

WAGE INEQUALITY AND RATE OF RETURNS TO PRIVATE SECTOR'S EDUCATION: A Case Study of Urban Pakistan

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Abstract

According to the Pakistan Education Statistics (PES) 2013-2014, out of total educational institutions in the urban areas of Pakistan 63 per cent are private, serving 54 per cent of students and having 63 per cent of total teachers. The figures presented in PES also reported an increasing share of private educational institutions in the urban areas of Pakistan by time. Private sector hence, playing an important role in providing educational services. However, despite the rapid expansion and its role in the provision of quality education, very little is known about its impact on wages and inequality that it has created over time. The study is therefore has analyzed the returns to private schooling by computing Internal Rate of Return (IRR). The return to private schooling is analyzed by levels of education that are; up to Primary, Middle, secondary, Higher Secondary, Graduation and up to Masters. IRR shows the wage inequality that private sector has created. Further, the study first computed the age earnings profile by level of education and used the computed profile to estimate the IRR. The Issue is analyzed by using the data of Pakistan Social and Living Standards Measurement (PSLM) for the period 2011-2012. Findings indicate that at Primary level individuals qualified from private sectors earns 15 per cent extra earnings as compare to one qualified from public sector. The internal rates of return to private education worked out as: 12 per cent for secondary and middle, 14 per cent for higher secondary, 13 per cent for graduation, and 16 per cent for individuals having Master degree. In other words it can be concluded that individuals qualified from Public sector usually face 12 per cent to 16 per cent wage inequality in the labor market.

I. Introduction

According to Pakistan Education Statistics (PES) 2013-2014, out of total educational institutions in the urban areas of Pakistan 63 per cent are private, serving 54 per cent of students and having 63 per cent of total teachers. The figures presented in PES also reported an increasing share of private educational institutions in the urban areas of Pakistan by time. Private sector hence, playing an important role in providing educational services. However, despite the rapid expansion and its role in the provision of quality education, very little is known about its impact on wages and inequality that it has created over time. One of the major reasons of the existence of Private sector in the

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field of education is failure of the Government to provide, monitor and supervise their educational institutes. As the public schools are almost fails to deliver the quality education therefore when the qualified students of both the educational institutes enter in the same market, they face inequality in terms of wages. Given the same level of education, qualified students of Private educational institutes have more skills and strong academic background as compare to public sector students, so they get higher returns of their education, which creates income or wage inequality in the labor market.

The study is therefore, aimed to analyze the returns to private schooling by computing Internal Rate of Return (IRR). The IRR is estimated to show the additional earnings enjoyed by the individuals who completed their education (Primary, secondary, Higher Secondary, and Graduation) from private institutes, as compare to those who got their education from public institutes. Further study has computed the IRR for six different levels of education; Primary, Middle, secondary, Higher Secondary, Graduation, and Masters.¹ IRR hence also shows the income inequality that is created by the private sector. This is because at the same level of education an individual is facing wage discrimination in the labor market. To find out how much wage inequality is created by the presence of private sector hence is one of the objectives of the study. Furthermore, another objective of the study is to construct the age earning profiles by education levels. At each level of education, a separate earning profile is constructed to show the wage gap between the individuals qualified from public and private educational institutions.

Existing literature, Pasha and Wasti (1989), Peet, et al. (2015) and many others are concerned about the rates of returns to education or efficiency of private schools and their rate of returns [Binelli and Rubio-Codina (2013), Asadullah (2009), NASIR (1999)]. According to the best of my knowledge, no study has estimated: (i) the age earnings profiles by level of education of individuals qualified from private and public educational institutes and, (ii) internal rate of returns to private education. The data is extracted from Pakistan Social and Living Standard Measurement survey for the period 2011-12. As there exist a large disparity in rural and urban occupational choices and hence on wages, therefore for simplicity only urban areas of Pakistan are included in the analysis.

II. Review of Literature

There are several existing studies that are related to the rate of return to education, public verses private school's efficiency and inequality in education and in wages, out of them, some important studies are summarize in this sections, which are as under.

¹ Primary level includes classes up to 5, Middle includes 6 to 8 years of education, Secondary includes 9 and 10 years of education, Higher Secondary includes 11 and 12 years of education, Graduation (BA/B. SC/B. Ed) includes 13 and 14 years of education, and Masters include s15 to16 years of education.

