545)
O levels	0.0573***	-0.0365***	0.113***	0.0399***	0.0690***	0.00835
	(0.00891)	(0.0103)	(0.00558)	(0.00746)	(0.0155)	(0.00621)
A levels	0.0362***	-0.0272**	0.0637***	0.0726***	0.108***	0.0272***
	(0.00925)	(0.0107)	(0.00493)	(0.0103)	(0.0190)	(0.00848)
University	0.184***	0.191***	0.0784***	0.0790***	0.113***	0.0287***
	(0.00761)	(0.0108)	(0.00393)	(0.0107)	(0.0179)	(0.00891)
Married	-0.0301***	-0.163***	0.111***	-0.0345***	-0.0148***	-0.0520***
	(0.00541)	(0.00733)	(0.00535)	(0.00265)	(0.00526)	(0.00335)
Widowed/separated	0.00522	-0.0534***	-0.0110	-0.0159***	0.00397	-0.0124***
	(0.00767)	(0.00894)	(0.00910)	(0.00315)	(0.00805)	(0.00372)
Sinhala	0.0824***	0.141***	0.00171	-0.0114***	-0.0190**	-0.00710**
	(0.00637)	(0.00814)	(0.00410)	(0.00372)	(0.00884)	(0.00293)
Share of hh members aged less than 5 years	-0.175***	-0.359***	-0.00990	-0.000874	0.0535***	-0.0262***
	(0.0122)	(0.0166)	(0.0136)	(0.00684)	(0.0142)	(0.00755)
Share of hh members 65+	-0.0543***	-0.0136	-0.0755***	-0.00692	-0.0116	-0.00404
	(0.0119)	(0.0148)	(0.0102)	(0.00577)	(0.0130)	(0.00546)
Child of household head	0.0375***	0.0124**	0.00598*	0.0162***	0.0416***	0.0104***
	(0.00455)	(0.00633)	(0.00359)	(0.00214)	(0.00512)	(0.00199)
Urban	-0.0476***	-0.0656***	-0.0160***	-0.00614**	-0.0234***	0.000947
	(0.00558)	(0.00726)	(0.00415)	(0.00307)	(0.00637)	(0.00267)
estate	0.172***	0.314***	-0.000336	-0.0276***	-0.0700***	-0.00641*
	(0.00731)	(0.0113)	(0.00642)	(0.00326)	(0.00612)	(0.00349)
Year	-0.00717***	-0.00708***	-0.00476***	-0.000243	-0.00276	0.000875
	(0.00156)	(0.00210)	(0.00108)	(0.000782)	(0.00169)	(0.000659)
Male*Educ	-0.00477***			-0.000712		
	(0.000869)			(0.000448)		
Province dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	181348	95691	85657	112831	42402	70429

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2.2: Determinants of being employed in informal paid work
and in public sector: Marginal Effects from a Probit regression

VARIABLES	(1) Women and Men Informal employee	(2) Women and Men Public sector employee
Male	0.329***	0.0750***
	(0.0142)	(0.0173)
Male*educ	-0.0165***	-0.0123***
	(0.00133)	(0.00147)
Age	-0.0428***	0.0493***
	(0.00168)	(0.00171)
Agesq	0.000479***	-0.000496***
	(2.04e-05)	(2.05e-05)
educlevel	-0.0615***	0.0646***
	(0.00140)	(0.00152)
Married	-0.0481***	0.0557***
	(0.00818)	(0.00761)
Sinhala	0.00361	0.0991***
	(0.0137)	(0.0102)
hhunder5	-0.0175	0.0960***
	(0.0242)	(0.0223)
Urban	-0.0357***	-0.0112
	(0.0101)	(0.00918)
Observations	59169	49079

Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1. Marginal
Effects at means of variables. Other variables include proportion of household
members aged 64 or older; whether employee is child of household head, whether
employee was previously married, residence in estate areas, province and year dummies.

