Ways to Enhance Private Benefits

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Abstract

This paper explores the link between improvements in human capital and individuals' private benefits. The paper builds its foundations upon Adam Smith's Circular Flow Model explaining the contribution of workers to a given production. In order to link skill level with wages, it draws heavily from Acemoglu and Autor's conceptualization of human capital as a measure of skill. To emphasize the importance of an individual worker's skill, Kremer's O-ring model of production is discussed. Through an analysis of employment status and earnings data across groups with different education attainment, the paper postulates that higher educational attainment corresponds to increased earnings. Conversely, a distinction is drawn between between higher wages and the status of employment. Considering this distinction, the paper highlights three possible policies to augment individuals' human capital and thereby increase private benefits.

Introduction

Various forms of investments may be used to increase the product of a firm or the aggregate production in a given country. The foremost method to follow when aiming to improve the output would be to directly interfere with the input, to enhance the resources which go into the making of a product. As one of the factors of production, the human capital, which signals the skill level or in this case the quality of the labor force, comes up as a significant, but tricky factor to consider in this discussion. Workers who take various roles in the production process can have an immense influence on the turnout of a given production. That being said, we are presented with the question of, to what extent worker skill contributes to the output on an aggregate level and what the most effective way to improve the worker skill is. In this paper, we take the main source of improving skill to be by educational attainment. Governments may manipulate the quality of education in a given country, and an individual may voluntarily increase their educational spending if they like to invest in their own set of skills. Therefore, we believe it is a good means of analysis of the purposes of this paper.

As we try to answer the question of whether primary, secondary, higher, or vocational schooling investment is the better, more effective way to improve individuals, we look at data employment and earnings data from different years and different education groups. Analyzing full-time, year round educational employment data as well as earnings data for the representative groups, we suggest that engaging in schooling, and thus improving one's human capital is more effective to increase earnings rather than to just render an individual employed. After interpreting the trends in data, as well as pointing out potential reasons why it may fall short in its explanation, we propose related policies.

Literature Review

The three sources of production—land, labour, and capital—are traded for money in a resource market, according to Adam Smith's traditional Circular Flow model. Theoretically, these elements serve as the foundation for a country's total domestic production. Any qualitative or quantitative increase in one of these parameters has an impact on output since the finished goods that are sold on the market reflect the quality of each component.

Due to their primarily qualitative nature, land and capital are quite simple to casually evaluate. However, labour is influenced by both qualitative and quantitative factors. It is difficult to define human capital, which is the calibre of the labour force. Some academics draw a connection between salary disparities and human capital, while others reject this idea because of flaws in the labour market.

Although there is no single definition all economists agree on, Daron Acemoglu and David Autor consider human capital as a measure of skill. According to them, “human capital corresponds to any stock of knowledge or characteristics the worker has (either innate or acquired) that contributes to his or her ‘productivity’ [and therefore will consequently be] valued in the market because it increases firms’ profits” (Acemoglu & Autor 2011). While this definition doesn’t capture all the nuances of the field, it helps address the complexities of labor market imperfections and the indirect relationship between labor quality, wages, and productivity.

Firms’ demand for high-skilled and low-skilled labor varies across sectors and company sizes. Sector-specific aspects influence the overall demand for different levels and types of human capital. Although skill requirements may differ by sector, the general ratio of high-skilled to low-skilled labor is largely determined by the extent of automation in a firm's production line. For example, a firm focused on mass production may employ mostly low-skilled workers, while another firm concentrating on building a stronger production infrastructure may have a higher number of high-skilled workers. In both scenarios, workers with varying levels of human capital are needed.

According to the O-ring production function, small differences in worker quality can lead to significant variations in productivity and wages (Kremer, 1993). This model explains that higher-skilled workers at the end of a production line have a greater impact on the final product’s quality. The O-ring model describes a multiplier effect, where each worker’s incremental value added increases with each step in the production process. Therefore, differences in worker skill amplify differences in the quality of outputKremer, 1993). From a macroeconomic perspective, a nation with a higher proportion of high-skilled labor would be significantly more productive compared to a nation with a larger number of low-skilled workers. Thus, even without considering other aspects of labor quality, higher worker skill is associated with greater value outputs due to the multiplier effect in the O-ring model of production.