Pasha and Wasti (1989) concentrating on the relationship between Unemployment and Rates of Returns to Education concluded that there is ambiguous relationship between unemployment and rate of returns to Education. In case of Social and private rate of returns to education for a sample of male workers, they concluded that, even, under certain conditions, Unemployment adjusted rate of returns to education can be higher than Unemployment unadjusted rate of returns. Binelli and Rubio-Codina (2013) discussed the relative efficiency of Mexico's Private and Public schools, by measuring the impact of Private schools on educational attainment and wages. They concluded that attending the Private school does not affect progression from high school to college but does increase wages conditional on college completion. Peet, et al. (2015) estimated that on average each year of completed schooling is associated with a 7.6 per cent increase in income in developing countries, very similar (or below) returns are reported for the US and other high income countries. Overall, returns appear highly heterogeneous, with lower returns in rural areas, higher returns for females than males, and higher returns in the regions of Africa and Latin American than in Asia.

Asadullah (2009) concluded that Private schools in Pakistan as compare to Bangladesh are more effective than Public schools. In Pakistan Graduates from private schools earn more than the public school graduates, while evidence in support of private schools graduates in Bangladesh is lacking. NASIR (1999) concluded that due to more skills and quality of education that an individual received from Private schooling, earns more than the government school qualified individual given the identical level of education. It is indicated that Private schools also reduces the gender inequality in the labor market. Iqbal (2012) investigates the performance of private versus public secondary schools in case of Lahore- city of Pakistan. Author did a comparison quantitatively between these two sectors by using the steak holder approach and taking the variables, which are leader's style of leadership, practice of management and physical services. Author collected the information by taking interviews from heads, teachers and students of the private and public schools and analyzed the data by using the method of qualitative analysis. Author finds that public schools have better infrastructure facilities, highly qualified teachers, free education and democratic leadership style, while private school don't have these facilities. Despite of all these facts Author conclude that performance of private schools is better than public schools due to better institutional supervision and monitoring of the system.

Saeed and Fatima (2015) estimate the district wise education inequality in case of province of Sindh, Pakistan, by computing Education Gini Index. Authors conclude that there is an enormous educational inequality exists in the population's attainment of education in the both regions and across districts of the Province, during the time 2004-2005 to 2010-2011. Educational inequality is higher in urban districts as compare to urban districts of Sindh. Authors further

conclude that, average years of schooling and Education Gini index are inversely associated. Aslam and Kingdon (2009) conclude that, there is an existence of wage differential between public and private sector's male and female employees. It is found by the authors that, employees that are associated with public sector, earns more wages. The wage differential is greater for the female workers than male workers. Results of Oxaca's methodology indicate that differences in characteristics of labors of private and public sectors explains the greater part of public-private wage differential for male workers, while it is not true for female workers. Imbert (2011) finds that, in case of Vietnam, the wage differential between public and private sectors increase by time, but overall wage inequality decline by time. It is concluded by the author that the public sector's labors are more skilled than the labors of private sector, hence this factor create more widen the gap between the wages in public-private sector, alternatively it is concluded by the author that public sector contributes significantly in increasing the public-private wage differential.

III. Methodology

The study is based on the Pakistan Standard of Living Measurement Survey 2011-12. In order to achieve the desired objectives, the study has first estimated the earning function Mincerian. Mincerian wage function considered the individual wages as function of their age education and experience. Specifically, the study estimated following two earning functions:

$$\text{Private Schooling for Individuals : } \ln W_{\text{priv}} = \beta_1 + \beta_2 \text{YRSEDU} + \beta_3 \text{EXP} + \beta_4 \text{EXP}^2 + \mu$$

$$\text{Public Schooling for Individuals : } \ln W_{\text{pub}} = \alpha_1 + \alpha_2 \text{YRSEDU} + \alpha_3 \text{EXP} + \alpha_4 \text{EXP}^2 + \varepsilon$$

where, $\ln W_{\text{pri}}$ is the log of monthly wages of individuals that attended private schooling while $\ln W_{\text{pub}}$ is the log of monthly wages of individuals that attended Public Schooling. YRSEDU is the Years of Education/schooling. Exp is the Years of experience an individual has, calculated as:

$$\text{Exp} = \text{Age} - \text{YRSEDU} - 6$$

Here, 6 is the age when children formally start schooling. For individuals not having any formal education the experience is calculated by subtracting 10 from their age. A child out of school usually starts working at the age of 10. Furthermore, it is assumed that function exhibit positive but diminishing marginal returns to experience. And finally EXP^2 is the square of the experience variable."

