

Challenges for Youth Employment in Pakistan

Are They Youth-Specific?

Xiaohui Hou

The World Bank
South Asia Region
Human Development Unit
January 2011



Abstract

This paper analyzes the patterns of and the challenges for youth employment in Pakistan and examines whether these challenges are youth-specific. Using the 2005/2006 Labor Force Survey, the analysis includes determinants of unemployment, determinants of working in the formal sector, rate of return on education, and determinants of working hours. The paper finds that many of the challenges to youth employment in Pakistan are not

youth-specific. Policies should thus emphasize broader labor market reforms, even in the context of tackling youth employment issues. Still, some challenges are youth-specific, such as a higher youth unemployment rate and insufficient returns to better-educated youth. To address these challenges, more youth-specific interventions are needed.

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Challenges for Youth Employment in Pakistan: Are They Youth-Specific?¹

Xiaohui Hou, Ph.D.
Economist
The World Bank Group
1818 H. St. NW
Washington DC, 20433
xhou@worldbank.org
Tel: 202-473-7773

JEL code: J13 D01 O12

Key words: Youth Employment, Labor Market, Poverty, Pakistan

¹ This paper has greatly benefited from discussions with Binayak Sen, Dhushyanth Raju, Lire Ersado, Maria Laura Sanchez Puerta, Mansoor Rashid, Nobuo Yoshida, and Tara Vishwanath,. I would also like to thank Tomoyuki Sho for his excellent assistance in preparing the data and Virginia Robano for helping with the tables. As usual, the findings, interpretations, and conclusions expressed in this paper are entirely those of the author and should not be attributed in any manner to the World Bank, to its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent.

1. Introduction

Youth employment is a challenging issue in many developing and transitional countries (Kolev and Saget 2005). The youth unemployment rate is usually two times to three times that of the adult unemployment rate. And this figure is probably an underestimate because it normally does not account for those who are “discouraged” in seeking work and remain “inactive” (neither in school nor in the labor market). Even most of the working youth in developing countries are in low-quality jobs without any security or social benefits, receiving low wages, and working in poor conditions. The ILO (2006) estimates that globally about 23 percent of the total young work force are “young working poor,” with earnings of less than \$1 a day.

To increase the awareness of and stimulate more interventions around youth issues, the 2007 World Development Report (World Bank 2007) summarizes the challenges to youth and stresses the necessity of investing in youth in developing countries, especially smoothing the transition from school to work and creating more opportunities for youth employment. However, before formal intervention plans are developed, a diagnostic analysis of the overall labor market, and specifically the youth labor market, should be carried out.

In the case of Pakistan, there is a growing recognition of the political urgency to respond to the challenges of youth employment. The challenges are multi-faceted. The transition from school to the labor market is not smooth; the youth unemployment rate is higher than the adult unemployment rate; many young people work in the informal sector as unpaid family workers, own-account, or casual wage workers; and female youth are in worse shape than their male counterparts on various employment dimensions.

However, an analysis of youth employment cannot be separated from the overall labor market analysis. Pakistan has a unique labor market, and many characteristics of the youth labor

market are present in the general labor market as well. Thus, to understand the challenges in the youth labor market, one must first know whether these challenges are youth-specific.

Understanding these questions can better guide the policy makers to allocate limited resources to youth-specific interventions or to interventions with a much broader target.

The objectives of this paper are to analyze the patterns and the challenges of youth employment in Pakistan and to determine whether these challenges are youth-specific. This paper uses the 2005/2006 Labor Force Survey (LFS), and the analysis covers various dimensions in the labor market, including determinants of unemployment, determinants of working in the formal sector, rate of return on education, and determinants of working hours.

I find that many of the challenges to youth employment in Pakistan are not youth-specific. This suggests that policies should emphasize a broader labor market reform, even in the context of tackling youth employment issues. Still, some challenges are youth-specific, such as the high unemployment rate and insufficient returns to better-educated youth. For these challenges, more youth-specific interventions are needed.

The paper is organized as follows. Section 2 describes the data and the key variables used in the paper. Section 3 presents youth labor market trends and compares the key dimensions of youth employment and adult employment. Section 4 analyzes the determinants of youth activities, and Section 5 analyzes the difference between youth and adults on characteristics associated with being unemployed and working in the formal sector. Section 6 presents the empirical results on rate of return on education for both youth and adults, and Section 7 explores the determinants of total hours worked. Section 8 concludes.

2. Data and Key Variables

2.1. Data

The main analysis uses the Labor Force Survey (LFS) data from 2005/2006. Earlier rounds are also used for the trend analysis. The LFS is conducted every two years, collecting a set of information on various dimensions of a country's civilian labor force, including socio-demographic characteristics, such as age, sex, marital status, level of education, current school enrollment, and migration status, and employment information. Each round of the LFS consists of all urban and rural areas of all provinces defined in the Population Census.¹ The sampling takes two stages. The first stage is the selection of the primary sampling units (PSU),² defined as enumeration blocks³ in the urban areas and mouzas/dehs/villages in the rural areas. The second stage is the selection of secondary sampling unit (SSUs). A specified number of households--i.e. 12 from each urban sample PSU and 16 from each rural sample PSU--are selected using systemic sampling techniques with a random starting point.

Several researchers who have studied the labor market in Pakistan have used the Pakistan Integrated Household Survey (PIHS) or Pakistan Social and Living Standard Measurement (PSLM) Survey. Here I use the LFS because: (1) the LFS data are a representative sample of the labor force; (2) the LFS asks specifically whether the individual (10 years old or above) was actively looking for a job if he/she did not work in the past week, an essential question for defining unemployment; (3) the survey instruments are the same in each round, facilitating trend analysis over a period of years;⁴ and (4) the LFS reports the number of hours worked but the PIHS does not.

2.2. Definition of Key Variables

In this paper, a “youth” is defined as someone between 15 and 24 years of age, and an “adult” as someone between 25 and 65 years of age. Definitions of the key variables used are explained below.

Employed and Unemployed

In the LFS, “employed” is defined as “do any work for pay, profit, or family gain during the past week, for at least one hour on any day” or “help to work for family gain in a family business or family farm during the past week” or “have a job or enterprise such as a shop, business, farm, or service establishment, even if did not work last week for some reason.” “Unemployed” is defined as not engaging in any of the activities listed above but available for work during the past week.

