Salary-Determinants of School Teachers in Gilgit City

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Abstract:  
This objective of this study is to explore and investigate the salary determinants of the school teachers in Gilgit (the capital city of Gilgit-Baltistan). The data has been collected from 100 school teachers (35 governments, 40 private and 25 NGO-private school teachers) of 20 schools via questionnaire. We used Analysis of Variance (ANOVA) model, the dummy variable regression approach to find out the salary variances in respect to different characteristics of the school teachers. Results show that salary variances are highly linked with institutional affiliation of a teacher, gender differences, experience years, seniority and teaching status of a teacher. While the models for teacher’s academic qualification and professional degrees reveals surprisingly ambiguous or very little effect towards salary. Our finding assumes valuable features for researchers and policy makers in the field of education and economics.

Keywords: Salary, Determinants, School Teacher, Gilgit.

I. Introduction  
Teachers are regarded as essential part of the educational system in any society and also termed as the benefactors of the nation. The presence of talented and efficient teachers in educational system is as important as an education for socio-economic development. But despite of recognition of their key role in the development of a nation, teaching is considered as a poorly rewarded profession particularly in developing societies. In many low income countries of Asia and sub-Saharan Africa, the teacher’s pay is very low and generally diminishing in real terms.

Similarly in many countries majority of school teachers earn less than three dollars per day and their salary mostly depends on professional qualification and formal education. It depends less upon seniority or experience (Bennell, 2004). While teacher’s
salaries are higher in private sector than that in the other public sector in United States (Savedoff, et. al. 1998). Salary is a regular and fixed payment to the employee made by the employer on monthly basis (Oxford dictionary, 2012) and salary is the prior target of any teacher (Tasnim, S. 2006).

Teacher’s salaries are one of the main issues of the financial office of educational department in Gilgit Baltistan because majority of the teachers are not satisfy with their given salary package and most of the teachers are facing extreme hardships even in meeting their basic needs (Shafa M. D, 2011). Although, the level of salary paid to a particular teacher is directly linked to different characteristics own by him/her, like institutional affiliation, formal education, professional skills, and gender difference and so on. Many factors have been analyzed by researchers to identify the most influential salary determinants of school teachers. Teachers of public schools in Pakistan earn average salary less than the teachers of elite schools. The salaries for government school teachers are fixed on the basis of basic pay scale (BPS) system and in private schools the autonomous bodies fix the salaries of teachers on the basis of their academic qualification (Khan, T. 2005).

Other responsible factors behind teacher’s salary variations are; difference in experience, educational qualification, local supplements. Also rich districts pay higher salaries for school teachers then poor districts (Winters, et. al. 2008). Gender, location and ethnicity can play an important role in the determination of salaries for teachers (Savedoff, et.al1998).

II. Methodology
We have used the survey method for data collection. We have classified the whole population in three strata they are, Government, Private and NGO’s schools. We have used stratified sampling technique to cover these three types of schools. A sample size of 100 teachers (35 governments, 40 private and 25 NGO-private school teachers) from 20 schools was selected. Data has been taken randomly from both male and female teachers being teaching at different classes of schools in different areas of Gilgit.

Hypothesis
We constructed the following null hypothesis
i. The mean salary of Government school teachers is equal to the mean salary of private and NGO-school teachers.
ii. The mean salary of school teachers mostly depends on the level of their formal education.
iii. Male teachers earn on average greater salaries as compared to their female counterparts.

Method of Data Analysis
We have used Analysis of Variance (ANOVA) model (a dummy variable regression approach) to estimate the dummy variables, because this study possesses all independent dummy variables which cause variations in teacher’s salary (a quantitative dependent variable). Variables which assume values 0 and 1 are called dummy variables. A regression model that contains all exclusively dummy or qualitative in nature is called as Analysis of Variance (ANOVA) model (Gujarati, et.al.2009). The economists and statisticians suggest this model as best for the comparison of different means. As
Abad Ali Shah, Muhammad Idrees, Farrukh Nawaz Kayani (2009) have used the Analysis of Variance (ANOVA) model in order to find out the salary differences among public school teachers for 50 states of USA in their renown book (Basic econometrics 5th edition pp-278).