Table A2.3: Mincerian earnings regression: OLS and Heckman Selection model Maximum Likelihood estimates

VARIABLES	(1) all no selection correction lnearnings	(2) ALL Selection corrected lnearnings	Pr(paid Employee)	(3) women no selection correction lnearnings	(4) Women Selection Model lnearnings	Pr(paid Employee)	(5) men no selection correction lnearnings	(6) Men Selection Model lnearnings	Pr(paid Employee)
educlevel	0.0856***	0.0879***	0.0643***	0.0870***	0.0279***	0.0545***	0.0788***	0.0811***	0.0553***
	(0.00331)	(0.00335)	(0.00249)	(0.00436)	(0.00419)	(0.00225)	(0.00378)	(0.00379)	(0.00218)
married			-0.331***			-0.198***			-0.201***
			(0.0153)			(0.0182)			(0.0179)
prevlymarried			-0.188***			-0.164***			-0.144***
			(0.0256)			(0.0224)			(0.0455)
sinhala	0.00663	-0.000493	-0.193***	-0.0502	0.270***	-0.345***	0.0493**	0.0440*	-0.118***
	(0.0210)	(0.0211)	(0.0282)	(0.0338)	(0.0454)	(0.0405)	(0.0242)	(0.0242)	(0.0268)
hhunder5			0.293***			0.133***			0.355***
			(0.0446)			(0.0430)			(0.0501)
hhover64			0.150***			0.0641*			0.141***
			(0.0430)			(0.0339)			(0.0534)
child			0.123***			0.131***			0.0685***
			(0.0140)			(0.0153)			(0.0165)
urban	0.112***	0.117***	0.131***	0.130***	-0.0679*	0.257***	0.104***	0.107***	0.0692***
	(0.0209)	(0.0209)	(0.0218)	(0.0329)	(0.0375)	(0.0306)	(0.0233)	(0.0233)	(0.0231)
estate	-0.141***	-0.0955***	1.357***	-0.0727*	-1.081***	1.141***	-0.201***	-0.156***	1.172***
	(0.0292)	(0.0293)	(0.0531)	(0.0412)	(0.0626)	(0.0733)	(0.0335)	(0.0334)	(0.0494)
time	-0.0138	-0.0130	0.0225***	-0.0174	-0.0193	0.00127	-0.0171	-0.0158	0.0265***
	(0.0161)	(0.0161)	(0.00651)	(0.0215)	(0.0194)	(0.00777)	(0.0201)	(0.0201)	(0.00688)
male	0.346***	0.347***	0.0643**						
	(0.0305)	(0.0307)	(0.0281)						
maleeduc	-0.00566**	-0.00592**	-0.00944***						
	(0.00268)	(0.00270)	(0.00251)						
educ_time	0.000170	0.000166		0.000169	-0.000484		0.000519	0.000507	
	(0.00142)	(0.00142)		(0.00182)	(0.00151)		(0.00181)	(0.00181)	
experience	0.0380***	0.0371***		0.0269***	0.0380***		0.0449***	0.0444***	
	(0.00189)	(0.00189)		(0.00283)	(0.00209)		(0.00246)	(0.00246)	
expsquare	-0.000612***	-0.000601***		-0.000373***	-0.000522***		-0.000755***	-0.000749***	
	(3.69e-05)	(3.69e-05)		(5.45e-05)	(4.11e-05)		(4.81e-05)	(4.80e-05)	
pubsector	0.429***	0.428***		0.584***	0.517***		0.328***	0.328***	
	(0.0145)	(0.0145)		(0.0246)	(0.0193)		(0.0167)	(0.0167)	
Constant	6.851***	6.803***	-0.000908	6.919***	7.925***	0.0386	7.142***	7.083***	-0.101**
	(0.0460)	(0.0471)	(0.0447)	(0.0614)	(0.0676)	(0.0508)	(0.0540)	(0.0550)	(0.0412)
Province dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES

VARIABLES	(1) all no selection correction lnearnings	(2) ALL Selection corrected lnearnings	Pr(paid Employee)	(3) women no selection correction lnearnings	(4) Women Selection Model lnearnings	Pr(paid Employee)	(5) men no selection correction lnearnings	(6) Men Selection Model lnearnings	Pr(paid Employee)
Observations	48556	91594	91594	18311	34117	34117	30245	57477	57477
R-squared	0.158			0.187			0.127		
rho		0.0590	0.0590		-0.975	-0.975		0.0653	0.0653
chi2_c		8.484	8.484		7775	7775		6.949	6.949
p_c		0.00358	0.00358		0	0		0.00839	0.00839

Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

Selection model exclusion restrictions: marital status and household composition variables affect probability of being a paid employee but do not directly affect earnings.

