Effects of Human Capital Investment on Unemployment Volatility in Nigeria (1981-2015)

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Abstract

Why do more educated workers experience lower unemployment rates and lower employment volatility? A closer look at the data reveals that these workers have similar job finding rates, but much lower and less volatile separation rates than their less educated colleagues. Therefore, this study examines the Effects of human capital investment on unemployment Volatility in Nigeria from 1981-2015 with a primary focal objective on the composition of human capital investment in Nigeria. We show that investments in match-specific human capital reduces the outside option of workers, implying less incentive to separate and thus longer job spells. The theoretical model generates unemployment dynamics that are consistent with the observed patterns for unemployment, separation and job finding rates across education groups. While the Error correction result revealed that Government current investment in human capital in terms of spending on education needs to increase in quantum for its significance to be meaningful. Hence, the government needs to put more effort in human capital investment in order to reduce unemployment rate in Nigeria.

I. Introduction

More educated individuals fare much better in the labour market than their less educated colleagues and enjoys greater employment stability. According to Becker (1964) “Employees with specific training have less incentive to quit, and firms have less incentive to fire them, than employees with no training or general training, which implies that quit and layoff rates are inversely related to the amount of specific training."

Economists have long paid close attention to the concepts of investments in physical capital but in recent years they had switched emphasis to the concept of human capital investments. Human capital is the stock of competencies, knowledge, habits, social and personality attributes, including creativity, cognitive abilities, embodied in the ability to perform labour so as to produce economic value. It is an aggregate economic view of the human being acting within economies, which is an attempt to capture the social, biological, cultural and psychological complexity as they interact in explicit and/or economic transactions. Many theories explicitly connect investment in human capital development to education, and the role of human capital in economic development, productivity growth, and innovation has frequently been cited as a justification for government subsidies for education and job skills training

A. W. Lewis is said to have begun the field of Economic Development and consequently the idea of human capital when he wrote in 1954, the "Economic Development with Unlimited Supplies of Labour." The term "human capital" was not used due to its negative undertones until it was first discussed by Arthur Cecil Pigou: "There is such a thing as investment in human capital as well as investment in material capital. So soon as this is recognised, the distinction between economy in consumption and economy in investment becomes blurred. For, up to a point, consumption is investment in personal productive capacity. This is especially important in connection with children: to reduce unduly expenditure on their consumption may greatly lower their efficiency in after-life. Even for adults, after we have descended a certain distance along the scale of wealth, so that we are beyond the region of luxuries and "unnecessary" comforts, a check to personal consumption is also a check to investment.

The use of the term in the modern neoclassical economic literature dates back to Jacob Mincer's article "Investment in Human Capital and Personal Income Distribution" in The Journal of Political Economy in 1958. Then T.W. Schultz who is also contributed to the development of the subject matter. The best-known application of the idea of "human capital" in economics is that of Mincer and Gary Becker of the "Chicago School" of economics. Becker's book entitled Human Capital, published in 1964, became a standard reference for many years. In this view, human capital is similar to "physical means of production", e.g., factories and machines: one can invest in human capital (via education, training, medical treatment) and one's outputs depend partly on the rate of return on the human capital one owns. Thus, human capital is a means of production, into which additional investment yields additional output. Human capital is substitutable, but not transferable like land, labour, or fixed capital.

The unemployment rate is a measure of the prevalence of unemployment and it is calculated as a percentage by dividing the number of unemployed individuals by all individuals currently in the labour force. During periods of recession, an economy usually experiences a relatively high unemployment rate. According to International Labour Organization report, more than 197 million people globally are out of work or 6% of the world's work-force was without a job in 2012. Theoretically, differences in unemployment rates across education groups could be either because the more educated find jobs faster, because the less educated get fired more often, or due to a combination of the two factors. Empirically, it turns out that different education groups face roughly the same unemployment outflow rates (loosely speaking, job finding rates).

What creates the remarkably divergent patterns in unemployment rates are unemployment inflow rates (job separation rates). Why is it then that more educated workers lose their jobs less frequently and experience lower turnover rates? This paper provides a theoretical model in which higher educational attainment leads to greater employment stability. It builds on vast empirical evidence showing that on-the-job training is strongly positively related to education. As argued already by Becker (1964), higher amounts of specific training should reduce incentives of firms and workers to separate. More educated workers engage in more complex job activities, which necessitate more initial on-the job training. After gaining job-specific human capital, workers have

less incentive to separate from their jobs, with these incentives being comparable stronger for more educated workers.