**Model Specification and Variable Construction**

A general model for the variables can be constructed as;

\[ \text{ASST} = \text{IA} + \text{EQ} + \text{PD} + \text{GD} + \text{TS} + \text{EXP} + \text{ROT} \]

Where; \( \text{ASST} \) = Average salary of a school teacher. (Quantitative dependent variable) \( \text{IA} \) = Institutional affiliation of a teacher, \( \text{GD} \) = Gender difference, \( \text{EQ} \) = Educational qualification, \( \text{PD} \) = Professional degrees, \( \text{EXP} \) = Level of Experience, \( \text{TS} \) = Teaching Status and \( \text{ROT} \) = Rank of a Teacher.

In our model teacher’s salary is the dependent variable that has been regressed on seven independent variables. But each independent variable has two or more than two categories that have been explained in above table. A combined model was difficult to construct as well as in taking comparative analysis of the means. Therefore we have constructed separate ANOVA models for each dummy variable in order to deeply analyze the effect of the dummy variables on quantitative dependent variable. The model specification for the first dummy variable (institutional affiliation of a teacher) is as follows and so on.

The (ANOVA) model is written as;

\[ y_i = \beta_0 + \beta_1 d_{2i} + \beta_2 d_{3i} + \mu_i \]

Where; \( y_i \) = (average) salary of school teacher of ith school. \( d_{2i} = 1 \) if the teacher from private school and 0 otherwise \( d_{3i} = 1 \) if teacher from NGO-private school and 0 otherwise \( \mu_i \) = the error term \( \beta_0 \) = is the benchmark. If a qualitative variable has m categories we introduce only (m-1) dummy variables. We have introduced only two dummies in the model (private school and NGO-private school) while the government school is a benchmark. More specifically, the category for which no dummy variable is assigned is known as benchmark. It is also known as base, control, comparison, reference or omitted category. All comparisons are made in relation to the benchmark category.

Now what does the model tells us? On taking expectation of the equation on both sides we obtain:

Expected Mean salary of private school teacher:

\[ E(Y_i | d_{2i} = 1, d_{3i} = 0) = \beta_0 + \beta_1 \]

Expected mean salary of NGO-private school teacher:

\[ E(Y_i | d_{3i} = 0, d_{3i} = 1) = \beta_0 + \beta_3 \]

Expected mean salary of government school teacher:

\[ E(Y_i | d_{2i} = 0, d_{3i} = 0) = \beta_0 \]

1. **Results and Discussions**
Table 1: Mean Monthly Salary (MMS) of a School Teacher on the basis of his/her Institutional Affiliation

<table>
<thead>
<tr>
<th>Categories</th>
<th>Constant</th>
<th>Coefficients</th>
<th>t-statistics</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant (Govt. School Teacher)</td>
<td>31356.971</td>
<td>13.010</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Private school teacher</td>
<td>-</td>
<td>-5.916</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>NGO-private school teacher</td>
<td>-</td>
<td>-5.236</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

R² = 0.31  f- value = 21.406

The results (table 1) show that the mean monthly salary of government school teachers is Rs.31,357. The mean salary of private school teachers is lowered by Rs.19627 and that of NGO-private school teacher is lowered by Rs.19618 in comparison to government school teachers. The p-value of f-test=.000 so the results of overall model are statistically significant at p=0.05%. Therefore we cannot accept the null hypothesis (1) and conclude that government sector school teachers earn more average salaries as compared to private and NGO school teachers in Gilgit.

Table 2: Mean Monthly Salary of a School Teacher on the basis of his/her Academic Qualification

<table>
<thead>
<tr>
<th>Educational Qualification</th>
<th>Constant</th>
<th>Coefficients</th>
<th>t-statistics</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant (teacher 7025.000 with FA/FSC)</td>
<td>.821</td>
<td>.414</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher with BA/BSC</td>
<td>12248.000</td>
<td>1.335</td>
<td>.185</td>
<td></td>
</tr>
<tr>
<td>Teacher with MA/MSC</td>
<td>12252.051</td>
<td>1.385</td>
<td>.169</td>
<td></td>
</tr>
<tr>
<td>Teacher with other Degrees</td>
<td>11141.667</td>
<td>1.008</td>
<td>.316</td>
<td></td>
</tr>
</tbody>
</table>

R² = 0.20  f- value = .655 .582

Table 2 reveals that teachers with high level of education have more mean monthly salary as compared to those with low level of education. But the value of f-test for the model p=.582 >0.05% therefore overall model was not statistically significant.
Table 3: Mean Monthly Salary of a School Teacher on the Basis of his/her level of Professional Degrees.