Employment Status and Formal Worker

This paper categorizes employment status into five groups: employer, own-account workers, unpaid family workers, salaried workers, and casual wage workers.⁵ Of these, workers in the informal sector consist of own-account workers, unpaid family workers, and casual wage workers.

Earnings and Hours Worked

Earnings are reported as the total amount earned (both in cash and in kind) from the main work source over the past week. Only paid employees (salaried workers and casual wage workers) report weekly earnings. Total hours worked is the sum of the hours worked in the past seven days for main occupations and for any subsidiary occupations.

Migration

Migration is defined as a dummy and equal to 1 if an individual lived in a district for less than 10 years.

3. Youth Labor Market Trends and a Static Comparison of Youth Employment and Adult Employment

3.1 The Trend of Youth Activities in Pakistan, from 1992 to 2006

In principle, youth can engage in any of the following activities: work and go to school; work only; go to school only; be unemployed; or be inactive.⁶ Figure 1 presents the trend of these five activities for male and female youth in both urban and rural areas. Overall, the activity trends for both male and female youth are similar; however, a higher percentage of youth work in the rural areas than in the urban area. In both urban and rural areas between 1992/1993 and 2005/2006, male youth were more likely to choose to work rather than to continue their education. One possible reason is that economic growth generated more job opportunities for youth, especially in fields that do not require higher education; thus there were no strong incentives for youth to pursue relatively higher education.

In both rural and urban areas, the percentage of unemployed male youth reached its peak in 2001/2002.⁷ This is consistent with the economy dynamic: in 2001/2002 a severe drought and a devastating earthquake hit the economy badly, but by 2003 the economy had recovered and grew quite rapidly until 2006. The trend for female youth activities in the rural areas is more dynamic than that in the urban areas. In the rural areas, female youth employment rate decreased from 1992/1993 to 1998/1999, but then steadily increased. The school enrollment rate also

increased, accompanied by a sharp decline in the rate of “inactivity.” Among youth workers, the trends in employment status and industry share are quite stable.⁸

3.2. Youth Employment and Adult Employment Compared

In this section, I use the latest LFS data 2005/2006 and compare youth employment and adult employment by labor force participation (LFP) rate, unemployment rate, employment status, and industry allocation (Table1).

The LFP rate for male youth is significantly less than that for male adults. However, the male youth unemployment is almost triple the male adult unemployment rate. This is not particular to Pakistan, but very common in many developing countries. The overall LFP rate for women is very low, reflecting the fact that women are discouraged from participating in the labor force. The unemployment rate is high for both female youth and female adults, roughly 10 percent.

In terms of employment status, more adults than youth are formal workers (salaried workers or employers) or own-account workers. There are two possible reasons. First, adults are more competitive in the formal job market, and second, many youth begin their careers in the informal sector (as unpaid family workers, for example) and then gradually become own-account or salaried workers as they get older. Little difference exists in their industry allocations between youth and adult workers, except that male youth are more likely to be in the manufacturing sector while male adults are more likely to be in the service sector.

4. Youth Education and Employment Decisions

4.1. Methods

Youth face a decision whether to continue their education, join the labor force, or stay inactive. A rational decision depends on many factors, including the marginal utility to the household of youth continuing in school, working, or staying inactive, the income constraints, time constraints, and outside opportunities for youth to work. The theoretical model of education and employment decisions has been substantively discussed in the child labor literature (Bhalotra and Heady 2003; Edmonds 2007). In this paper I adapt the reduced form for the youth education and employment decisions.

$$Y(EW, E, W, H) = F(\text{age}, \text{sex}, X), \quad (1)$$

where Y is the decision, EW is both in the labor force and in school, E is in school, W is in the labor force, and H is inactive; HH is household demographic information, and X is the vector of variables including individual and household characteristics.⁹

The four choices can be sequential or simultaneous. For example, youth can choose whether to go to school, then choose whether to join the labor force or stay inactive. Or the choices can be made simultaneously. Because the order of the decisions is subjective in a sequential model, this paper uses a simultaneous model--i.e., a multinomial logit model--to understand which factors are significant in contributing to youth activity decisions (Ersado 2005). Four choices (to be both in labor force and in school; in school; in labor force; and inactive) are estimated, with school as the base outcome (Green 2003).

$$\Pr(\text{activity}=j) = \frac{\exp(\beta_j X_i)}{\sum_{k=0}^3 \exp(\beta_k X_i)}, \quad j = 0, 1, 2, 3,$$

where $j=0$ is in school, $j=1$ is in school and in labor force, $j=2$ is in labor force, and $j=3$ is staying inactive. The relative risk ratios (RRR) are presented.

4.2. Results

Table 2 presents the results for male youth and female youth activity decisions. Two of the findings are common for male and female youth. First, household heads' education and employment status play a significant role in determining youth activity decisions. Youth in a family with a better-educated head and/or employed head (in either the agricultural sector or the non-agricultural sector) are more likely to be in school and less likely to be in the labor force or be inactive. Second, the ratio of working individuals to nonworking individuals in a household has a significant and positive effect on youth's activity decisions, both in statistics and in magnitude. This ratio reflects two specific effects: the income effect and the network effect. The network effect in this context refers to youth who are exposed to greater job opportunities if there are more employed individuals in the family.¹⁰ Since the income effect is the opposite of the network effect (a wealthier family is more likely to keep youth in school), this finding suggests that the network effect outweighs the income effect and the family network can be instrumental in helping youth to find a job and start to work. This finding is consistent with findings from the Pakistan Investment Climate Assessment (PICA) survey that about 50 percent of firms hire employees through a network of family or friends (Hou 2008).

The male youth decision model also shows that older and married male youth are more likely to work. Male youth in families with more young children (0-5 or 6-14 years old) or female youth (15-24 years old) are more likely to work. On the contrary, male youth in a family with more adults or more male youth (15-24 years old) are more likely to be in school. This

finding suggests that households tend to put male youth to work when there are younger children or more girls in the same age range.

The female decision model shows that the majority of female youth remain inactive, neither in the labor force nor in school. Older and married female youth are less likely to be in school than their younger and unmarried counterparts. Household demographic structure plays an important role in determining the activities of female youth. Female youth in families that have more young children (0-5 or 6-14 years old) are more likely to be in the labor force or to stay inactive; female youth in families that have more men in the same age range (15-24 years old) are less likely to be in the labor force and more likely to be inactive; female youth in families that have more older men and women are more likely to be in school. This finding implies that female youth are less likely to be in school when domestic needs increase (such as caring for young children) and there are fewer substitutes (such as older women).