1. For Internal Rate of Return to Private Education or Inequality

Internal rate of return is the rate of return at which Net present Value of the income stream is zero, that is Present value of costs is equal to the Present Value of benefits. The computed IRR for a particular level of education shows the wage inequality that exists because of the differences in the public and private schooling for a particular level of education. IRR is derived from annual stream of benefits (earning differential because of private and public schooling). Specifically; $PVB = PVC$, where, PVB stands for present value of benefits and PVC stands for Present value of costs. where PVB and PVC are calculated as;

$$PVB = \sum (W_{pri} - W_{pub}) / (1 + r)^n,$$

where summation starts from 10 and ends at 65.

$$PVC = (C_{pub} - C_{pr}) / (1 + r)^n$$

where, $W_{pri} - W_{pub}$ = earning differential between the individuals having private or public schooling, $C_{pub} - C_{pr}$ = expenditure differential on education by public and private schooling, r = discount rate.

here, Public Schooling includes all government's educational institutions offering Primary, Secondary, Higher Secondary, and Graduation level education while, Private schooling includes all private educational institutions; Deeni Madrissa and NGOs/Foundation sponsored schools and others offering education. Further, education expenditure includes per year or annual 'Fees' which includes admission, tuition, registration, funds and examination fees. Moreover other expenditures on education include expenditures on uniforms, books and supplies, private tuition, transport, and other education-related expenses.

There are several methodologies available in the literature that are used to estimate the income or wage inequality, like Oaxaca (1994) decomposition methodology, Gini coefficient etc., but the study uses the method of Internal rate of return (IRR)- followed by Pasha and Wasti (1989) - for couple of reasons. Firstly, IRR not only show the returns to getting private sector's education but it is also indicating the wage inequality, that is how much extra wages can earn by the individual who is qualified from the private educational institute as compare to the individual who gets same level of qualification from public educational institute. Secondly IRR captures both benefits and the costs streams and gives a rate of return on which net present value (NPV) is zero, means it gives the rate of return which equalize the present value of benefit to the present value of cost. That is why it gives the clearer picture of returns. In addition, in the study IRR shows the both rate of return to private sector's education and inequality creating by private sector. These are the reasons of opting IRR methodology for the study.

2. Age Earning Profile by Level of Education: Primary

Figure 1 and Table 1 show the average annual earnings of individuals, who belong to urban areas of Pakistan, that have received only Primary (class 1 to 5) level of education from either private or public educational institute/school by age groups for the period 2011-12. The results show that the wages of individuals qualified from public sector has slightly increased over the age groups/time as compare to the wages earned by individuals qualified from private sector. After the age of 50 the earnings of the Private sector's qualified person increasing with decreasing rate and the wages of public sector is qualified individual has declined slightly. This could be due to decrease in the efficiency and working capability. As the age, increases or experience enhances the earnings of individuals starts increasing but the growth in the earning of private sector qualified person is more than growth in the earnings of public sector's qualified person, and hence gap between the two earnings widen with the increment of experience, as expressed in Figure 1. Annual earnings at the age of 10 to 15 for individuals' qualified from private schools are Rs34,653, while despite in identical age group and with same qualification individuals' qualified from public school earning Rs33,357 per year. The difference between the two earnings for this particular age cohort is Rs1,296. This differential grows as the age cohort increases, and reaches to its maximum point at the age group 56 to 60, Rs2,30,404 per year.

3. Age Earning Profile by Level of Education: Middle

Figure 2 and Table 2 indicate that the average annual earnings of individuals, who belong to urban areas of Pakistan, and have received Middle (class 6 to 8) level education only either from private or public educational institute/school by age groups for the period 2011-12. Results shows that the wages of Public sector qualified individuals has slightly increased over the age groups/time as compare to the private sector qualified person. After the age 45, the earnings of the Private sector's qualified person increasing sharply and the wages of public sector's qualified individual are almost constant and after 55 years of age it has gradually declined. As the age increases or experience enhances the earnings of both groups of individuals though grows, but the growth in earning for the private sector qualified person is more, and therefore gap between the two earnings get wider with the increment of experience, as presented in Figure 2. Annual earnings of private school qualified persons at the age of 10 to 15 are Rs39,635, while the public sectors' qualified individuals are earning slightly lower, Rs39,414 per year. The difference between the two earnings for this specific age cohort is only Rs221. However, it grows very fast as the age cohort increases, and reaches at its maximum at the age cohort 61 to 65, Rs 4,22,775.