<table>
<thead>
<tr>
<th>Professional degrees</th>
<th>Constant</th>
<th>Coefficients</th>
<th>t-statistics</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant (teacher with CT)</td>
<td>11550.000</td>
<td>1.440</td>
<td>.153</td>
<td></td>
</tr>
<tr>
<td>Teacher with (B.ED)</td>
<td>7800.880</td>
<td>.936</td>
<td>.352</td>
<td></td>
</tr>
<tr>
<td>Teacher with (M.ED)</td>
<td>16578.650</td>
<td>1.887</td>
<td>.062</td>
<td></td>
</tr>
<tr>
<td>Teacher with other professional degrees</td>
<td>3033.333</td>
<td>.293</td>
<td>.770</td>
<td></td>
</tr>
<tr>
<td>Teachers with no any professional degree</td>
<td>-3197.655</td>
<td>-.359</td>
<td>.721</td>
<td></td>
</tr>
</tbody>
</table>

R² = 0.14  t-value = 3.814  Level of significance = .006

The results presented in table 3 show that a high level professional degree (PD) holder teachers like B.ED have greater salaries as compared to teachers with low level PD. The value of t-test was very small that it did not show highly effectiveness of the variable, although p<0.05 and overall model is statistically significant.

Table 4: Mean Monthly Salary of a School Teacher on the Basis of Gender Differences

<table>
<thead>
<tr>
<th>Gender</th>
<th>Constant</th>
<th>Coefficient</th>
<th>t-statistics</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>23659.065</td>
<td>9.819</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-9590.438</td>
<td>-2.886</td>
<td>.005</td>
<td></td>
</tr>
</tbody>
</table>

R² = 0.8  t-value = .005

The data in table 4 showed that the male teachers earned more salaries as compared to their female counterparts. The results were statistically significant as the p-value=.005<0.05%.

Table 5: Mean Monthly Salary of a School Teacher on the Basis of their Status of Teaching

<table>
<thead>
<tr>
<th>Teaching status</th>
<th>Constant</th>
<th>Coefficient</th>
<th>t- statistics</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent teacher</td>
<td>21969.809</td>
<td>11.073</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Contract based teacher</td>
<td>-9064.424</td>
<td>-1.830</td>
<td>.070</td>
<td></td>
</tr>
<tr>
<td>Temporary teacher</td>
<td>-12596.475</td>
<td>-2.699</td>
<td>.008</td>
<td></td>
</tr>
</tbody>
</table>

R² = 0.90  t-value = 4.069  Significance = .0012
The results of table 5 showed that regular teachers have higher average salaries as compared to temporary and contract based teachers. The p value of f-test=.0012<0.05% that showed overall significance of the model for teacher’s salaries in respect to their status.

Table 6: Mean Monthly Salary of a School Teacher on the Basis of their Years of Experience

<table>
<thead>
<tr>
<th>Years of experience</th>
<th>Constant</th>
<th>Coefficient</th>
<th>t-values</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 10 years</td>
<td>13460.333</td>
<td>7.051</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>11 to 20 years</td>
<td>7375.902</td>
<td>1.816</td>
<td>.073</td>
<td></td>
</tr>
<tr>
<td>21 to 30 years</td>
<td>25146.939</td>
<td>5.185</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>31 to 40 years</td>
<td>32059.867</td>
<td>4.658</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 reveals that teachers belonging to high experience groups enjoyed high level of salaries as compared to teachers from lower experience groups. The p value of f-test=.000<0.05% that shows the overall significance of the model for level of salary and experience.