In summary, the analysis shows that in addition to age and sex, some household characteristics are highly correlated with the youth activity decision. Among them, education of household head, household demographic structure, and the ratio of working to non-working individuals are very important determinants.

5. Who Is More Likely to Be Unemployed and to Be Formal Workers?

5.1. Methods

This paper uses a two-part model to understand the likelihood of being unemployed and being a formal worker, if employed. This multiple-part model has been widely used in the health economics literature (Duan and Chau 1987; Manning, Newhouse, et al. 1987; Ruiz, Amaya, et al.

2007). In this paper, the two-part model separates the process into two stages, with the first being unemployed and the second being a formal worker, if employed.

Part I uses a LOGIT model to estimate the likelihood of being unemployed:

$$\text{Prob}[\text{unemployed}=1 \mid \text{labor market participation}=1] = \alpha_1 + \beta_1 X + \varepsilon_1, \quad (2)$$

where β_1 is a vector of coefficients and X represents a set of independent variables.

Part II also uses a LOGIT model:

$$\text{Prob}[\text{formal worker}=1 \mid \text{unemployed}=0] = \alpha_2 + \beta_2 X + \varepsilon_2, \quad (3)$$

where β_2 is a vector of coefficients and X represents a set of independent variables. The respective error terms are symbolized by ε_1 and ε_2 . It is assumed that $E(\varepsilon_1) = E(\varepsilon_2) = 0$.

5.2. Characteristics Associated with Unemployment

The most striking finding is that, for male youth, the higher the level of education, the greater the likelihood of being unemployed (Table 3). Compared with male youth without any formal education, the likelihood of being unemployed is 1.74 times greater for male youth with a matric degree (equivalent to a high school diploma), 2.2 times greater for male youth with an inter degree (higher than matric but less than a bachelor's degree), and 3.37 times greater for male youth with a bachelor's degree or above. One possible reason is that better-educated male youth are more likely to seek job opportunities that require a higher level of skills, but such opportunities are rare for youth in Pakistan. Thus, over time, the probability of being unemployed is higher for better-educated youth. This pattern is very different from that in developed countries, where the youth unemployment rate falls as the level of education rises (Nickell 1996; O'Higgins 1997).

Yet this pattern is unique to male youth. Education is not an important factor in determining unemployment for male adults because none of the educational variables are significant in the regression. There are at least two possible explanations for this youth-specific pattern. First, economic pressures might make it necessary for adults with higher levels of education to accept jobs with fewer educational requirements. Second, because there is less demand for individuals with higher education, adults are more likely than youth with a similar education level to get the job, largely because adults are more experienced. However, the pattern for female adults is different. Female adults with inter or higher degrees are less likely than their male counterparts to be unemployed.

There are some regional variations in youth unemployment and adult unemployment. The patterns are not identical but are very similar for youth and adults within each gender. In contrast, the gender difference is much bigger than the youth-adult difference. For example, compared with men in Punjab province, men in Sindh and NWFP are less likely to be unemployed, but women are more likely to be unemployed. This gender difference has deep social historical roots and is associated with recent economic and cultural progress.

Migration increases the likelihood of unemployment for both male youth and male adults. However, it decreases the likelihood of unemployment for female adults. One possible reason is that individuals tend to move from rural areas to urban areas, where there are more opportunities for women to work.

Some household characteristics are also significant in determining the probability of being unemployed, and the effects are quite similar for youth and adults. Individuals in a household with more employed members are less likely to be unemployed. Again, this finding implies that a large family employment network can help youth and adults to find jobs.

5.3. Characteristics Associated with Working in the Formal Sector

This section compares the characteristics associated with working in the formal sector for youth and adults of each gender, respectively. Pakistan's informal sector is large. As specified in the previous section, the informal sector consists of workers who are self-identified as unpaid family workers, own-account workers, or casual wage workers. Formal sector workers consist of workers who are self-identified as salaried employees or employers. Eighteen percent of youth and 27 percent of adults are employed in the formal sector.

The variables that are significantly associated with working in the formal sector are similar for youth and adults (Table 4). Education plays an important role for all groups. However, the likelihood of being employed in the formal sector is much greater for male adults than for male youth with the same level of education. Similar patterns are also found between female youth and female adults. This finding suggests that it might take youth with higher education quite some time to find a job in the formal sector; before that, these youth have to work in the informal sector. Better-educated females are more likely to be employed in the formal sector than their male counterparts. This is true for both youth and adults.

Another important set of variables in determining employment in the formal sector is the employment status of other household members, and these effects are very similar across the four groups. An individual seeking work in the formal sector who has family members employed in the formal sector has a higher probability of working in the formal sector. This is again because of the network effect of family. However, these variables might be correlated with other unobserved characteristics; thus the estimation is subject to the omitted-variable bias.

In summary, the variables that determine youth employment in the formal sector are not very specific to youth, except for education. There are two main points. First, it is very likely that

better-educated youth will begin working in the informal sector and then move to the formal sector, given the different findings for youth and adults. Second, although in general the labor market does reward workers with better education by placing them in the formal sector, the reward is not very linear. There is little difference in the probability of working in the formal sector between individuals with middle or primary school education and individuals with no formal education. This is especially true for youth.

6. Return on Education

6.1. Method

This study follows the standard human capital earnings function developed by Mincer (Mincer 1974):

$$\ln y = \beta_0 + \beta_1 s + \beta_2 age + \beta_3 age^2 + \sum_{i=4}^n \beta_i X_i + u, \quad (4)$$

where $\ln y$ is the log of weekly earnings, s is schooling, X is a vector of other characteristics that might influence the earnings, and u is a residual with zero mean. Various methods have been developed to address the selection bias and the endogeneity issues in the estimation of the rate of return on education (Griliches 1977; Griliches 1979), and many have been applied to studies in developed countries. Since the objective of this section is to compare the the rate of return for adults and youth, this paper uses the simplest method, the ordinary least squares (OLS). Thus, the interpretation should not be focused on the absolute return on education for youth and adults, but rather on the comparison of the two. It should also be noted that the sample is restricted to wage employees (salaried workers and casual wage workers) because LFS only reports earnings for wage employees. Since only levels of education are reported, the rate of return on education is level-based rather than year-based.