TABLE 1
Age Earning Profile: Primary

| Age Group | Average Annual Wages of Private sector's Primary Qualified People | Average Annual Wages of Public sector's Primary Qualified People |
|-----------|---|--|
| 10-15 | 34653 | 33357 |
| 16-20 | 49411 | 45657 |
| 21-25 | 71394 | 60406 |
| 26-30 | 94253 | 76434 |
| 31-35 | 128001 | 91740 |
| 36-40 | 171807 | 103027 |
| 41-45 | 203764 | 113000 |
| 46-50 | 268502 | 113000 |
| 51-55 | 299786 | 109893 |
| 56-60 | 332678 | 102275 |
| 61-65 | N/A | 88456 |

Author's Estimation.

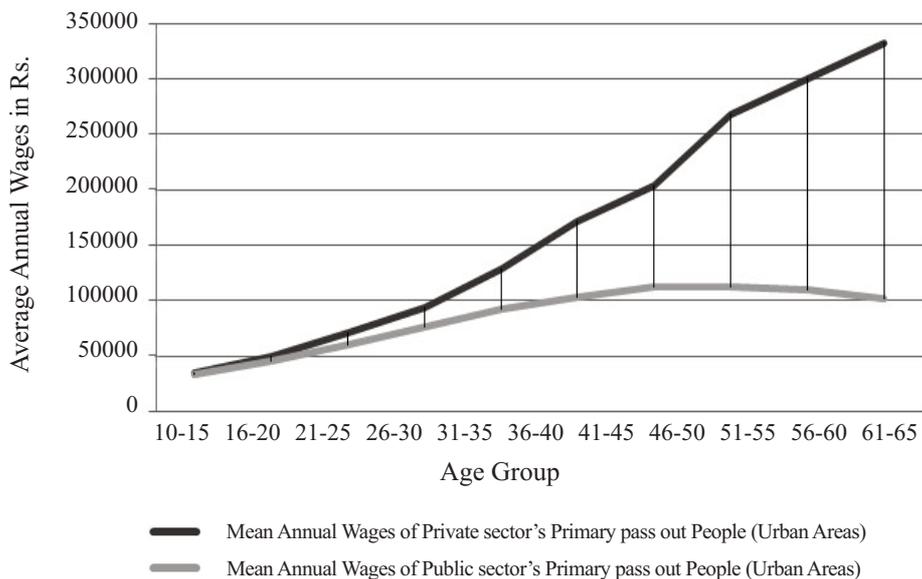


FIGURE 1
Age Earning Profile: Primary

TABLE 2
Age Earning Profile: Middle

| Age Group | Average Annual Wages of Private sector's Middle Qualified People in Rs. | Average Annual Wages of Public sector's Middle Qualified People in Rs |
|-----------|---|---|
| 10-15 | 39635 | 39414 |
| 16-20 | 57887 | 53339 |
| 21-25 | 81359 | 71941 |
| 26-30 | 114911 | 92847 |
| 31-35 | 160886 | 115734 |
| 36-40 | 204456 | 134183 |
| 41-45 | 253540 | 150379 |
| 46-50 | 339075 | 158381 |
| 51-55 | 411715 | 158671 |
| 56-60 | 491828 | 152828 |
| 61-65 | 560768 | 137993 |

Author's Estimation.

