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Pocket Money as a proxy for Family Income

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Abstract

This study is to analyze the effect of pocket money in the education production function. Basically, this study tried to respond two questions. Firstly, can pocket money serve as a regressor in explaining the education production function? Secondly, can pocket money be used as an alternative to family income in the education production function? The study proved that pocket money plays its role in explaining the education production function hence it could be used as an alternative to family income. However, researchers do not recommend using it when family income is on hand.

Keywords: *Education production function, pocket money, family income, parents' education, adolescent.*

1. Setting the Scene

Scholastic inputs and outputs constitute education production function. Where outputs refer to achievement, which could be represented on both side in an internal efficiency as academic achievement and/or, as external efficiency, as its impact on employability. Inputs comprise a number of socioeconomic as well as psychological factors involved in the educational process. Success for higher education graduates is determined by employability, the personal characteristic to succeed or fail to final exam, and rarely in addition to their scores (and degrees) through standardized academic achievement tests; but for secondary school students it is only academic achievement which defines the output. Student scores are a good measure of their academic achievement.

There are two broad categories that affect academic achievement, namely: school and society. Hanushek (1998) referred to the following measures of resources devoted to schools.

1. the real resources of the classroom (teacher education, teacher experience, and teacher-pupil ratios);
2. financial aggregates of resources (expenditure per student and teacher salary);
3. measures of other resources in schools (specific teacher characteristics, administrative inputs, and facilities), those last domain is more difficult to observe in respect with the impact of various externalities.

Coleman and his team (1966) studied the effect of school resources and the socioeconomic factors on student achievement. They found that student background and socioeconomic status are much more important in determining educational outcomes than are measured differences in school resources. Cynthia et al. (1997) while working on family circumstances for students' grade progression in rural Pakistan also found that school completion (academic achievement) rates remain very dependent on household economic circumstances. Aslam (2003) investigated the determinants of pupil achievement in secondary schools in Pakistan. She found that home background, personal and school-related factors are significant determinants of academic achievement of students. Willms (2006) has recorded various

researches[1] demonstrating socioeconomic impacts on achievements of students. From his recorded literature one may trace this impact since birth of the children through his entire career both educational as well as his entry into the labor market.

There are various factors responsible for their academic achievement. Among these factors parents' education, their socioeconomic status, students' age, students' gender, and place of residence are important. For instance, "*More educated and wealthy parents may further assist and direct their children's' studies and thus enhance their children's' scholastic aptitude and ability*" (Wenli Li 2007). Pocket money could be considered a relevant factor affecting student's achievement. Before going deeper it is pertinent to get *pocket money* defined.

Pocket money is a small amount of money given to children on daily, weekly or monthly bases from their parents or guardians for their private use. Children are supposed to consume this amount according to their own free will. Although it has also been revealed (Cheng and Westwood, 2007), while investigating the achievement of primary school students, that majority of children are least worried about their pocket money situation; nevertheless, pocket money can teach children the money management skills and help them to understand how the economic system works. It is probable that there could be some negative impacts of pocket money upon children but it would not be a good idea to abandon them from pocket money. For example, Jun (2000), after interviewing the parents, stated as:

> *"Pocket money also gave school children an opportunity to consume secretly food that their parents prohibited on health and safety grounds. Most of the parents interviewed were well aware of this consequence of pocket money but said that it would be unrealistic not to give children any pocket money at all."*

According to a press release[2], "*the allocation of pocket money varies with age and gender. Children aged 15 to 17 are more likely to receive pocket money from their parents (84%), compared with those aged 10 to 14 (70%). Older girls are also more likely to receive money for doing well at school or in exams. Some 22% of girls aged 12 to 16 are rewarded for academic achievement, compared with just 14% of boys in the same age group*".

As pocket money has been found an interesting factor in the life of the adolescent students, so, it could be taken as an explanatory variable in the education production function which is to explain the academic achievement of the adolescents. It is obvious that intrinsically it is correlated with family income. It is not always easy to collect the information concerning family income, especially, when the subjects (the adolescent students) are not too old to have known their family income exactly. Furthermore, people are often hesitant to disclose their personal income. In order to avoid the complexity involved in the process of retrieving such information it is thought that pocket money could be a reasonable alternative to family income in the education production function. This study is to find the relevance of pocket money in the education production function. Following two research questions have been addressed in this study.