Having discussed the significance of human capital, it is important to examine the mediums through which human capital is improved and how such improvements can be accelerated. In this context, schooling comes up as the foremost and standard measure through which human capital is built. Ideally, all individuals receive some form of schooling whether it is primary or secondary or only vocational education. There are both private and social benefits to receiving education. These two variables are very intertwined as one’s private benefit in the context of a labor market, correlates with their output if we assume perfect matching. Private benefits can be defined as the extent to which an individual benefits from an improved education, and this can be measured directly through their income. That being said, an individual also benefits from improved education through other means which are comparably hard to measure. In this context, an increased income would indicate an increased vocational skill level which could imply an increased intellectual capacity and an improvement in decision-making skills. As all the qualitative factors listed above complement individuals, they ultimately reflect on the macro-scale, as individuals accumulate to shape bigger groups or nations. Social benefits, which can be defined as larger benefits of schooling which affect not only an individual but rather a whole society, are hard to measure. Although they can be related

with a quantitative measure such as income levels, social benefits consist of further aspects that can't be explained quantitatively.

As explained above, social and private returns to schooling are linked due to the incongruent nature of specifically the social rates of return. This is mainly due to the non-peculiar benefits associated with schooling. As much as we can view schooling as a solely financial opportunity of investment, it is important to consider the non-financial benefits that an improved education entails. According to the productive efficiency model, individuals with an improved education become more efficient and produce more output if we control for the amount of money they're paid and the time they're given to complete a task. It is hypothesized that such an effect is due to improved multitasking or time management, which are two foremost non-peculiar benefits associated with schooling. According to the allocative efficiency model, better-educated individuals make more advanced choices regarding what they spend their energy doing. Meaning, if a worker is more skilled, they would distribute their energy into multiple tasks that would maximize their returns, instead of concentrating on a single task with a constant unattractive benefit.

Both these models explain how a worker is improved beyond their measured value. Although these improvements might not show in an individual's earnings, they would augment the productivity of a given firm and thus improve the aggregate output on a larger scale (Oreopoulos & Salvanes, 2011).

Having discussed the potential benefits improved schooling can have, it is quite important to find the best, most effective form of investment that would improve education and thus yield a better output. For this, we compare the percentage of educational attainment across educational groups as well as the education attainment-specfic wages.

Data and Findings

Year	2017	2018	2019	2020	2021	2022
Less than high school completion	64 (1.6)	62 (1.8)	65 (2.1)	49 (2.0)	53 (2.2)	64 (2.4)
High school completion	71 (0.8)	72 (0.9)	72 (0.9)	60 (0.8)	68 (0.8)	73 (0.9)
Some college, no degree	69 (1.0)	71 (0.9)	69 (1.0)	58 (1.1)	70 (1.2)	71 (1.1)
Associate's degree	73 (1.1)	73 (1.1)	73 (1.0)	62 (1.3)	69 (1.4)	76 (1.2)
Bachelor's degree	78 (0.7)	80 (0.7)	79 (0.7)	73 (0.8)	79 (0.7)	80 (0.7)
Master's or higher degree	77 (1.0)	78 (0.9)	80 (1.0)	77 (1.0)	78 (1.0)	80 (0.9)

Percentage of 25- to 34-year-olds in the labor force who worked full time, year round, by educational attainment: 2012 through 2022}

Higher Education Benefits

Higher educational attainment (e.g. Bachelor's, Master's) are correlated with high levels of consistent employment. For instance, in 2022, 80 percent of individuals with a Bachelor's degree and 80 percent with a Master's or higher degree were employed, while just 64 percent of those with less than a high school completion were.

Standard Error

The percentage differences for relatively higher educational levels such as Bachelor's degree and above are quite low. The percentages are stable with relatively low standard errors. For example the standard error for Bachelor's degree has persisted as 0.7 across time while the standard error for lower educational levels such as college, high school and less than high school has fluctuated among years.

According to the above data, even when wage differences aren't considered, higher education corresponds with a better vocational status. Higher educational levels generally correlate with higher rates of full-time, year-round employment. It is important also to notice the significant change in 2020, when individuals with less than a high-school education experienced the pandemic's effects comparably a lot worse than others did. Indeed all groups where somewhat affected by the detrimental effects of the pandemic, but highly-educated individuals with for instance a bachelor's degree showed a faster more stable recovery towards their usual levels of employment.