Table A2.4: Selection Corrected Mincerian earnings regression: Marginal Effects from MLE estimation (Marginal Effects at means of variables)

VARIABLES	(1) all	(2) Women	(3) men
educlevel	0.287***	0.241***	0.264***
	(0.00871)	(0.00743)	(0.00788)
experience	0.0201***	0.0196***	0.0238***
	(0.00103)	(0.00106)	(0.00132)
expsquare	-0.000325***	-0.000269***	-0.000402***
	(2.00e-05)	(2.06e-05)	(2.57e-05)
pubsector	0.220***	0.227***	0.169***
	(0.00787)	(0.0101)	(0.00889)
Male	0.369***		
	(0.0950)		
Observations	91594	34117	57477

Table A2.5: Mincerian earnings regression: OLS and Heckman selection corrected MLE estimates, Testing Wage Gap Between Public and Private Sector Employment

VARIABLES	(1) women pub-pvt lnearnings	(2) employee	(5) men pub-pvt lnearnings	(6) employee	(9) women semipub-pvt lnearnings	(10) employee	(13) men semipub-pvt lnearnings	(14) employee
educlevel	0.0185***	0.0523***	0.0756***	0.0499***	0.0519***	0.0172***	0.0719***	0.0202***
	(0.00389)	(0.00228)	(0.00323)	(0.00221)	(0.00393)	(0.00243)	(0.00320)	(0.00225)
educ_pub	0.0140**		0.0132**		0.0501***		0.0382***	
	(0.00693)		(0.00655)		(0.00638)		(0.00576)	
experience	0.0338***		0.0427***		0.0407***		0.0422***	
	(0.00239)		(0.00268)		(0.00240)		(0.00268)	
exp_pub	0.0104**		-0.00530		0.0140		0.0188*	
	(0.00519)		(0.00793)		(0.0103)		(0.0109)	
expsquare	-0.000505***		-0.000764***		-0.000615***		-0.000758***	
	(4.36e-05)		(5.30e-05)		(4.32e-05)		(5.30e-05)	
exp2_pub	-2.33e-05		0.000242		-5.87e-05		-0.000101	
	(0.000110)		(0.000152)		(0.000218)		(0.000196)	
pubsector	0.215*		0.204*		-0.404***		-0.566***	
	(0.111)		(0.118)		(0.140)		(0.147)	
Constant	8.105***	0.0447	7.161***	-0.0474	7.747***	0.369***	7.222***	0.297***
	(0.0691)	(0.0517)	(0.0541)	(0.0416)	(0.0719)	(0.0549)	(0.0548)	(0.0426)
Observations	32181	32181	54534	54534	29623	29623	51675	51675
rho	-0.975	-0.975	0.0774	0.0774	-0.967	-0.967	0.0742	0.0742
chi2_c	7166	7166	9.690	9.690	4685	4685	8.727	8.727
p_c	0	0	0.00185	0.00185	0	0	0.00314	0.00314

Table A2.6: Expected earnings regression: OLS

VARIABLES	(1) all lnexpected_earnings
age	0.0520***
	(0.0112)
agesq	-0.000672***
	(0.000169)
educlevel	0.0815***
	(0.0123)
married	-0.0763*
	(0.0433)
prevlymarried	-0.0221
	(0.117)
sinhala	-0.114**
	(0.0583)
hhunder5	0.0641
	(0.163)
hhover64	-0.140
	(0.135)
child	0.000336
	(0.0394)
urban	0.0251
	(0.0470)
estate	-0.0740
	(0.0675)
year	0.164***
	(0.0125)
male	0.639***
	(0.175)
maleeduc	-0.0323**
	(0.0143)
Constant	-321.1***
	(25.16)
Province dummies	Yes
Observations	6776
R-squared	0.068
rho	e(rho)
chi2_c	e(chi2_c)
p_c	e(p_c)

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$