Table 7: Mean Monthly Salary of the School Teachers on the Basis of their Rank

<table>
<thead>
<tr>
<th>Rank of a teachers</th>
<th>Constant</th>
<th>Coefficient</th>
<th>t-value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal</td>
<td>38452.000</td>
<td>9.694</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Senior teacher</td>
<td>-19851.472</td>
<td>-4.247</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Junior teacher</td>
<td>-26023.136</td>
<td>-5.714</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

Finally, the results of table 7 exhibits that the headmasters/principals have high level of salaries as compared to senior and junior teachers. Furthermore the senior teachers are enjoying greater salaries as compared to junior ones. The p-value of f-test=.000<0.05% indicates the significance of overall model.

III. Discussion

The salary gap among inter-sector school teachers is too wide. Table 1 shows the sectorwise mean monthly earnings of school teachers in Gilgit and reveals that the government school teachers have three times higher salaries as compared to private and NGO-private school teachers. On the other hand both PST and NGO-ST have similar mean monthly salaries. These results are similar to those found in other poor areas as according to James Tooley.et.al (2007). Teachers from government schools earn almost three and half times higher salary as compare to unregistered schools and two times higher than a teacher from registered private schools in Ghana according to Rabia.et.al (2011). Teachers in public sectors are more facilitated and paid higher than private sector school teachers in Pakistan.

This inter-sector salary differences are directly linked to the different salary structures and packages being offered by relative sectors like Khan.et.at. (2005). The GST are paid on the basis of BPS system while in NGO-PS salaries are determined by donor of the NGO. Private and NGO-PS teachers are not given any formal and regular package of salary increment on monthly or annual basis. While GST has fixed salary
packages and they avail salary increments equivalent to those of other public sector employees. Therefore, their salaries increase smoothly and rapidly as compared to teachers salaries in rest of the sectors. In NGO-PS teachers salary increments depend on allocation of marginal funds by the NGO.

But in some NGO-PS we found a presence of ‘teacher scale’ (TS) system. The permanent teachers are assigned scales in between TS-5 to TS-8 and their salaries are determined on the basis of this system. But this system is not applied in other private schools being run under NGOs. While the private school teachers have irregular and unstructured salaries and commonly determined by the organizer or head of the institution.

Teacher’s education level is known as a leading factor of salary determination. As Bennell (2004) stated that teachers salaries are mostly determined by professional qualification and formal education of a teacher. Winters, et. al. (2008) mentioned that teachers with advanced degrees are highly paid. But our results explain that the academic qualification of a teacher is ineffective determinant of teacher’s salary. That is supported by (figure1) which shows that the percentage level of teacher’s educational qualification in private and government sector schools is same. This ratio is little bit low in NGO run private sector schools but the mean monthly salaries of private school teachers are less from the rest of the sectors.

Teachers with high level professional degrees such as with M.ED has little bit higher salaries than those with B.ED or CT and all professional degree holders have greater salaries than those with no any (PD). The ratio of professional degree holder teachers is higher in government sector such that not a any single teacher is found without (PD). While this ratio is also higher in NGO-PS schools where only 16% teachers are without any (PD) and 33.3% private school teachers are devoid of any kind of professional degree and vocational training certificate (see figure 2). Some observations have shown insignificance against the results. Although the overall effect of (PD) on the level of salary is significant.

There are high salary differentials among male and female teachers. The female segment is usually less earner than their male counterparts. Teaching is the only profession that is highly embedded with female teachers, according to Ali, M. A. (1998). Teaching is a poorly structured profession that is highly embedded with female workers than in other salaried-profession. Women enter into this profession due to its suitability for women. The female teachers are less sensitive to salaries as compared to male teachers. Therefore they accept even less amounts as salary. Because of this factor private sector schools mostly recruit female teachers. We observed this gender discrimination with respect to level of salaries in all educational sectors (government, private and NGO-private sectors).

More experienced and senior teachers with permanent status have significantly greater mean monthly salaries as compare to inexperienced and junior teachers with temporary or contractual status.
In government schools almost all teachers are permanent and highly experienced as compared to those of other sectors. On the other hand we have not found the concept of permanency in any single private school and all teachers are about less experienced.

IV. Conclusion
The major salary-determinants of school teachers in Gilgit are institutional affiliation of a teacher, gender difference, years of experience, teaching status of a teacher and seniority. On the other hand more surprisingly, the level of education is almost ineffective and level of professional degree is found less influential as determinant of salary. The results of this study reveal that the poor structure of non-government schools affect the standard of education.

References