6.2. Results

In general, the rate of return on education significantly and progressively increases with higher levels of education (Table 5). This is consistent with the finding from Aslam (2009), which shows the return to an additional year of schooling ranges from 7 to 11 percent for men and from 13 to 18 percent for women.¹¹ The finding is also similar to that in Kingdon and Soderbom (2008), which shows that conditional on occupation, education consistently and substantially raises earnings.¹² However, the analysis also reveals three additional points.

First, there is no significant difference in earnings between youth with primary education and youth without any formal education. This is also true for female adults, but not for male adults. This implies that the labor market might not sufficiently reward individuals with limited education in these disadvantaged groups. This could have the devastating consequence that some families might be reluctant to send their children to school if they perceive that completion of primary education would not increase their future earnings prospects.

Second, it seems that the return on education is compounded with experience (or age). This conclusion comes from the comparison of rate of return on education between youth and adults, for males and females respectively. Coefficients at all education levels are significantly higher for adults than for youth, and such differences increase with the level of education.

Third, there seems to be a scarcity premium for educated females in the labor market. This finding is based on a comparison of coefficients between male adults and female adults with similar education levels. Compared with their less-educated counterparts, women with more education receive much higher returns than men. However, the average earnings of women are still much lower than those of men, even in the categories of higher-educated ones. These

findings are similar to the findings of Kingdon and Soderbom (2008), who use a different survey and sample.

7. Labor Supply - Total Hours Worked

7.1. Method

The labor supply models usually consist of two stages, the first being the decision to work and the second being hours worked. Since the earnings data are not reported for informal sector workers, I use the following models to estimate hours worked.

First, I restrict the sample to paid employees and estimate the hours worked:

$$H = \beta_0 + \beta_1 \text{earnings} + \sum_{i=2}^n \beta_i X_i + u, \quad (5)$$

where β_1 is the coefficient for earnings, X is the vector of other variables that may influence the hours worked, and u is the unobserved variables with zero mean.

Second, I include all workers in the labor market in both formal and informal sectors. Since earnings are not reported for unpaid family workers and own-account workers, employment status (ES) rather than earnings data are included.

$$H = \beta_0 + \beta_1 ES + \sum_{i=2}^n \beta_i X_i + u \quad (6)$$

In the last model, I use the earnings equation (equation 4) to predict the earned wages for unpaid family workers and own-account workers, assuming that the return on education is the same for paid employees and informal sector workers. This is a strong assumption because of the selection bias between workers in the formal sector and workers in the informal sector. Thus, the results have to be interpreted with caution. In the case, the model is as follows:

$$H = \beta_0 + \beta_1 \text{earnings}' + \beta_2 ES + \sum_{i=3}^n \beta_i X_i + u, \quad (7)$$

where *earnings'* is the predicted earnings using equation 4.

7.2. Results

Table 6 presents the regression results of characteristics associated with total hours worked for male workers. The sample in column 1 and column 4 includes only paid employees. The sample in the other columns includes workers in both formal and informal sectors. Column 3 and column 6 use earnings predicted from the earnings equation (equation 4) for male adults, male youth, female adults, and female youth respectively. Table 7 presents the female case using the same structure.

Total hours worked in the past week increase when earning increases, and the results do not vary between the sample of wage workers (column 1 and column 4) and the sample with all workers (column 3 and column 6). Youth respond more than adults to the same incremental earnings increase. For example, male youth work 0.99-1.04 more hours and male adults work only 0.18-0.2 more hours for an increase in wages of 1,000 Rs a week. Female are more responsive than male to higher earnings.

Working hours are different among workers with different employment status. Unpaid family workers work less than salaried workers in all four groups. Among unpaid family workers, on average, young men work 5.6 hours less; adult males work 1.5 hours less; young women work 12 hours less; and adult women work 10 hours less than salaried workers in their respective groups. In general, casual wage workers also work less than salaried workers, but this is not true for male adults.

Other findings include that better-educated workers work less; migrated workers work longer hours; and workers tend to work much longer hours in the transportation, wholesale, and retail sectors than in other sectors.

8. Conclusions

Youth employment in Pakistan faces many challenges, but some of them are also common in the overall labor market. Thus, interventions at this stage should focus more on improving the overall labor market performance rather than on narrowly targeting youth employment. Generating more employment opportunities, for both adults and youth, and creating a job portal that would allow employees and workers to share employment information should be priorities in Pakistan. At the same time, focusing on long-term investment in human capital through formal and informal education and strategically strengthening the links between education and the labor market would greatly benefit youth in the long run (Fasih 2008).

Still, there are some challenges that are youth-specific. The most striking one is that the unemployment rate is much higher for better-educated youth, and the initial earnings of better-educated youth are not much different from those of less-educated youth (compared with wages for adults with similar education levels). Thus, youth-specific interventions should be implemented to generate more (well-paying) job opportunities for better-educated youth, to smooth the transition from school to the labor force, and to help youth realize their investment in education. These interventions would have long-term benefits to economic growth by leading to higher household incomes and influencing households to invest in youth education.

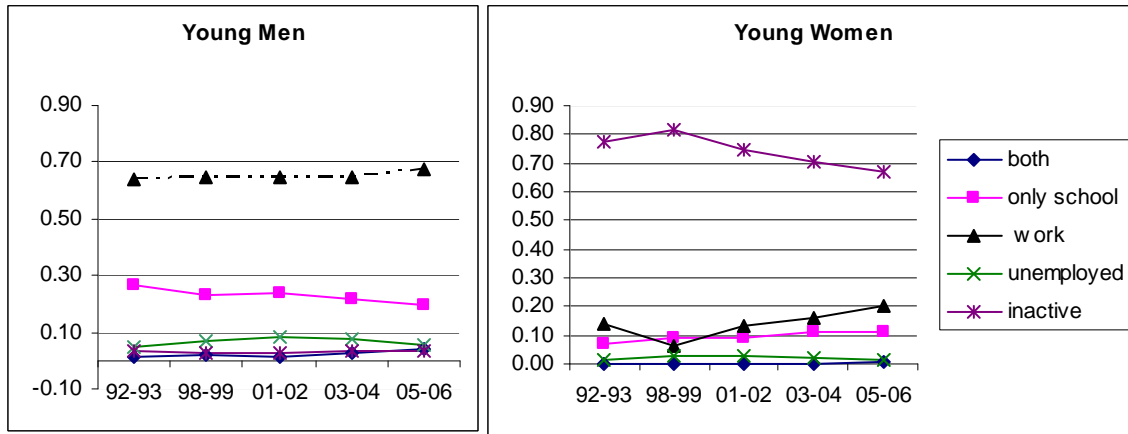
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Figure 1: Trends in schooling, employment, and unemployment of male and female youth in Pakistan, 1992-2006