II. Theoretical Models on Human Capital Investment and Unemployment.

Adam Smith wrote "The Wealth of Nations" (1776) in which he introduced the human capital concept proposing an analogy between man and machines: "When any expensive machine is erected, the extraordinary work to be performed by it before it is worn out, it must be expected, will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expense of much labour and time to any of those employments which require extraordinary dexterity and skill, may be compared to one of those expensive machines. The work which he learns to perform, it must be expected, over and above the usual wages of common labour, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable capital. It must do this, too, in a reasonable time, regard being had to the very uncertain duration of human life, in the same manner as to the more certain duration of the machine" (Smith 1776, p. 93).

Smith reflected on the fact that an individual's growth required the employment of economic resources, just as machines did. This implied that it would be a misjudgment to consider only the value of machines and not that of individuals in the stock of the wealth of a nation. The total income of a country was the sum of all material and personal means, i.e. of all production factors. In other words, a comparison between national income - the sum of all material and personal means and wealth of the nation generated with the aid of human capital is not a homogeneous comparison. Smith's ideas raised much controversy. In particular J. Mill (1848) advocated that it was not possible to aggregate material and personal goods as the value of the former was determined by their ability to satisfy people's needs. Equally, the wealth of a nation, comprised of material goods, only exists with reference to individuals. Over 100 years after Smith, Alfred Marshall (1890) defined human capital so as "to include all those energies, faculties, and habits which directly contribute to making people industrially efficient". Such production capabilities are also capabilities whose value can be measured only indirectly.

The various theories on human capital which were developed in the 20th century were finalized to explain salary differentials and the various opportunities for success in the labour world, seeking to identify and specify the type of skills acquired which enable individuals to increase the human capital stock. The efforts made by the Chicago School were all focused in this direction.

The Chicago School (Mincer, 1958; Becker, 1964; Schultz, 1961), placed emphasis on the human capital notion once more as a factor for salary growth and focused on the elements which contributed to training and human capital accumulation. In particular the authors outlined analytically the relationship between labour-generated income (earnings functions) and human capital, the latter being measured simply through the number of years of schooling and degree of professional experience. In parallel with the Chicago School studies, further theories on human

capital were finalized to measure their impact on economic development and growth at the macro level. The major thrust for all these theoretical arguments was to move from a theoretical concept of human capital to an operational concept, i.e. a measurable human capital regarded as a factor necessary for production and national wealth. In many works (Fabricant, 1954; Solow, 1956; Solow et al., 1961; Denison, 1980; Schmookler, 1966; Abramovitz, 1956; Benhabid and Spiegel, 1994) various authors disaggregated the factors which had repercussions on the productivity of economic systems and established a functional relationship between output changes and the changes of the inputs of the main production factors - above all physical goods (i.e. material goods) and labour (i.e. performance and personal attributes).

Many authors have pointed out that the production and maintenance costs of the human capital stock should be included into the income statement as an investment rather than as a cost. In particular, expenditure incurred for education, vocational training, health on the workplace, etc. should be deducted from the total amount of costs. In addition, a new entry should be introduced in the Government's financial reports called "investments in education" or, broadly speaking, "investments in human capital stock". In order to measure the economic development of a country the characteristics of human capital cannot be ignored and must be adequately considered in the national accounts. The production capacity of tangible assets runs out over time, whereas that of human assets e.g. initiative, professional abilities, knowledge - can be transmitted, at least partially, from one generation to the next through the knowledge which turns into knowledge acquired over a period of time (Lenti, 1967).

In Italy, Corrado Gini (1946; 1959, 1962) was the most passionate advocate of the human capital notion as a factor to be included into a nation's wealth. Gini drew on a thesis by Vilfredo Pareto (1905) illustrated in the early 20th century and claimed that most of the wealth owned by American citizens in the years between World War I and II was derived from the saving accumulated by the immigrant workforce from the early 19th century onwards. Gini's thesis aimed to emphasize the incorrectness in regarding wealth increases when brought about by physical capital while neglecting all increases in wealth when brought about by human capital.