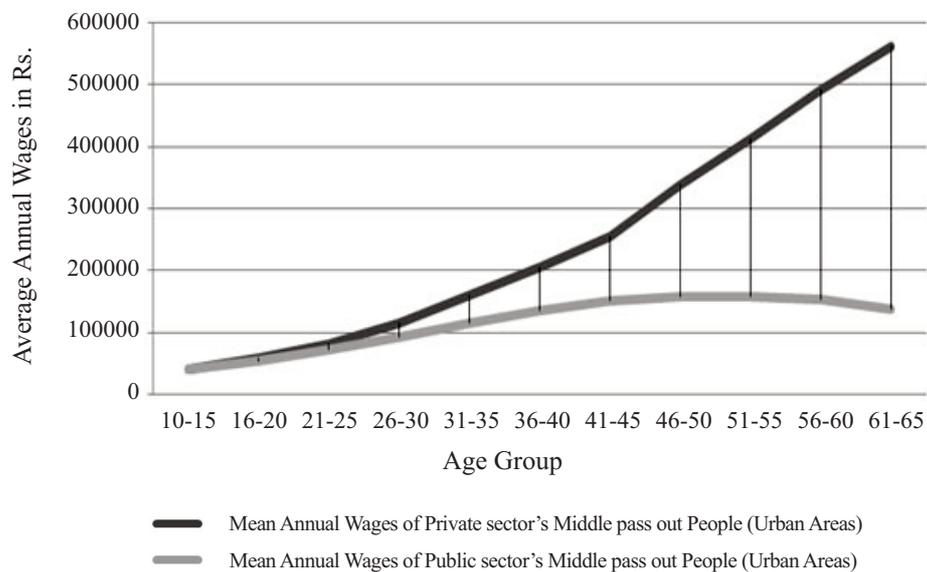


FIGURE 2
Age Earning Profile: Middle

4. Age Earning Profile by Level of Education: Secondary

Table 3 and Figure 3 indicate the average annual earnings of individuals, who received their Secondary level (class 9th and 10th) education either from private or public educational institute/school by age groups. Therefore, it is evident from Figure 3 and Table 3 that the wages of Public sector qualified individual has first increased but after crossing 45 years of ages it become stagnant over the rest of the age groups/time as compare to private sector qualified person. After 40 years of age earnings of the Private sector's qualified person continue to increase gradually but the wages of public sector's qualified individual are increasing with slower rate, it remain constant and then declines slightly after 55 years of age. As the age increases or experience enhances the earnings of the two groups grows, but private sector qualified person gets earns more by the passage of time, and hence gap between the two earnings become wider. Annual earnings at the age of 10 to 15 of private school qualified persons are Rs47,665, public school qualified individuals are earning Rs45,442 per year. The difference between the two earnings for this specific age cohort is Rs2,223, and the differential grows as the age cohort increases, it reaches at its maximum at the age group 61 to 65, Rs4,96,357 per year.

5. Age Earning Profile by Level of Education: Higher Secondary

Table 4 and Figure 4 highlights the average annual earnings of individuals, who received their Secondary (class 11th and 12th) level education from either private or public educational institute/school by age groups. Figure 4 shows that the wages of Public sector's qualified individuals are increasing with the slower rate as compare to the private sector's qualified person. After the age of 40 the earnings of the Private sector's qualified person still increasing gradually while the wages of public sector's qualified individual are almost stagnant. Further, after 60 years of ages it has declined slightly. As the age increases or experience enhances the earnings gap between the two earnings become wider. Annual earnings at the age of 16 to 20 for private schools' qualified individuals are Rs73,065, while public schools' qualified individuals are earning Rs46,614 per year. The difference between the two earnings for this particular age cohort is Rs4,217, and difference between the two earning reaches at its maximum at the age group 61 to 65, Rs4,77,844 per year.

6. Age Earning Profile by Level of Education: Graduation

Table 5 and Figure 5 presents the average Annual earnings of individuals, who received their Graduation (B.Sc/B.com/BA) level qualification either from private or public educational institute/school by age group. It shows that the wages of the individual qualified from public institute first increase but after the

TABLE 3
Age Earning Profile: Secondary

| Age Group | Average Annual Wages of Private sector's Secondary Qualified People | Average Annual Wages of Public sector's Secondary Qualified People |
|-----------|---|--|
| 10-15 | 47665 | 45442 |
| 16-20 | 65982 | 61241 |
| 21-25 | 92669 | 82663 |
| 26-30 | 126707 | 108196 |
| 31-35 | 175359 | 137100 |
| 36-40 | 237873 | 164028 |
| 41-45 | 331001 | 187216 |
| 46-50 | 400227 | 201546 |
| 51-55 | 487499 | 206729 |
| 56-60 | 566383 | 202422 |
| 61-65 | 684503 | 188146 |

Author's Estimation.