Rural Area



Urban Area

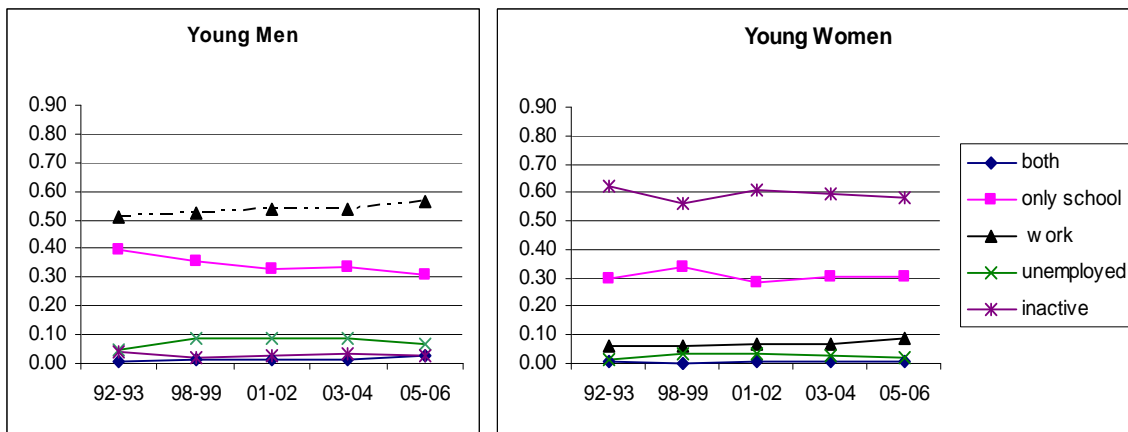


Table 1: A static comparison between youth labor and adult labor, 2005-2006

	Male youth	Male adults	Female youth	Female adults
<i>LFP rate and unemployment rate</i>				
LFP rate	73%	95%	18%	22%
Unemployment Rate	8%	3%	10%	9%
<i>Employment status in the urban area</i>				
Employer	0%	3%	0%	0%
Own-account workers	20%	39%	18%	21%
Unpaid-family workers	22%	7%	26%	17%
Salaried workers	33%	37%	32%	40%
Casual workers	26%	15%	24%	22%
<i>Employment status in the rural areas</i>				
Employer	0%	0%	0%	0%
Own-account workers	20%	54%	9%	16%
Unpaid-family workers	47%	12%	71%	68%
Salaried workers	12%	18%	6%	5%
Casual workers	21%	15%	15%	11%
<i>Industry allocation</i>				
Agriculture	37%	35%	61%	73%
Manufacturing	18%	12%	23%	11%
Construction	9%	7%	1%	0%
Wholesale and Retail	18%	18%	2%	2%
Transportation	7%	8%	0%	0%
Services	11%	17%	13%	13%
Other	1%	3%	0%	0%
<i>Hours worked and earnings in the previous work</i>				
Hours worked (Hours)	49.95	51.97	34.55	35.06
Earning per week (Rs)	856.00	1501.17	571.88	949.99

Note: 1. weighted data are used.

Table 2: Determinants of youth activity decisions

	Male Youth			Female Youth		
	In school and LF	in LF	inactive	in school and LF	in LF	inactive
Age	0.94 [0.23]	2.19*** [0.27]	0.98 [0.22]	1.78 [0.96]	2.11*** [0.38]	1.77*** [0.24]
Married	1.5 [0.39]	3.61*** [0.52]	5.54*** [1.05]	1.51 [0.86]	11.26*** [2.19]	26.37*** [4.86]
Household Head:						
Educ. (Middle and below)	0.93 [0.10]	0.56*** [0.03]	0.65*** [0.07]	1.29 [0.32]	0.43*** [0.03]	0.39*** [0.02]
Educ. (Matric and above)	1.14 [0.12]	0.17*** [0.01]	0.28*** [0.03]	0.73 [0.19]	0.18*** [0.02]	0.13*** [0.01]
Married	1.57** [0.28]	1.15* [0.10]	0.97 [0.15]	1.21 [0.43]	1.31** [0.17]	0.87 [0.08]
Female	0.89 [0.28]	0.43*** [0.06]	0.73 [0.21]	0.6 [0.31]	0.46*** [0.10]	0.44*** [0.07]
Female and Married	0.71 [0.26]	0.52*** [0.09]	0.72 [0.25]	0.43 [0.31]	0.78 [0.19]	0.82 [0.15]
Employed (in agricultural sector)	0.66*** [0.10]	0.44*** [0.03]	0.57*** [0.08]	0.23*** [0.09]	0.65*** [0.07]	1.07 [0.09]
Employed (in non-agricultural sector)	0.56*** [0.08]	0.52*** [0.03]	0.68*** [0.08]	0.47*** [0.13]	0.43*** [0.04]	0.87** [0.06]
Migration within past 10 years	0.83 [0.19]	1.13 [0.12]	1.08 [0.24]	0.82 [0.43]	0.82 [0.12]	1.1 [0.13]
# of members, 0-5, female	1.34*** [0.07]	1.39*** [0.04]	1.19*** [0.06]	1.37* [0.23]	1.80*** [0.08]	1.32*** [0.05]
# of members, 0-5, male	1.53*** [0.08]	1.41*** [0.04]	1.22*** [0.06]	1.54*** [0.24]	1.78*** [0.08]	1.33*** [0.05]
# of members, 6-14, female	1.47*** [0.06]	1.35*** [0.03]	0.99 [0.04]	1.50*** [0.14]	1.46*** [0.04]	1.07*** [0.02]
# of members, 6-14, male	1.27*** [0.05]	1.33*** [0.03]	1.19*** [0.05]	1.15 [0.12]	1.44*** [0.04]	1.19*** [0.03]
# of members, 15-24, female	1.23*** [0.05]	1.14*** [0.02]	0.85*** [0.04]	1.17 [0.11]	1.14*** [0.04]	0.92*** [0.02]
# of members, 15-24, male	0.71*** [0.03]	0.80*** [0.02]	1.11*** [0.04]	0.67*** [0.07]	0.68*** [0.02]	1.05** [0.02]
# of members, 25-65, female	1 [0.07]	0.87*** [0.03]	0.86** [0.06]	0.91 [0.15]	0.76*** [0.04]	0.82*** [0.03]
# of members, 25-65, male	0.56*** [0.04]	0.58*** [0.02]	0.96 [0.05]	0.39*** [0.07]	0.54*** [0.03]	0.92** [0.03]
# of members, 66+	0.84 [0.09]	0.71*** [0.04]	0.97 [0.09]	0.89 [0.20]	0.79*** [0.06]	0.85*** [0.05]
# work / # non work	44.22*** [3.93]	34.94*** [2.86]	3.82*** [0.57]	20.99*** [2.46]	22.04*** [1.97]	2.05*** [0.17]
Urban	0.78***	0.70***	0.53***	0.55***	0.44***	0.38***
Number of Observations	22392	22392	22392	21262	21262	21262