1. Can pocket money serve as a regressor in the education production function?
2. Can pocket money be used as an alternative to family income in the education production function?

[1] Sewell and Hauser (1975); Bielby (1981); Datcher (1982); Sameroff, Seifer and Elias (1982); Hart and Risely (1995); Voelkl (1995); Hertzman and Weins (1996); Finn and Rock (1997); Raudenbush and Kasim (1998); Johnson, Crosnoe and Elder (2001); Japel, Normand, Tremblay and Willms (2002); Willms (2002, 2003).

[2] THE ASSOCIATED CHAMBERS OF COMMERCE AND INDUSTRY OF INDIA. (APRIL 18, 2008) "Trends of Pocket Money in Urban Areas". (ACCESSED ON 05.02.2009; HTTP://WWW.ASSOCHAM.ORG/PRELS/SHOWNEWS.PHP?ID=1495).

2. Methodology

The data used in present study was collected by the researchers themselves through questionnaire method. The target population is the secondary school students (14 to 16 years old) from the province of Punjab (The largest province of Pakistan). Sampled population is the secondary school students in Multan (Punjab, Pakistan). Sample consisted of 801 observations.

Selected variables are pocket money, family income, parent's education, gender, and domicile of the student as explanatory variables and the Student Score as a response variable.

In order to analyze the data, the regression and the correlation techniques were used through SAS. Several regression models were constructed. The overall regression model contained seven explanatory variables. The results of this model made us construct a number of different regression models for detailed analyses. Correlation matrix was also calculated to see the correlation between any of the two variables. In order to take decisions about the significance of parameter estimates, α =0.10 was selected.

3. Results and Discussion

In model 1[3] the researchers took Student Score as a function of six explanatory variables (Pocket Money, Family Income, Father's Education, Mother's Education, Gender, and Domicile). The algebraic expression of the above regression function is:

$$S_{Student} = \beta_0 + \beta_1 M_{Pocket\ Money} + \beta_2 I_{FamilyInco\ me} + \beta_3 E_{Father\ \ Eduacation} + \beta_4 E_{Mother\ \ Education} + \beta_5 G_{Student} + \beta_6 D_{Student} + \varepsilon$$

Table 1 contains the results of all the regression models of this study.

Models	β_0	β_1	β_2	β_3	β_4	β_5	β_6	R^2	F
Model 1	213.54719 (16.12444) (<.0001)	-0.00051433 (0.00438) (0.9065)	0.00187 (0.00045446) (< 0.0001)	1.93324 (0.81579) (0.0182)	3.46772 (0.79093) (< 0.0001)	-16.62449 (6.01268) (0.0059)	19.56417 (6.54666) (0.0029)	0.1816	18.30 (< 0.0001)
Model 2	264.41495 (2.99027) (< 0.0001)	0.01150 (0.00314) (0.0003)	—	—	—	—	—	0.0229	13.41 (0.0003)
Model 3	245.90967 (4.09728) (< 0.0001)	0.00121 (0.00349) (0.7299)	0.00273 (0.00042445) (< 0.0001)	—	—	—	—	0.0991	28.50 (< 0.0001)
Model 4	240.18976 (4.47134) (< 0.0001)	0.00791 (0.00414) (0.0565)	—	—	4.12592 (0.57138) (< 0.0001)	—	—	0.0997	30.36 (< 0.0001)
Model 5	223.42731 (6.40053) (< 0.0001)	0.00927 (0.00301) (0.0022)	—	4.41272 (0.61395) (< 0.0001)	—	—	—	0.1064	33.33 (< 0.0001)
Model 6	225.35046 (6.44407) (< 0.0001)	0.00804 (0.00409) (0.0497)	—	2.51007 (0.78653) (0.0015)	2.70691 (0.72162) (0.0002)	—	—	0.1179	24.07 (< 0.0001)

[3] Model 2 $S_{Student} = \beta_0 + \beta_1 M_{Pocket\ Money} + \varepsilon$

Model 3 $S_{Student} = \beta_0 + \beta_1 M_{Pocket\ Money} + \beta_2 I_{FamilyIncome} + \varepsilon$

Model 4 $S_{Student} = \beta_0 + \beta_1 M_{Pocket\ Money} + \beta_2 E_{Mother\ Education} + \varepsilon$