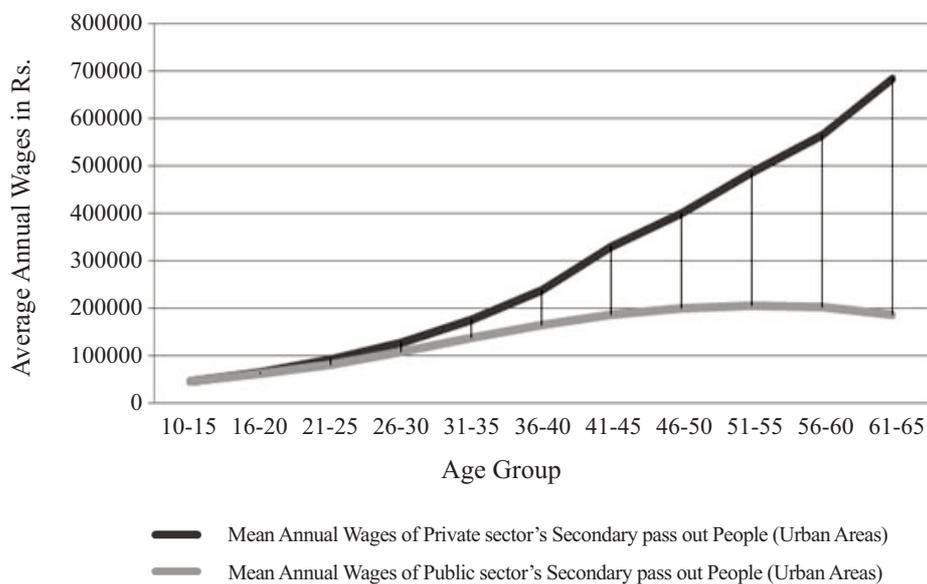


FIGURE 3
Age Earning Profile: Secondary

TABLE 4
Age Earning Profile: Higher Secondary

| Age Group | Average Annual Wages of Private sector's Higher Secondary Qualified People | Average Annual Wages of Public sector's Higher Secondary Qualified People |
|-----------|--|---|
| 10-15 | N/A | 46614 |
| 16-20 | 73065 | 68848 |
| 21-25 | 98666 | 90584 |
| 26-30 | 140309 | 123249 |
| 31-35 | 200671 | 160071 |
| 36-40 | 260247 | 192334 |
| 41-45 | 353621 | 225010 |
| 46-50 | 445047 | 247109 |
| 51-55 | 565431 | 260326 |
| 56-60 | 641358 | 259138 |
| 61-65 | 723873 | 246029 |

Author's Estimation.

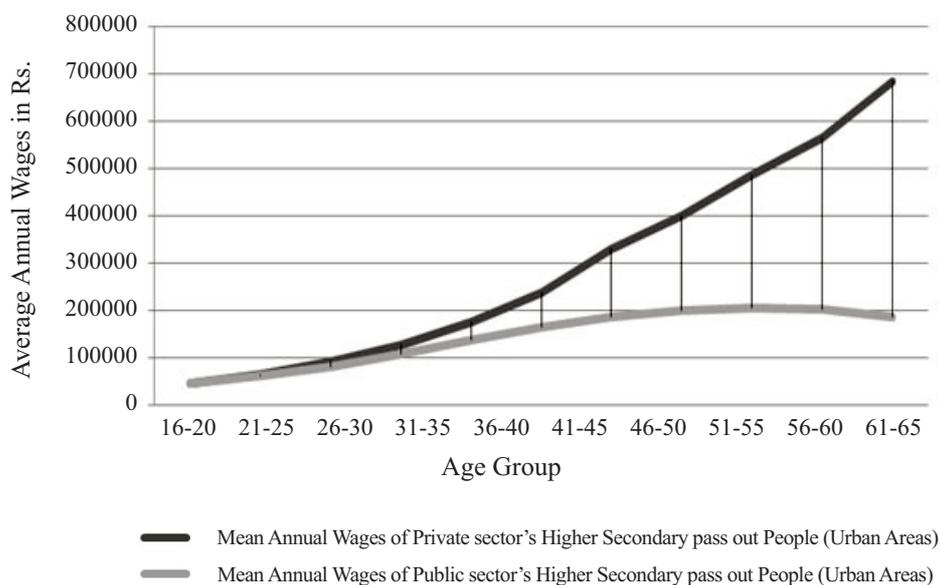


FIGURE 4
Age Earning Profile: Higher Secondary

TABLE 5
Age Earning Profile: Graduation

| Age Group | Average Annual Wages of Private sector's Graduation Qualified People | Average Annual Wages of Public sector's Graduation Qualified People |
|-----------|--|---|
| 10-15 | N/A | 53655 |
| 16-20 | 81833 | 78619 |
| 21-25 | 109727 | 100078 |
| 26-30 | 153137 | 136099 |
| 31-35 | 216974 | 180931 |
| 36-40 | 294386 | 226731 |
| 41-45 | 374336 | 266438 |
| 46-50 | 492841 | 299408 |
| 51-55 | 648178 | 320401 |
| 56-60 | 725690 | 326981 |
| 61-65 | 876717 | 317850 |

Author's Estimation.