Educational attainment	Median usual weekly earnings	Unemployment rate	Earnings/Doctoral D. Earnings %
Doctoral degree	$2,083	1.00%	100.00%
Professional degree	2,080	1.4	99.86%
Master's degree	1,661	1.9	79.74%
Bachelor's degree	1,432	2.2	68.75%
Associate's degree	1,005	2.7	48.25%
Some college, no degree	935	3.5	44.89%
High school diploma	853	4	40.95%
Less than a high school diploma	682	5.5	32.74%

Earnings and Unemployment Rates by educational attainment, 2022

Earnings Increase with Education

The data from Table 2 depicts that higher levels of education correspond to higher median weekly earnings. For example, individuals with a doctoral degree earn a median weekly wage of 2,083 USD, which is the highest among all educational levels. In contrast, those with less than a high school diploma earn significantly less, with median weekly earnings of 682 USD.

Unemployment Rates Decrease with Higher Education

Greater educational attainment is also associated with reduced unemployment rates. Those holding a doctoral degree experience the lowest unemployment rate at 1.00 percent, whereas individuals without a high school diploma encounter a significantly higher unemployment rate of 5.5 percent. This trend indicates that higher education not only augments earning potential but also enhances job stability.

Marginal Differences Between Doctoral and Professional Degrees

It is also significant to notice that there's a very small difference between the earnings of individuals with doctoral and professional degrees, the two highest groups of educational attainment. This might hinder us from directly associating an increase in the level of educational attainment with an increase in earnings. And it also nudges us to consider what makes an individual actually valuable in the job market where their price is their wage.

Commentary & Conclusion

Notwithstanding the small marginal difference between doctoral and professional degrees, an increase in educational attainment more significantly translates into and increase earnings, than it does into simply employment. More specifically, from Table 1 we see that although different, the marginal differences in the percentage of full-time working individuals is still quite small. Conversely, the latter table shows that if we consider the earnings of individuals with a doctoral degree to be normal (or 1 in this case), and calculate the earnings ratio of all the other degrees with respect to this number, we end up with quite disparate numbers. For example, the percentage difference between the employment status of individuals with a college degree and bachelor's degree in 2022 is 9. At the same time their relative wage differences are

above 20 percent. This contrast signifies that although individuals of different educational backgrounds may commonly be employed, their wages are much significantly determined by their levels of schooling. Returning to Acemoğlu's views on the human capital, we see that even though the labor market may not entertain differences in human capital through employment, it more so does through private benefits.

Policy Suggestions

Enhancing the Quality of Higher Education

We may infer from the patterns in our data that an aggregate increase in the attainment of higher-education would correlate with higher earnings, which signal a higher skill level. Therefore, it would be in governments' best interest to support high-level institutions. This might take the form of financially supporting ongoing research in such institutions or by endorsing individuals to attain this level of education.

Another important factor of this discussion, as highlighted by the small-margin difference in professional and doctoral degree earnings, is the link between academia and industry. Although doctoral degrees are characterized as the highest-level education may reach, the differences in employment status and salaries are quite slight of individuals with professional and doctoral degrees. Therefore supporting collaborations between universities and the industry would ensure the skills taught in these institutions are in line with what the industry values.

Increase Funding for Early Childhood Education

Considering the major viewpoints in the literature, it is important to also note the value of early childhood education in this context. Because early childhood education is more vastly attained by any other level of education, it is the most substantial mean by which a government can affect the aggregate human capital in a country. Therefore governments should prioritize funding early-childhood education for everyone.

Expand Access to Vocational and Technical Training

We stated expanding access to vocational and technical training as the third and the last of our policies, as it is directly related with our comments on the first Table. Even though vocational training isn't the foremost way to enhance individuals' human capital and improve their intellectual skill, it is direct and effective. Governments, by focusing on, and investing in such trainings, may increase individuals' rates of full-time employment. Individuals, by learning task-specific skills, may easily allocate themselves in the labor market and quickly match with jobs.

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