Note: 1 Variables included but not reported: age squared, province dummies; 2 standard errors are in brackets; 3. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Characteristics associated with unemployment

	Male		Female	
	Youth	Adults	Youth	Adults
Age	1.19 [0.97]	0.77 [12.08]***	1.39 [0.87]	0.75 [8.35]***
Age Squared	0.99 [1.56]	1 [14.32]***	0.99 [1.10]	1 [10.56]***
Married	0.37 [8.09]***	0.2 [19.88]***	1.48 [2.14]**	0.67 [3.46]***
Had Training	1.17 [0.75]	0.84 [0.79]	1.42 [1.02]	1 [0.00]
<i>Education (no formal education as comparison)</i>				
Below Primary Education	1.24 [1.54]	0.89 [0.72]	1.19 [0.52]	0.8 [0.62]
Primary Education	1.27 [2.56]**	1.01 [0.06]	1.33 [1.38]	0.79 [1.15]
Middle	1.07 [0.66]	1.05 [0.46]	1.19 [0.65]	1.52 [1.61]
Matric	1.74 [5.74]***	1.06 [0.65]	1.42 [1.67]*	1.04 [0.22]
Inter	2.2 [5.56]***	1.23 [1.70]*	1.15 [0.55]	0.58 [2.05]**
Bachelor or Above	3.37 [7.12]***	1.06 [0.50]	1.03 [0.09]	0.66 [2.23]**
Migration within past 10 years	1.28 [1.72]*	2.14 [7.64]***	1.45 [1.38]	0.64 [1.71]*
Household size	0.89 [11.12]***	0.97 [3.87]***	0.93 [3.94]***	0.97 [2.47]**
# employed/# not employed	0.02 [28.06]***	0.06 [20.58]***	0.03 [15.22]***	0.07 [17.55]***
Urban	1.44 [5.76]***	1.24 [3.28]***	1.28 [1.69]*	1.96 [6.21]***
<i>Provinces (Punjab as comparison group)</i>				
Sindh	0.54 [7.60]***	0.69 [4.52]***	1.15 [0.69]	1.28 [1.74]*
NWFP	0.81 [2.52]**	1.52 [5.56]***	3.09 [6.95]***	3.37 [10.69]***
Balochistan	0.54 [5.17]***	0.4 [6.28]***	0.85 [0.51]	1.39 [1.55]
Number of Observations	15584	34716	3213	7073

Note: 1. Absolute value of z statistics in brackets

2. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: Characteristics associated with being a worker in the formal sector

	Male		Female	
	Youth	Adults	Youth	Adults
Age	1.11 [0.72]	1.18 [13.34]***	0.94 [0.14]	1.16 [3.18]***
Age Squared	1 [0.30]	1 [13.54]***	1 [0.18]	1 [3.01]***
Married	1.01 [0.09]	1.06 [1.22]	0.93 [0.33]	0.9 [0.85]
Had Training	1.71 [2.92]***	1.55 [4.86]***	1.18 [0.46]	1.29 [0.74]
<i>Education (no formal education as comparison)</i>				
Below Primary Education	1.02 [0.14]	1.28 [3.17]***	0.36 [1.63]	1.16 [0.42]
Primary Education	1.02 [0.22]	1.26 [4.87]***	0.6 [1.70]*	0.71 [1.55]
Middle	0.93 [0.88]	1.83 [12.45]***	1.08 [0.26]	1.01 [0.04]
Matric	1.24 [2.76]***	2.64 [22.31]***	4.16 [6.36]***	6.44 [10.81]***
Inter	1.84 [5.28]***	3.75 [23.73]***	7.37 [7.59]***	9.1 [10.16]***
Bachelor's or Higher	2.38 [5.91]***	6.04 [35.62]***	12.61 [8.69]***	17.3 [15.60]***
In Agricultural Sector	0.13 [20.85]***	0.1 [39.19]***	0.02 [7.30]***	0.01 [13.73]***
Number of other family members are				
Employer	0.63 [2.50]**	0.55 [4.56]***	1.15 [0.31]	0.29 [3.74]***
Own-account workers	0.74 [7.45]***	0.87 [5.21]***	0.63 [4.20]***	0.61 [5.26]***
Unpaid family workers	0.83 [5.48]***	0.63 [17.63]***	0.69 [3.77]***	0.69 [4.50]***
Salaried workers	2.67 [28.00]***	2 [29.38]***	1.53 [4.63]***	1.59 [6.42]***
Casual wage workers	0.67 [10.89]***	0.84 [6.84]***	0.58 [5.42]***	0.68 [4.33]***
Migration within past 10 years	1.5 [3.62]***	1.4 [5.86]***	1.73 [1.80]*	1.56 [2.16]**
Household size	0.96 [4.15]***	0.97 [5.06]***	1.05 [1.50]	1 [0.23]
Urban	1.15 [2.51]**	0.76 [8.63]***	1.04 [0.24]	1.06 [0.48]
<i>Provinces (Punjab as comparison group)</i>				
Sindh	0.89 [1.97]**	1.29 [7.21]***	1.91 [2.91]***	1.21 [1.21]
NWFP	0.68 [4.86]***	1.22 [4.50]***	2.25 [3.49]***	1.64 [2.93]***
Balochistan	0.6 [5.02]***	1.65 [10.54]***	2.25 [1.91]*	2.68 [3.17]***
Number of Observations	14579	34403	3087	6805

Note: 1. Absolute value of z statistics in brackets; 2. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Rate of return on education