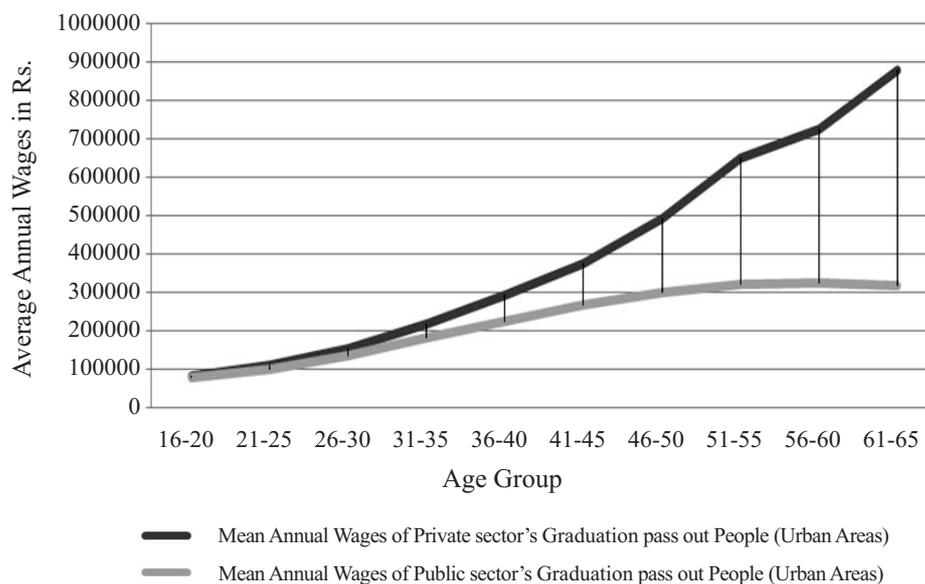


FIGURE 5
Age Earning Profile: Graduation

age of 45 it become stagnant for rest of the age groups/time as compare to the private sector's qualified person. After the age of 40 the earnings of the Private sector's qualified person increasing gradually and the wages of public sector's qualified individual is almost stagnant. As the age increases or experience enhances the gap between the two earnings get wider. Annual earnings at the age of 16 to 20 for private schools' qualified individuals are Rs81,833 while the public school's qualified earns Rs78,619 per year. The difference between the two earnings for this particular age cohort is Rs3,214, and it grows up to Rs 5,58,867 per years.

7. *Age Earning Profile by Level of Education: Masters*

Table 6 and Figure 6 highlight the average annual earnings of individuals, who received their master (MSc/M.Com/MA) degree either from private or public educational institute/school by age groups. The result shows that the wages of individual qualified from Public sector first increases and then become stagnant as compare to the wages earned by private sector's qualified person. Again as the age increases or experience enhances gap between the two earnings become wider. Annual earnings at the age of 21 to 25 of the individuals qualified from private schools are Rs1,12,999, while individuals passed out from public school in the same age group with identical qualification are earning slightly lower; Rs1,02,402 per year. The difference between the two earnings for this particular age cohort is Rs10,597, and this grows as the age cohort increases, and reaches to its maximum at the age group 61 to 65, Rs 5,58,210 per year.

8. *Internal Rate of Returns: Income Inequality*

Table 7 indicates that individuals' up-to Primary level education, who received their education from private schools, earns 15 per cent extra as compare to public sector qualified individuals. The internal rates of return to private education worked out as: 12 per cent for secondary and middle, 14 per cent for higher secondary, 13 per cent for graduation, and 16 per cent for individuals having Master degree. The internal rate of returns to private education ranges from 12 to 16 per cent.

The IRR shows the inequality in the earnings that private educational institutes are creating in the urban areas of Pakistan. Specifically, it indicates that for a given level of education individuals who got their education from public educational institutes are earnings less wages in labour market as compared to the individuals who got their degree from private institutions. The earning differential reaches around Rs5,50,000 per year as the age or experience increases.

TABLE 6
Age Earning Profile: Masters

| Age Group | Average Annual Wages of Private sector's Masters Qualified People | Average Annual Wages of Public sector's Masters Qualified People |
|-----------|---|--|
| 10-15 | N/A | N/A |
| 16-20 | N/A | 78391 |
| 21-25 | 112999 | 102402 |
| 26-30 | 150955 | 137118 |
| 31-35 | 215385 | 179873 |
| 36-40 | 292854 | 227468 |
| 41-45 | 389192 | 269075 |
| 46-50 | 480882 | 301172 |
| 51-55 | 656615 | 321215 |
| 56-60 | 779298 | 327016 |
| 61-65 | 904052 | 315843 |

Author's Estimation.