Model 5 $S_{Student} = \beta_0 + \beta_1 M_{Pocket\ Money} + \beta_2 E_{Father\ Eduacation} + \varepsilon$

Model 6 $S_{Student} = \beta_0 + \beta_1 M_{Pocket\ Money} + \beta_2 E_{Father\ Eduacation} + \beta_3 E_{Mother\ Education} + \varepsilon$

The results of the above regression are given in the Table 1[4]. All explanatory variables except pocket money are statistically significant (α = 0.10) in model 1. Although the researchers have seen from previous analysis that pocket money is not significantly contributing to explain the response variable i.e. Student Score. However, in order to explore our assumption that Pocket Money is contributory to Student Score the researchers constructed model 2 which includes only this variable as explanatory variable. One can clearly observe that Pocket Money is highly significant in model 2, which means that this can be considered as a reasonable predictor of student achievement. Now question is that why it is not significant in model 1. This may be due to some collinearity between Pocket Money and one or more explanatory variables in model 1. Henceforth, correlation coefficients between all the variables are presented in table 2.

Table 2

	Student Score	Pocket Money	Family Income	Father's Education	Mother's Education	Gender	Domicile
Student Score	1.00000						
Pocket Money	0.15135 (0.0003)	1.00000					
Family Income	0.32613 (<0.0001)	0.45351 (<0.0001)	1.00000				
Father's Education	0.31215 (<0.0001)	0.11307 (0.0058)	0.32964 (<0.0001)	1.00000			
Mother's Education	0.32964 (<0.0001)	0.32964 (<0.0001)	0.28030 (<0.0001)	0.62447 (<0.0001)	1.00000		
Gender	-0.05165 (0.1683)	-0.10953 (0.0069)	-0.19256 (<0.0001)	0.16753 (<0.0001)	0.23998 (<0.0001)	1.00000	
Domicile	-0.11658 (0.0018)	-0.05885 (0.1472)	-0.16458 (<0.0001)	-0.27977 (<0.0001)	-0.45326 (<0.0001)	-0.20042 (<0.0001)	1.00000

The correlation matrix in table 2 reflects that all the variables are correlated. Pocket Money is positively correlated with Family Income, Father's Education, and Mother's Education; whereas, it is negatively correlated with Gender as well as Domicile, however, the values are too small to have significant effect. This could be the reason that the effect of Pocket Money was suppressed in model 1. As Family Income and Mother's Education have comparatively high correlation with Pocket Money so the researchers thought to study their effects more precisely. Usually Father's Education and Mother's Education are correlated which is also observable in above matrix. Their correlation coefficient is 0.62447. It would be logical to include this variable also in to consideration for further analyses. In the ensuing lines, the analyses of the data have been presented in which efforts have been made to investigate *Family Income*, *Mother's Education* and *Father's Education* in combination with *Pocket Money* which is the focus of present study.

In model 3 one can note that family income is highly significant while pocket money is insignificant. This may be because of expected dependence of pocket money on family income as the researchers have already noted in the correlation matrix. Pocket money remains significant with mother's education (model 4), father's education (model 5). The researchers have also analysed the effect of mother's education and father's education along with pocket money in model 6; so that their combined suppressing effect upon pocket money could be more observable. This analysis shows that pocket money remains significant in the presence of both mother's education and father's education.

Although throughout our analysis the researchers encountered a very low value of R^2 which sounds disappointing. But such low values of R^2 are frequently encountered in cross-sectional data with a large number of observations (Gujarati, 2007). F values in table 1 reveal that all the models are significant.

4. Conclusion

From the above discussion the researchers come to know that Family Income is the only variable in the presence of which the effect of Pocket Money is suppressed; conversely, Pocket Money becomes a significant regressor in the absence of Family Income. This is probably because of their collinearity. It is evident that Pocket Money, as a social phenomenon especially in the life of adolescents, depends on family income. Furthermore, there are a number of probable situations when true family income is hard to access. For example, people are reluctant to tell their earnings or the adolescents are too young to know their true family income. Researchers must be prepared to cope with the situations in which family income is unavailable. They should have identified some alternatives to cope with such situations. According to our investigation Pocket Money can be one such potential alternative. It is maintained that pocket money has significant role in the education production function. The researchers may say that Pocket Money can be used as a reasonable predictor in the absence of Family Income. However we suggest the preferred use of family income as a reliable economic indicator in the education production function, if it is available.

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