

mate income elasticity. Income changes must be permitted to find their expression in quality changes, which, in turn, can then lead to expenditure changes.

With these considerations in mind, the following hypothesis was enunciated and tested:

X_1 —daily total currently expenditures plus debt service for public, primary, and secondary education per pupil in average daily attendance is a function of,

X_2 —percent of public high school enrollment relative to total public school enrollment,

X_3 —percent of pupils (5 to 19 years old) in average daily attendance living in urban areas, and

X_5 —per capita personal income.

In brief,

$$X_{1a} = f(X_2, X_3, X_5).$$

The multiple regression equation was found to have the following values for selected years during 1900–1958:

$$X'_{1a} = .112568 + \frac{0.004274}{(.0024)} X_2 - \frac{0.005200}{(.0022)} X_3 + \frac{0.000924}{(.8715)} X_5. \quad (1.3)$$

The statistically significant coefficient is $\beta_{15.23}$.²⁷

The coefficient of multiple determination adjusted for degrees of freedom lost— $R^{*2}_{1.235}$ —is 0.969. It is statistically highly significant at an α of 0.05. About 76 percent of the 1900–1958 variation in the cost of daily per pupil current expenditure plus debt service can be explained on the average in terms of per capita personal income change, holding the effect of changes in the public high school—all public school enrollment ratio and urbanization constant.

The following beta coefficients were found:

$$\beta_{15.23} = .9625,$$

$$\beta_{13.25} = -.0565, \text{ and}$$

$$\beta_{12.35} = -.0474.$$

The following is the simple correlation coefficient matrix:

	X'_{1a}	X_2	X_3
X_2 -----	0.6892	-----	-----
X_3 -----	.5707	0.9659	-----
X_5 -----	.9746	.7049	0.5854

Income elasticity of education is defined as,

$$\frac{\partial X_1}{\partial X_5} \cdot \frac{\bar{X}_5}{\bar{X}_1},$$

and for 1900–1958 it is +1.09, just a little above unit elastic. Thus, it can be concluded that during 1900–1958, a 1 percent increase in per capita personal income was on the average associated with a

²⁷ With 17-4 or 13 degrees of freedom lost, coefficients are statistically significant at an α of 0.05 if they are larger than 0.514.