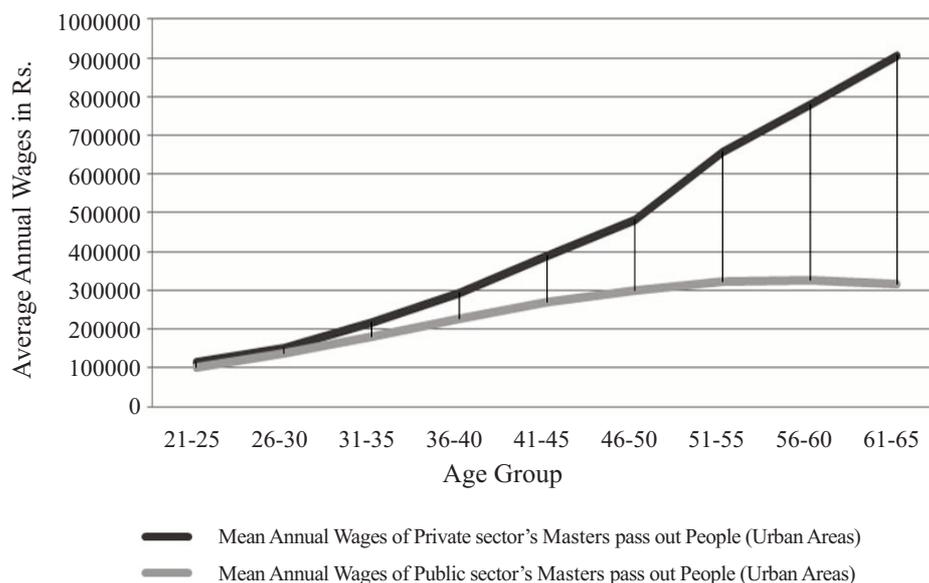


FIGURE 6
Age Earning Profile: Masters

TABLE 7
IRR by Levels of Education

| Education Levels | IRR |
|------------------------|-----|
| Up to Primary | 15 |
| Up to Middle | 12 |
| Up to Secondary | 12 |
| Up to Higher Secondary | 14 |
| Up to Graduation | 13 |
| Up to Masters | 16 |

The returns to private schooling are highest for individuals having Master level of education - 16 per cent. The returns are highest at primary level as well showing that for these two extreme level educations the returns to private education is highest while for rest of the education levels; it remains around 12 to 14 per cent. The returns show little variation across different levels of education hence this study conclude that the return to private schooling is around 12 to 16 per cent in urban areas of Pakistan.

VI. Conclusions

From the Age Earning Profiles for six different levels of educations and internal rate of returns (IRR) it can be concluded that in the urban areas of Pakistan individuals who qualified from private sector gets more wages in the labor market due to their extra skills and sound academic backgrounds as compare to the individuals who received their degree from public institute. The IRR shows that returns for private schools are 12 to 16 per cent higher. The substantially higher IRR reflects the wage inequality that individuals who received their degree from public schools faced in the labour market. Results of this study indicated that at Primary level of education private sectors qualified individuals earn 15 per cent extra earnings as compare to public sector qualified individuals. In other words it can be stated that, Public sector qualified individuals faces 15 per cent inequality in the labor market.

Further to this, the internal rates of return to private education worked out as: 12 per cent for secondary and middle, 14 per cent for higher secondary, 13 per cent for graduation, and 16 per cent for individuals having Master degree. The internal rate of returns to private education ranges from 12 to 16 per cent.

The role of private sector in delivering the quality education cannot be ignored. Private sector in Pakistan is playing a significant role in the delivery of quality education to the mass of population. But this is also creating inequality

in the labor market however this is only due to the inefficiency of public sector in the delivery of quality education. The inequality prevailing in the labour market is hence nothing but the failure of government policies. There is a need of the time that Government should overcome the inefficiencies prevailing in the delivery of quality education.

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ANNEDIX

TABLE A-1
 Regression Results for Earning functions of Private
 and Public Sector's Qualified Individuals

| Private Sector's Qualified Individuals | | | Private Sector's Qualified Individuals | | |
|--|--------------|----------|--|--------------|----------|
| Variables | Coefficients | t-values | Variables | Coefficients | t-values |
| YRSEDU | 0.1116937 | 13.93 | YRSEDU | 0.112375 | 66.01 |
| EXP | 0.0792837 | 7.04 | EXP | 0.07508 | 42.11 |
| EXP_Sqr | -0.00056 | -2.2 | EXP_Sqr | -0.001 | -26.29 |
| Constant | 7.290425 | 54.64 | Constant | 7.232552 | 306.04 |
| R squared | 0.4235 | | R squared | 0.3876 | |
| N | 519 | | N | 12318 | |