	Male		Female	
	Youth	Adults	Youth	Adults
Age	0.28 [6.44]***	0.06 [13.04]***	-0.12 [0.82]	0.06 [3.95]***
Age Squared	-0.01 [5.28]***	0 [10.98]***	0 [1.01]	0 [3.07]***
Married	-0.01 [0.57]	0.12 [7.11]***	-0.03 [0.39]	0.06 [1.49]
Education (no formal education as comparison)				
Below Primary Education	0.02 [0.60]	0.1 [3.68]***	-0.25 [1.92]*	0.22 [1.54]
Primary Education	0.02 [0.80]	0.15 [8.92]***	-0.05 [0.63]	0.13 [1.50]
Middle	0.05 [2.31]**	0.25 [13.48]***	0.24 [2.13]**	0.38 [3.55]***
Matric	0.14 [5.81]***	0.43 [26.69]***	0.01 [0.10]	1.03 [16.58]***
Inter	0.31 [8.13]***	0.6 [28.95]***	0.19 [2.04]**	1.12 [15.86]***
Bachelors or Higher	0.64 [13.21]***	1.05 [63.09]***	0.63 [6.84]***	1.67 [32.75]***
Urban	0.02 [1.20]	0.17 [15.49]***	0.21 [3.81]***	0.16 [3.99]***
Provinces (Punjab as comparison group)				
Sindh	-0.05 [2.97]***	-0.03 [2.21]**	0.29 [4.19]***	0.23 [4.75]***
NWFP	-0.13 [5.74]***	0 [0.05]	0.29 [3.33]***	0.07 [1.24]
Balochistan	0.2 [6.65]***	0.19 [11.01]***	0.75 [4.72]***	0.51 [4.67]***
Number of observations	6167	14456	962	1905

Note: 1 Absolute value of t statistics in brackets

2. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Characteristics associated with total hours worked in the previous week for male workers

	Male Youth			Male Adults		
	1	2	3	4	5	6
Weekly earnings	1.04 [6.30]***			0.2 [3.13]***		
Actual or predicted weekly earnings			0.99 [5.32]***			0.18 [2.68]***
Own account workers		-0.15 [0.43]	-0.13 [0.37]		1.17 [5.73]***	1.37 [6.50]***
Unpaid family workers		-5.63 [16.05]***	-5.62 [15.91]***		-1.56 [4.77]***	-1.42 [4.29]***
Casual wage workers		-0.92 [2.65]***	-0.78 [2.23]**		0.4 [1.51]	0.64 [2.37]**
Age	2.28 [2.78]***	4.2 [7.18]***	4.05 [6.90]***	-0.27 [2.95]***	0.29 [5.15]***	0.27 [4.80]***
Age –squared	-0.05 [2.61]***	-0.09 [6.16]***	-0.09 [5.93]***	0 [2.66]***	0 [6.94]***	0 [6.67]***
Married	0.23 [0.51]	-0.46 [1.37]	-0.39 [1.16]	0.68 [1.99]**	0.71 [2.94]***	0.61 [2.53]**
Had training	-2.13 [1.87]*	-1.94 [1.99]**	-1.82 [1.85]*	1.51 [2.54]**	0.86 [1.72]*	0.96 [1.91]*
Below Primary Education	1.34 [2.22]**	0.7 [1.57]	0.5 [1.13]	0.69 [1.31]	0.79 [2.28]**	0.74 [2.13]**
Primary Education	0.79 [2.01]**	0.33 [1.13]	0.28 [0.96]	-0.03 [0.08]	0.78 [3.74]***	0.77 [3.67]***
Middle	-0.14 [0.33]	-1.23 [3.95]***	-1.27 [4.04]***	-0.05 [0.13]	0.59 [2.48]**	0.54 [2.24]**
Matric	-1.17 [2.53]**	-1.38 [4.14]***	-1.5 [4.46]***	-2.3 [7.20]***	-0.07 [0.34]	-0.16 [0.72]
Inter	-4.1 [5.50]***	-3.71 [6.61]***	-3.98 [6.96]***	-4.93 [12.01]***	-2 [6.52]***	-2.11 [6.65]***
Bachelors or Higher	-8.76 [9.08]***	-7.06 [9.04]***	-8.06 [10.00]***	-7.44 [19.79]***	-4.48 [15.95]***	-5.07 [15.50]***
Migration within 10 years	2.28 [3.71]***	1.82 [3.42]***	1.82 [3.42]***	1.61 [4.32]***	0.65 [2.18]**	0.72 [2.38]**
Manufacture	-2.51 [4.15]***	1.17 [3.03]***	1.09 [2.80]***	-0.72 [1.57]	2.54 [9.22]***	2.39 [8.50]***
Construction	-7.63 [12.46]***	-3.4 [7.11]***	-3.58 [7.43]***	-6.8 [15.13]***	-2.58 [7.53]***	-2.73 [7.88]***
Wholesale and retail	2.51 [3.72]***	5.68 [16.49]***	5.68 [16.45]***	3.86 [7.00]***	6.92 [31.57]***	6.79 [30.73]***
Transportation	3.62 [5.13]***	6.33 [13.32]***	6.19 [12.91]***	3.62 [7.52]***	7.12 [24.55]***	7.16 [24.49]***
Service	-2.11 [3.26]***	1.54 [3.70]***	1.53 [3.65]***	-4.49 [10.20]***	-0.33 [1.30]	-0.25 [0.98]
Other industry	-2.12	0.63	0.39	-3.39	0.71	0.57

Note: 1. Absolute t statistics in bracket. 2. * significant at 10%; ** significant at 5%; *** significant at 1%. 3. Other variables in the model but not reported include: household size, household demographic structure, household head information, and province dummies.

Table 7: Characteristics associated with total hours worked in the previous week for female workers