III. Empirical Analysis

Government current expenditure on education and health were used to proxy human capital investments. The time series data of all the variables from 1981 to 2015 were sourced from the Central Bank of Nigeria Statistical Bulletin 2015

Model Specification

Unemp =f (Gredu, Grhealth, Infl) (1)

Equation one is expilicitly written as follows:

$Unemp = \beta_0 + \beta_1 Gredu + \beta_2 Grhealth + \beta_3 Infl + U_t$ (2)

Where:
Unemp represent the unemployment rate
Gredu represents government current expenditure on education
Grheath represents government current expenditure on health
Infl represent inflation rate

β_0 is the intercept and $\beta_1, \beta_2, \beta_3$ are parameters
apriori expectation
$\beta_1, \beta_2, \beta_3 < 0$

Table 1: ADF Unit Root Test and Order of Integration

Variables	ADF Test Statistic Value	5% Mackinnon Critical Value	Remark	Order of Integration
D(unemp)	-5.693429	-2.967767	Stationary	I(1)
D(gredu)	-3.840385	-2.967767	Stationary	I(1)
D(grhealth)	-6.390599	-2.963972	Stationary	I(1)
D(inf)	-8.018265	-2.919952	Stationary	I(1)

Source: Author's Computation from Eviews

Unit Root Test

This study employed ADF to test the stationarity of the variables; all the variables are integrated of order one at 5 percent. That is, they are stationary after first difference. The stationarity test conducted using ADF reveals that all the variables are integrated of order one.

Table 2: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.578569	59.43048	47.85613	0.0028
At most 1 *	0.432821	33.50747	29.79707	0.0179
At most 2 *	0.396121	16.49509	15.49471	0.0353
At most 3	0.044437	1.363647	3.841466	0.2429

Trace test indicates 3 co-integrating eqn(s) at the 0.05 level

Table 3: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.578569	27.92301	25.58434	0.0503
At most 1	0.432821	17.01238	21.13162	0.1714
At most 2 *	0.396121	15.13144	14.26460	0.0364
At most 3	0.044437	1.363647	3.841466	0.2429

Co-integration Test

We therefore concluded that both unrestricted co-integrating rank test (Trace) and unrestricted co-integrating rank test (Max-Eigen) confirmed the presence of co-integrating equations at 5% level of significance. Hence, there is a long run relationship between human capital investment and unemployment volatility in Nigeria.

Table 4: VECM RESULT

Dependent Variable: D(UNEMP)
Method: Least Squares
Included observations: 34 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
ECM(-1)	-0.826599	0.219757	-3.761426	0.0011
GREHEALTH(-1)	0.000856	0.000760	1.126252	0.2722
GREDUC(-1)	-0.000464	0.000514	-0.902885	0.3764
D(UNEMP(-1)	0.456059	0.204372	2.231516	0.0362
D(GRHEALTH(-1))	-0.000730	0.000633	-1.152583	0.2615
D(GREDUC(-1))	-0.000300	0.000405	0.740707	0.0667
D(INF(-1))	1.003842	0.924363	1.085983	0.2892
C	2.767024	3.386262	0.817132	0.4226

R-squared	0.615761	Mean dependent var	0.650000
Adjusted R-squared	0.529867	S.D. dependent var	18.64458
S.E. of regression	16.36197	Akaike info criterion	8.650975
Sum squared resid	5889.709	Schwarz criterion	9.024628
Log likelihood	-121.7646	Hannan-Quinn criter.	8.770510
F-statistic	2.236547	Durbin-Watson stat	2.032954
Prob(F-statistic)	0.040511		

Source: Author's compilation from Eviews 9.0

Error Correction Model

The Vector Error Correction Model is used to correct for disequilibrium in a co-integrating relationship. This mechanism serves as a means of reconciling short run disequilibrium behaviour of an economic variable of interest with its long run behaviour (Sargan, 1962; Engle and Granger, 1987; Sule and Momoh, 2009). The coefficient of the parameters and the t-statistics are the two parameters used in error correction model. The coefficients are expected exhibit negative sign, indicating that a covergence of the variables back to equilibrium path following every period of disequilibrium. The t-statistics however, is used to check the significance of the variables or using the absolute p-value testing at 5 percent level (0.05).

The error correction model (ECM (-1)) is both significant and acceptable at 5 percent because it value in negative and lies between 0 and 1. As well as it p-value (0.0011) is less than 0.05, and then the error correction model variable statistically indicates that the model has 82.65 percent speed of adjustment (see Table 4). However, the model explained 62 percent dynamic variation in unemployment in Nigeria and the model is statistically significant at 10 percent (Table 4).

Specifically, only government spending on education has significant impact on unemployment rate in Nigeria after a period of one year. In fact, the impact is less than 1 percent. This implies that government current expenditures on human capital investment in Nigeria is far from encouraging.

VIII. Conclusion

The study examines the effect of human capital investment on unemployment volatility in Nigeria using time series data from 1981 to 2015. Findings revealed that Government current investment in human capital in terms of spending on education needs to increase in quantum for its significance to be meaningful. Hence, the government needs to put more effort in human capital investment in order to reduce unemployment rate in Nigeria.

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