	Female Youth			Female Adults		
	1	2	3	4	5	6
Weekly earnings	1.86 [4.54]***			1.08 [5.39]***		
Actual or predicted weekly earnings			1.66 [4.02]***			1.05 [5.30]***
Own-account workers		-9.36 [9.12]***	-9.22 [8.98]***		-7.22 [9.31]***	-7.02 [8.99]***
Unpaid family workers		-12.74 [12.17]***	-12.59 [12.01]***		-10.12 [12.61]***	-9.93 [12.27]***
Casual wage workers		-5.96 [5.56]***	-5.85 [5.43]***		-3.22 [4.07]***	-3.03 [3.79]***
Age	2.43 [1.09]	1.42 [1.18]	1.5 [1.25]	0.1 [0.36]	0.43 [3.45]***	0.38 [3.08]***
Age –squared	-0.06 [1.02]	-0.03 [0.98]	-0.03 [1.07]	0 [0.60]	-0.01 [3.90]***	-0.01 [3.73]***
Married	-2.47 [2.01]**	-1.68 [2.66]***	-1.62 [2.55]**	-2.04 [2.58]**	-1.18 [2.45]**	-1.35 [2.79]***
Had training	1.15 [0.51]	-0.56 [0.32]	-1.15 [0.65]	1.75 [0.96]	2.88 [1.93]*	2.68 [1.79]*
Below primary education	-5.31 [2.66]***	-0.65 [0.57]	-0.54 [0.47]	-1.49 [0.70]	-3.19 [3.15]***	-3.58 [3.53]***
Primary education	-3.9 [3.12]***	-1.4 [2.14]**	-1.45 [2.24]**	-2.95 [2.27]**	0.21 [0.35]	0.12 [0.20]
Middle	-5.39 [3.05]***	-0.83 [0.91]	-1.66 [1.80]*	-1.07 [0.65]	-1.39 [1.35]	-1.8 [1.73]*
Matric	-7.02 [4.97]***	-3.66 [4.28]***	-3.8 [4.45]***	-4.57 [4.18]***	-3.36 [4.16]***	-4.48 [5.41]***
Inter	-9.22 [5.29]***	-6.23 [5.12]***	-6.72 [5.49]***	-4.96 [4.00]***	-2.76 [2.70]***	-3.77 [3.60]***
Bachelors or Higher	-12.2 [6.85]***	-8.6 [6.58]***	-10.01 [7.42]***	-7.75 [7.41]***	-3.85 [4.89]***	-6.36 [6.99]***
Migration within 10 years	5.66 [3.63]***	2.86 [2.91]***	2.8 [2.86]***	2.63 [2.44]**	0.55 [0.79]	0.47 [0.67]
Manufacturing	-5.51 [4.50]***	-1.33 [1.94]*	-1.31 [1.91]*	-8.37 [8.76]***	-4.04 [7.33]***	-3.93 [7.12]***
Construction	1.83 [0.59]	5.39 [1.94]*	5.77 [2.04]**	1.7 [0.66]	5.38 [2.28]**	4.6 [1.91]*
Wholesale and retail	5.82 [1.79]*	10.77 [6.04]***	10.69 [6.01]***	0.82 [0.24]	9.07 [10.06]***	9.07 [10.04]***
Transportation	9.18 [2.82]***	14.02 [5.23]***	13.35 [4.99]***	10.89 [3.93]***	13.15 [5.41]***	12.99 [5.35]***
Service	0.46 [0.31]	-0.21 [0.19]	-0.1 [0.09]	-1.63 [1.76]*	-0.85 [1.12]	-0.67 [0.88]
Other industry	2.99	6.32	5.06	3.98	7.4	6.38

Note: 1. Absolute t statistics in bracket. 2. * significant at 10%; ** significant at 5%; *** significant at 1%. 3. Other variables in the model but not reported include: household size, household demographic structure, household head information, and province dummies.

Appendix 1. Descriptive analysis of male youth, male adults, female youth and female adults

	Male youth	Male adults	Female youth	Female Adults
Age	18.9	40.7	19.0	39.4
Married	13.1%	87.3%	32.2%	88.7%
No any formal education	24.1%	40.7%	45.8%	73.5%
Below primary education	5.5%	4.4%	3.1%	2.1%
Middle level	20.5%	15.0%	15.0%	8.4%
Matric level	23.3%	11.7%	13.6%	4.3%
Inter level	17.8%	14.5%	13.8%	6.2%
Bachelor's	6.5%	5.9%	5.8%	2.5%
Post-graduation level	2.3%	7.7%	3.0%	2.9%
Migration within past 10 years	3.7%	5.0%	6.4%	5.0%
Household Characteristics				
# of members, 0-5, female	0.66	0.88	0.76	0.90
# of members, 0-5, male	0.69	0.91	0.81	0.93
# of members, 6-14, female	1.07	1.07	1.03	1.16
# of members, 6-14, male	1.17	1.18	1.15	1.26
# of members, 15-24, female	1.20	0.95	2.04	0.87
# of members, 15-24, male	2.15	0.92	1.25	0.91
# of members, 25-65, female	1.40	1.54	1.38	1.77
# of members, 25-65, male	1.40	1.83	1.50	1.53
# of members, 66+	0.20	0.21	0.22	0.25
Household size	9.93	9.48	10.13	9.59
# work/# not work	0.73	0.60	0.61	0.54
Urban	37.1%	36.0%	36.1%	33.8%
Punjab	53.3%	54.0%	55.4%	54.9%
Sindh	26.9%	26.4%	23.4%	23.9%
NWFP	15.6%	14.6%	18.0%	16.7%
Balochistan	4.3%	5.0%	3.2%	4.6%
Number of observations:	22797	37743	21514	37500

ENDNOTE

¹ Some rounds exclude Azad Jammu, Kashmir, North Areas, Federally Administered Tribal Area (FATA), military restricted areas, and protected areas of NWFP. The population of the excluded areas constitutes about 3 percent of the population.

² Sample PSUs is drawn with probability proportional to size method.

³ Enumeration blocks are defined as 200-250 households on average with well-defined boundaries and maps.

⁴ PSLM2004/2005 uses a slightly different employment module than PIHS2001/2002 and PIHS2005/2006. This makes the trend analysis difficult to interpret.

⁵ Casual wage workers include casual paid employees, workers paid a piece rate or according to the work performed, and paid non-family apprentices. Own-account workers include self-employed workers, owner cultivators, share croppers, and contract cultivators.

⁶ Inactiveness means that youth do not participate in the labor force or enrolled in school. However, inactive youth might engage in many domestic activities. This is especially the case for female youth.

⁷ Note that the percentage of unemployed youth is different from the unemployment rate for youth. The former uses all youth as the denominator while the latter uses all youth in the labor force as the denominator.

⁸ Tables are available from the author upon request.

⁹ The author would like to control for the consumption or income variable, but LFS does not contain the consumption module and only reports the earnings for paid employees. Thus, the income variable is not usable since it only captures part of the household income. I controlled for household head education, which is positively correlated with income and expenditures both in magnitude and significance.

¹⁰ The Investment Climate Assessment Survey also shows that firms hire through “family or friends” more frequently.

¹¹ The author used the Pakistan Integrated Household Survey (PIHS) data, and the sample was restricted to wage and salaried employee.

¹² The authors also use the PIHS data and broaden the analysis to wage, self-employed, and agricultural workers